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MINISTRY OF HEALTH MALAYSIA



Gastroenterology and Hepatology Services Operational Policy

SECOND EDITION

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This document was developed by Medical Services Unit, Medical Development Division, Ministry of Health Malaysia and the Gastroenterology and Hepatology Services Operational Policy Working Group.

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FOREWORD DIRECTOR GENERAL OF HEALTH MALAYSIA

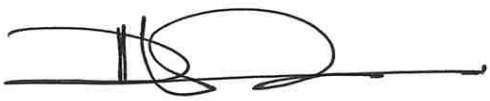
It is with great pleasure and honour that I present the second edition of the Gastroenterology and Hepatology Services Operational Policy. This updated document reflects our ongoing commitment to advancing the science, education, and practice of gastroenterology and hepatology across the Ministry of Health (MOH) Malaysia.

Since its merger in 2016, the Gastroenterology and Hepatology subspecialty has grown significantly, incorporating both clinical and procedural components that are rapidly evolving with new technological advancements. This second edition broadens its scope to include vital areas such as inflammatory bowel disease, gastrointestinal physiological studies, and comprehensive liver disease services, ensuring that our healthcare providers are equipped with the latest guidelines and best practices.

This policy document serves as an indispensable guide for healthcare providers, hospital managers, and policymakers. It meticulously outlines the requirements for organisation, human resources, and essential assets, alongside robust clinical governance frameworks and specialist training programmes. Our collective aim is to ensure that all clinical, endoscopy, and ancillary services adhere to the highest standards of care, ultimately enhancing the digestive and liver health outcomes for all Malaysians.

I extend my heartfelt gratitude to the Medical Services Unit, Medical Development Division, and the Gastroenterology and Hepatology Services Operational Policy Working Group for their unwavering dedication and meticulous efforts in developing this comprehensive document. Their commitment is instrumental in steering our services towards greater excellence and innovation.

It is my sincere hope that this operational policy will foster continuous improvement, promote evidence-based practices, and strengthen interdisciplinary collaboration across all MOH hospitals. Let us collectively strive to uphold the highest ethical and professional standards, ensuring patient safety and promoting advanced research in all facets of gastroenterology and hepatology.



DATUK DR MAHATHAR BIN ABD WAHAB
DIRECTOR GENERAL OF HEALTH MALAYSIA



FOREWORD DIRECTOR OF MEDICAL DEVELOPMENT DIVISION

It is with immense pleasure and a sense of profound responsibility that I introduce the second edition of the Gastroenterology and Hepatology Services Operational Policy. This updated document marks a significant milestone in our continuous efforts to elevate the standards of medical care and service delivery within the Ministry of Health (MOH) Malaysia.

The subspecialty of Gastroenterology and Hepatology has seen remarkable advancements, particularly since its integration in 2016. This evolution, encompassing both clinical expertise and technological innovation in procedural components, necessitates a dynamic framework to guide our practices. This second edition has been meticulously expanded to incorporate critical areas such as inflammatory bowel disease, gastrointestinal physiological studies, and comprehensive liver disease services, ensuring that our healthcare professionals are equipped with the most current knowledge and best practices.

This policy document is an indispensable resource for all healthcare providers, hospital management, and policymakers. It comprehensively outlines the organizational structure, human resource requirements, essential assets, and robust clinical governance frameworks, alongside detailed specialist training programmes. Our collective commitment is to ensure that all clinical, endoscopic, and ancillary services consistently meet the highest standards of care, ultimately improving the digestive and liver health outcomes for all Malaysians.

I extend my deepest appreciation to the Medical Services Unit, the Medical Development Division, and especially the dedicated Gastroenterology and Hepatology Services Operational Policy Working Group. Their tireless efforts and collaborative spirit have been crucial in the development of this forward-thinking and comprehensive document.

It is my sincere hope that this operational policy will inspire continuous improvement, promote evidence-based practices, and strengthen interdisciplinary collaboration across all MOH hospitals. Let us collectively strive to uphold the highest ethical and professional standards, ensuring patient safety and fostering advanced research in all facets of gastroenterology and hepatology.



DATO' DR. MOHD AZMAN BIN YACOB
DIRECTOR OF MEDICAL DEVELOPMENT DIVISION



FOREWORD
HEAD OF GASTROENTEROLOGY AND HEPATOLOGY SUBSPECIALTY

It is my privilege to present the second edition of the Gastroenterology and Hepatology Services Operational Policy. This document reflects the collective commitment of our fraternity to continuously strengthen gastroenterology and hepatology services across the Ministry of Health Malaysia.

Over the past decade, our specialty has undergone substantial transformation. The scope of practice has expanded far beyond conventional diagnostic endoscopy and management of common gastrointestinal and liver diseases. Today gastroenterologists and hepatologists are expected to deliver increasingly complex services including advanced therapeutic endoscopy, inflammatory bowel disease care, gastrointestinal physiological studies, liver transplantation and comprehensive management of chronic liver diseases. These developments require not only specialised expertise but also robust operational systems, adequate infrastructure and a well-trained multidisciplinary workforce.

This policy provides a practical framework for the planning, organisation, delivery and future development of gastroenterology and hepatology services within MOH hospitals. It establishes clear expectations regarding service standards, manpower requirements, infrastructure, equipment, training, clinical governance and quality assurance. More importantly, it serves as a roadmap for equitable and sustainable service expansion throughout the country.

As Head of Service, my vision is to build a unified, competent and future-ready gastroenterology and hepatology workforce capable of delivering safe, evidence-based and patient-centred care regardless of geographical location. We must continue to strengthen

our referral networks, develop centres of excellence, embrace innovation and nurture the next generation of specialists and allied health professionals.

This second edition also reflects the evolving priorities of our specialty, including the growing burden of chronic liver disease, inflammatory bowel disease, gastrointestinal cancers and the increasing demand for advanced endoscopic interventions. Through strategic workforce planning, service standardisation, and continuous professional development, we aim to ensure that every Malaysian has access to high-quality digestive and liver healthcare services.

I would like to express my sincere appreciation to the Medical Services Unit, Medical Development Division, members of the working group, external reviewers and all colleagues who contributed their expertise, experience and dedication towards the development of this policy document. Their invaluable contributions have helped shape a comprehensive guide that will support the continued growth of our specialty.

It is my hope that this operational policy will serve not merely as a reference document, but as a catalyst for excellence, innovation, collaboration, and continuous improvement in gastroenterology and hepatology services nationwide.



DR MUHAMMAD FIRDAUS BIN MD SALLEH
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ABBREVIATIONS

ACLF	Acute-on-Chronic Liver Failure
ALF	Acute Liver Failure
ASGE	American Society for Gastrointestinal Endoscopy
CPC	Clinical Pathology Conference
EMR	Endoscopic Mucosal Resection
ERCP	Endoscopic Retrograde Cholangiopancreatography
ESD	Endoscopic Submucosal Dissection
ESGE	European Society of Gastrointestinal Endoscopy
EUS	Endoscopic Ultrasound
HE	Hepatic Encephalopathy
HDW	High Dependency Ward
HRIM	High Resolution Impedance Manometry
HR-ARM	High Resolution An High Resolution Anorectal Manometry
GERD	Gastroesophageal reflux disease
GPs	General practitioners
MDT	Multidisciplinary Team
MOF	Multi-organ failure
MOH	Ministry of Health
OGDS	Oesophagogastroduodenoscopy
OGIB	Obscure Gastrointestinal Bleeding
PEG	Percutaneous Endoscopic Gastrostomy
SCC	Squamous Cell Carcinoma
TPE	Therapeutic Plasma Exchange

EXECUTIVE SUMMARY

This second edition of the Gastroenterology and Hepatology Services Operational Policy is a comprehensive guide developed by the Medical Services Unit, Medical Development Division, Ministry of Health Malaysia, and the Gastroenterology and Hepatology Services Operational Policy Working Group. Published in August 2025, it aims to standardize and advance the science, education, and practice of gastroenterology and hepatology across the Ministry of Health (MOH) Malaysia.

The document addresses the significant growth and rapid evolution of the Gastroenterology and Hepatology subspecialty since its merger in 2016, incorporating new technological advancements and broadening its scope to include vital areas such as inflammatory bowel disease, gastrointestinal physiological studies, and comprehensive liver disease services.

The policy outlines essential requirements for organization, human resources, and assets, alongside robust clinical governance frameworks and specialist training programmes. It details the vision, mission, and objectives of the Gastroenterology and Hepatology services, which focus on promoting excellence in patient care, advancing research and education, fostering collaboration and leadership, advocating for digestive and liver health, and upholding ethical and professional standards.

Key sections of the policy include:

- Introduction: Provides an overview of the merged Gastroenterology and Hepatology service and the purpose of the policy document.
- Vision, Mission, and Objectives: Defines the overarching goals and principles guiding the subspecialty.
- Scope of Services: Details the range of services provided, including general clinics, endoscopy and daycare units, liver transplant services, emergency endoscopy, inflammatory bowel disease clinics, gastrointestinal physiological studies, national screening programs, and patient advocacy.
- Tiers of Services: Categorizes gastroenterology and hepatology services into five levels (National referral centre, Regional referral hospital, State level hospital, Hospital with resident gastroenterologist/hepatologist, and Visiting), with specific requirements for human resources, medical equipment, space/facilities, and special budgets for each level.

- Components of Services: Breaks down services into outpatient and daycare, inpatient, and rehabilitation and support services.
- Organisation: Defines the roles and responsibilities of the Head of Service and Head of Gastroenterology and Hepatology Unit, and outlines the national sub-committee groups.
- Operational Policies Services: Covers various operational aspects, including general unit policies, ward management, clinic procedures (referrals, appointments, clinic policy, hospital networking), and detailed guidelines for the Endoscopy Unit (design, equipment, staffing, admission/discharge, resuscitation).
- Specific Endoscopic Procedures: Provides in-depth protocols and indications for Oesophagogastroduodenoscopy (OGDS), Colonoscopy, Capsule Endoscopy, Enteroscopy, Endoscopic Retrograde Cholangiopancreatography (ERCP), Endoscopic Ultrasound (EUS), Endoscopic Mucosal Resection (EMR), Endoscopic Submucosal Dissection (ESD), Percutaneous Endoscopic Gastrostomy (PEG), and Liver Elastography, including pre-procedure protocols, infection control, and potential risks/complications.
- Training and Education: Addresses the training of trainees, physicians, medical practitioners, and allied health professionals.
- Clinical Practice Guidelines: References adherence to relevant guidelines.

The policy emphasizes continuous improvement, evidence-based practices, interdisciplinary collaboration, patient safety, and advanced research to enhance digestive and liver health outcomes for all Malaysians.

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1. INTRODUCTION

The Gastroenterology and Hepatology service was merged in 2016 and became one of the major subspecialty services provided in the Ministry of Health Malaysia. Our subspecialty has a clinical component as well as a procedural component and rapidly evolving comparable with emerging new technology. There are a plethora of diagnostic and therapeutic endoscopic procedures available today. In addition, a few centres provide inflammatory bowel disease, gastrointestinal physiological studies and liver disease services which are included in this second edition.

This policy document covers services provided such as organization, human resources and asset requirements as well as clinical governance, specialist training as well as patient management. It is intended to guide healthcare providers, hospital managers and policymakers on the requirement, operation and development of gastroenterology and hepatology services in MOH hospitals. It is hoped that the clinical service, endoscopy service and ancillary services adhere to the standards set by these operational policies.

2. VISION, MISSION AND OBJECTIVES OF THE GASTROENTEROLOGY AND HEPATOLOGY SERVICES

2.1 VISION

To build a unified and leading fraternity advancing the science, education and practice of gastroenterology and hepatology ultimately improving digestive and liver health in the country.

2.2 MISSION

2.2.1 Promote Excellence in Patient Care: To improve prevention, diagnosis, and treatment of gastrointestinal and liver diseases through evidence-based practices and innovation.

2.2.2 Advance Research and Education: To support and disseminate high-quality research and provide continuous professional development for clinicians, scientists, and trainees.

2.2.3 Foster Collaboration and Leadership: To build a global community of professionals committed to leadership, mentorship, and interdisciplinary collaboration.

2.2.4 Advocate for Digestive and Liver Health: To raise public awareness and influence health policy for better outcomes in gastrointestinal and hepatologic health.

2.2.5 Uphold Ethical and Professional Standards: To maintain the highest standards of ethics, integrity, and professionalism in all aspects

2.3 OBJECTIVES

2.3.1 To provide a comprehensive gastroenterology and hepatology services encompassing clinical gastroenterology and hepatology, gastrointestinal endoscopy and liver transplant in the Ministry of Health, Malaysia.

2.3.2 To promote the development of gastrointestinal endoscopy services including therapeutic endoscopy as well as the expansion of gastroenterological services in the Ministry of Health, Malaysia.

2.3.3 To provide teaching and training in the form of structured programs for all categories of staff in the gastroenterology and hepatology services including fellows, gastroenterologists and hepatologists, gastrointestinal assistants (endoscopy nurses) and allied health personnel.

2.3.4 To collaborate with all stakeholders in the Ministry of Health, academic institutions, the private sector and non-governmental organizations to promote the development of gastroenterology and hepatology services in Malaysia.

2.3.5 To ensure that the gastroenterology and hepatology services are delivered based on evidence-based practices with an emphasis on patient safety.

2.3.6 To promote research in all aspects of gastroenterology and hepatology.

2.3.7 To network with overseas centers of excellence and international gastroenterology and hepatology organizations in the field of gastroenterology and hepatology with particular emphasis on training and research.

2.3.8 To increase the awareness of the prevention, screening, detection and treatment of gastrointestinal and liver disorders through close collaboration with primary care and public health practitioners.

3.0 SCOPE OF SERVICES

The scope of Gastroenterology and Hepatology services include:

3.1 General clinics
3.2 Endoscopy and daycare units
3.3 Liver transplant services
3.4 Emergency gastrointestinal endoscopy services
3.5 Inflammatory bowel disease clinic
3.6 Gastrointestinal physiological studies
3.7 National screening programs
3.8 Patient advocacy and health promotion

4.0 TIER OF SERVICES

Gastroenterology and hepatology services shall be delivered in accordance with tier of services as illustrated below:

Table 1: Tier of services

Tier	Descriptions
1	National referral centre
2	Regional referral hospital
3	State level hospital
4	Hospital with resident gastroenterologist / hepatologist
5	Visiting

Table 2: Specific requirement for the development of gastroenterology and hepatology services based on tier of service

Resources	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Human resource	Gastroenterologist/ Hepatologist - 5 Medical officer - 10 Medical assistant - 5 Nurse -26 K- 2 GIA (Medical assistant & Nurse) - 3 per endoscopy suite Pharmacist - 2 PPK - 3 PA - 1 PT - 1 Physiotherapist - 2 Dietitian - 1 Transplant anesthetist/ Transplant Intensivist - 3 Transplant Coordinator - 5	Gastroenterologist / Hepatologist-2 Medical officer-5 Medical assistant 5 Nurse -26 KJ -2 GIA (Medical assistant & Nurse) -3 per endoscopy suite Pharmacist -2 PPK -3 PA- 1 PT- 1 Physiotherapist -1 Dietitian - 1	Gastroenterologist / Hepatologist- 2 Medical officer 5 Medical assistant- 4 Nurse -12 GIA (Medical assistant & Nurse) -3 per endoscopy suite Pharmacist -1 PPK- 3 PA- 1 PT- 1 Physiotherapist -1 Dietitian- 1	Gastroenterologist / Hepatologist- 1 Medical officer- 3 Medical assistant -3 GIA (Medical assistant & Nurse)- 3 per endoscopy suite Pharmacist- 1	Gastroenterologist / Hepatologist (visiting) -1 Medical officer -2 Medical assistant -2 PPK- 1

Resources	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Medical equipments	Transient Elastography – 1 Endoscopy system – 3 Gastroscopy scope – 6 Colonoscopy scope –6 Electrosurgical system -2 Balloon assisted enteroscopy –1 ERCP system -1 EUS system (3 linear, 1 radial) -1 Intestinal ultrasound -1 Therapeutic plasma exchange (TPE) -2 CO2 insufflator -2 Emergency trolley-2 Monitoring system-3 Reprocessing machine -1 Dry cabinet storage rotascope -1 Automated endoscopic washer -1 MUI (leaker tester) -1 Hepa filter -1 Exhaust fan -1 Manual soaking tub -1 Trolley for keeping the accessories -2 Cabinet to keep the brush and PPE Gown -2 Endoscopy table -3 Endoscopy recovery bed -3 Computer -3 Printer -3 UBT machine -1	Transient Elastography – 1 Endoscopy system – 2 Gastroscopy scope – 4 Colonoscopy scope –4 Electrosurgical system -1 Balloon assisted enteroscopy –1 ERCP system -1 EUS system (3 linear, 1 radial) -1 Intestinal ultrasound -1 CO2 insufflator -1 Emergency trolley-1 Monitoring system-1 Reprocessing machine -1 Dry cabinet storage rotascope -1 Automated endoscopic washer -1 MUI (leaker tester) -1 Hepa filter -1 Exhaust fan -1 Manual soaking tub -1 Trolley for keeping the accessories -1 Cabinet to keep the brush and PPE Gown -1 Endoscopy table -2 Endoscopy recovery bed -1 Computer -2 Printer -2 UBT machine -1	Transient Elastography – 1 Endoscopy system – 2 Gastroscopy scope – 3 Colonoscopy scope –3 Electrosurgical system -1 Balloon assisted enteroscopy –1 ERCP system -1 EUS system (3 linear, 1 radial) -1 Intestinal ultrasound -1 CO2 insufflator -1 Emergency trolley-1 Monitoring system-1 Reprocessing machine -1 Dry cabinet storage rotascope -1 Automated endoscopic washer -1 MUI (leaker tester) -1 Hepa filter -1 Exhaust fan -1 Manual soaking tub -1 Trolley for keeping the accessories -1 Cabinet to keep the brush and PPE Gown -1 Endoscopy table -2 Endoscopy recovery bed -1 Computer -1 Printer -1 UBT machine -1	Endoscopy system – 1 Gastroscopy scope – 2 Colonoscopy scope –2 Electrosurgical system with APC -1 CO2 insufflator with 10L tank -1 Emergency trolley-1 Monitoring system -2 Reprocessing machine -1 Dry cabinet storage rotascope -1 Automated endoscopic washer -1 MUI (leaker tester) -1 Hepa filter -1 Exhaust fan -1 Manual soaking tub -1 Trolley for keeping the accessories -1 Cabinet to keep the brush and PPE Gown -1 Endoscopy table -2 Endoscopy recovery bed -4 Computer -4 Printer -1 UBT machine -1	Endoscopy system – 1 Gastroscopy scope – 2 Colonoscopy scope –2 Diathermy machine -1 CO2 insufflator -1 Emergency trolley-1 Monitoring system-1 Reprocessing machine -1 Dry cabinet storage rotascope -1 Automated endoscopic washer -1 MUI (leaker tester) -1 Hepa filter -1 Exhaust fan -1 Manual soaking tub -1 Trolley for keeping the accessories -1 Cabinet to keep the brush and PPE Gown -1 Endoscopy table -2 Endoscopy recovery bed -1

Resources	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Space / facilities	Endoscopy suite Procedure room Fluoroscopy room Isolation room Transplant High dependency unit	Endoscopy suite Procedure room Fluoroscopy room	Endoscopy suite Procedure room Fluoroscopy room	Endoscopy suite Procedure room	Common area or ward
Special budget	Refer to Appendix 13 and list of medications as per starter pack				

Table 3: Comprehensive gastroenterology and hepatology servicesincluding ward, daycare and outpatient services.

Facilities	Level 1	Level 2	Level 3	Level 4	Level 5
Ward	Gastro/Hepatology ward with high dependency unit bed	Medical based ward with gazetted beds	Medical based ward with gazetted beds	Medical based ward	Medical based ward
Daycare	Integrated Outpatient Gastro/Hepatology procedure (core and specialised) and medications	Integrated Outpatient Gastro/Hepatology procedure	Integrated Outpatient Gastro/Hepatology procedure (core and specialised) and medications	Integrated Outpatient Gastro/Hepatology procedure (core and specialised) and medications	Common use (if needed)
(core and specialised) and medications	Integrated Outpatient Gastro/Hepatology procedure	Outpatient Gastro/ Hepatology - gazetted beds & specialist interest clinic.	Outpatient Gastro/ Hepatology-Integrated medical clinic	Outpatient Gastro/ Hepatology-Integrated medical clinic	Outpatient medical clinic Outpatient Gastro/ Hepatology - Integrated medical clinic
(core and specialised) and medications	Integrated Outpatient Gastro/Hepatology procedure				
(core and specialised) and medications	Common use (if needed)				
Outpatient	Outpatient Gastro/ Hepatology gazetted beds & specialist interest clinic.	Outpatient Gastro/ Hepatology - gazetted beds & specialist interest clinic.	Outpatient Gastro/ Hepatology-Integrated medical clinic	Outpatient Gastro/ Hepatology-Integrated medical clinic	Outpatient medical clinic Outpatient Gastro/ Hepatology - Integrated medical clinic

5.0 COMPONENTS OF SERVICE

The range of services provided by gastroenterology and hepatology units include:

5.1 Outpatient and daycare services:

5.1.1 Clinics

- General gastroenterology
- General hepatology
- Liver transplant
- Inflammatory bowel disease
- Research / clinical trials

5.1.2 Daycare

- Upper endoscopy
- Lower endoscopy
- Small bowel studies
- Endoscopic ultrasound (EUS)
- Endoscopic retrograde cholangiopancreatography (ERCP)
- Gastrointestinal physiological studies (pH monitoring, impedance studies, manometry etc.)
- Other endoscopy services
- Other daycare procedures (biologic infusion, abdominal paracentesis etc.)

5.2 Inpatient services

- Care of patients with gastrointestinal and hepatobiliary diseases
- Care of post-liver biopsy patients
- Care of transplant patients
- Emergency inpatient endoscopy
- Abdominal paracentesis
- Interventional radiology
- Advanced endoscopy (ERCP, POEM, etc.)

5.3 Rehabilitation and support services

6.0 ORGANISATION

6.1 Roles and responsibilities of head of service (HOS):

- HOS is appointed by the Ministry of Health. The HOS shall represent the views of all the gastroenterologist and hepatologist in MOH, on all aspects of the practice and development of gastroenterology and hepatology services and will be the principal liaison officer between them and MOH.
- To advise in operational policies and standard for credentialing
- To advise on manpower and requirements for gastroenterologist and hepatologist, trainees and gastrointestinal assistants (GIAs).
- To advise on the urgent needs for equipment, consumables and drugs for all accredited gastroenterology centres.
- To plan and advise on annual budgetary requirements.
- To advise on the development of gastroenterology and hepatology services.
- To promote the implementation of QA indicators in endoscopy and gastroenterology.

6.2 Roles and responsibilities of head of gastroenterology and hepatology unit:

- To advise the hospital director on matters pertaining to gastroenterology and hepatology services
- To ensure effective, efficient, safe and professional management of gastroenterology and hepatology patients.
- To advise on the drugs, consumable and equipment needs in providing safe, effective and efficient gastroenterology and hepatology service.
- To build a team of dedicated staff comprising gastroenterologist and hepatologist, fellow, medical assistants, nurses, pharmacists, gastrointestinal assistants and other allied healthcare professionals.

6.3 Organisation chart (appendix 1)

6.4 Gastroenterology and hepatology sub-committee groups:

6.4.1 At the national level, the gastroenterology and hepatology service shall establish as the following management committees:

- Trainee and specialist placement
- Asset
- Facility planning and infrastructure

- Fellow training education and continuing medical education
- CPG, national policy and protocol
- Hepatology services (liver transplant)
- Gastrointestinal services (IBD, pancreatobiliary etc.) (term and references in appendix 2)

7.0 OPERATIONAL POLICIES SERVICES

The Gastroenterology and Hepatology services shall comply with the General Hospital Operational Policy in the following areas:

i. Hospital admission and discharge.
ii. Transportation service.
iii. Infection control.
iv. Sterilisation service.
v. Management of waste products.
vi. Supply of pharmaceuticals and consumables.
vii. Acquisition of assets and equipment.
viii. Catering service.
ix. Laundry and linen supply.
x. Cleaning service.
xi. Engineering service including preventive and maintenance services.
xii. Security service.
xiii. Fire precaution.
xiv. Medical record management.
xv. Communication system.
xvi. Quality assurance.
xvii. Occupational and Safety Health Act (OSHA).
xviii. Public relations, release of information and confidentiality.

7.1 GASTROENTEROLOGY AND HEPATOLOGY UNIT

7.1.1 The unit shall be headed by a consultant gastroenterologist and hepatologist.

7.1.2 The organisation of the unit depends on the category of the hospital, level of patient care and the scope of the service provided.

7.1.3 All state hospitals shall provide daycare endoscopy services, outpatient gastroenterology and hepatology clinics, inpatient consults and if manpower allows, "out of hours" on call services for endoscopy.

7.1.4 For non-specialist hospitals or hospitals where there is no resident consultant gastroenterologist and hepatologist, the service shall come under the responsibility of consultant surgeons or physicians.

7.1.5 Multidisciplinary meetings under Gastroenterology and Hepatology Unit.

The following multidisciplinary meetings are recommended to be held at least on monthly basis:

i. Gastroenterology-radiology conference
ii. Gastroenterology-clinical pathology conference (CPC).
iii. Multidisciplinary team (MDT) gastroenterology-oncology-surgical meeting.
iv. Gastroenterology research meeting.

7.2 GASTROENTEROLOGY AND HEPATOLOGY WARD

7.2.1 The gastroenterology and hepatology ward shall be under the overall charge of the head of the gastroenterology and hepatology unit.

7.2.2 Recommended patient-to-nurse ratio ranges from 4:1 to 5:1.

7.2.3 Admission and discharge policy

Admission and discharge for the gastroenterology and hepatology ward shall be based on existing hospital policy

7.2.4 Visiting policy

Visiting hours for the gastroenterology and hepatology ward shall be based on existing hospital policy.

7.2.5 Ward round policy

7.2.5.1 For ill cases, ward rounds shall be conducted three times a day on normal working days, and twice daily on weekends and public holidays. For stable patients, the ward round shall be conducted twice daily on normal working days, and once daily on weekends and public holidays.

7.2.5.2 The ward round shall be led by a gastroenterologist and hepatologist or GI fellow at least once a day. Night rounds shall be led by the specialist on call.

7.2.5.3 The ward round shall be led by a gastroenterologist and hepatologist or GI fellow. Night rounds shall be led by the specialist on call.

7.2.5.4 A weekly grand ward round led by the consultant gastroenterologist and hepatologist is encouraged.

7.2.6 High Dependency Ward (HDW)

7.2.6.1 The HDW shall be under the overall charge of the head department of medicine/head of gastroenterology and hepatology unit or head of intensive care/anaesthesiology.

7.2.6.2 It shall provide critical care for patients who need joint management between the gastroenterologist/hepatologist and intensivist.

7.2.6.3 HDW admission, discharge, HDW round and visiting policy shall be based on existing hospital policy.

7.3 THE GASTROENTEROLOGY AND HEPATOLOGY CLINIC

7.3.1 The gastroenterology and hepatology clinic shall be under the overall charge of head of unit.

7.3.2 The gastroenterology and hepatology clinic shall provide the following services:

- Specialist referral
- Follow-up

7.3.3 Referrals

i. All gastroenterology and hepatology patients are to be referred by:

- Physicians, surgeons, specialists or MOs from other disciplines/ hospitals.
- Family physicians or MOs from health centres.
- General practitioners (GPs).

ii. All referrals should be made by MOs or specialists to gastroenterologist and hepatologist or GI fellows.
iii. All inpatient referrals between departments in the hospital or between hospitals should be discussed with gastroenterologist and hepatologist or GI fellow.
iv. Referring doctors should discuss all urgent referrals with the gastroenterologist and hepatologist or GI fellow.

7.3.4 Appointments.

- The number of appointments per day shall be decided by the head of the gastroenterology unit in consultation with the gastroenterologists and nursing sister in charge of the clinic.
- The referral letter shall be screened by the doctor-in- charge of the clinic.
- Appointments are based on urgency. For non-urgent cases an appointment date shall be given within eight weeks.
- Urgent referrals shall be discussed by the referring doctors and cases may be admitted directly if needed or may be given an early outpatient appointment date.

7.3.5 Gastroenterology clinic policy

- Every accredited gastroenterology and hepatology centre shall have at least two clinic days per week.
- It is recommended for the clinic to be 3-4 hours for the morning session and 2-3 hours for the afternoon session.
- All new referrals shall be screened by the gastroenterologist and hepatologist or GI fellow
- All new referrals (excluding suspected malignancy) shall be seen within 8 weeks
- All referrals for suspected GI malignancy shall be seen within 2 weeks.
- For urgent referrals, the cases shall be seen immediately (on the same day) or on the next clinic day.
- Patients who miss their appointment for two consecutive visits have to be referred again as new cases.

- Waiting time to see a doctor shall be less than 90 minutes and this shall be one of the key performance indicators (KPI/HPIA) for the gastroenterology and hepatology unit. In order to achieve this, staggered appointments are suggested.a
- Every gastroenterology and hepatology clinic shall be provided with a dedicated clinic nurse and personnel
- All clinic data shall be updated and documented in the patients folder and/or EMR.
- Where indicated involvement of the appropriate GI nurse, dietician and pharmacist is encouraged in the running of the gastroenterology and hepatology clinic.
- Regular clinic audit is encouraged e.g., clinic waiting time and waiting time for endoscopy appointments.
- Hospital networking (including district visits) - providing gastroenterology and hepatology services to selected hospitals without in house residents. Scheduling of patients shall be done using the hospital resource scheduling system.
- The gastroenterology and hepatology clinic service shall be provided by the visiting consultant gastroenterologist and hepatologist. MOs may be allowed to assist in the clinic with supervision.

7.4 ENDOSCOPY UNIT

7.4.1 The design of an endoscopy unit can be divided into several main areas

a) Patient-related accommodation
   - Entrance/ reception.
   - Preparation room.
   - Treatment room.
   - Recovery area.
   - Sanitary facilities.
   - Special patient needs

b) Staff facilities.
   - Male/female changing room.
   - Rest room.
   - Office.
   - Teaching/training.

c) Support services
- Endoscope cleaning.
- Storage space.
- Clean/dirty utilities.
- Waste disposal.
- Electricity/water room.

7.4.2 Entrance, reception and waiting area (Figure 2 and 3)
- The reception desk should be situated at an accessible area and be low enough to cater for patients in wheelchairs. The reception counter should be equipped with computers, printers and other necessary equipment for registration and appointments including internet and phone lines.
- A phased admission system with patients arriving at intervals is best to reduce patient waiting time, the size of the waiting area and prevent crowding.
- The waiting area must have enough chairs with designs suitable for the elderly, children as well as obese patients.
- Toilet facilities should be available in the waiting area.

7.4.3 Preparation room (Figure 2 and 3)
- The preparation room should include a separate room for interviewing the patient and allow confidential discussion and consent taking.
- Toilet facilities should be available in the preparation room especially when enemas area given pre-procedure.
- Separate changing facilities for gender separation should be encouraged if possible.
- The waiting area should be comfortable.

7.4.4 Procedure room requirements (Figure 2 and 3).
- The room should be of sufficient size to carry out the procedure comfortably.
- It should allow easy access at all sides and allow trolleys.
- Space enough for endoscopist, two GIAs as well as fellows
- Space for endoscopy equipment and wiring.

- Clinical preparation space for equipment.
- Desk space for reporting systems and computers.
- Controlled drug cupboard.
- Foot operated bins.
- Hand washing sink.
- Emergency call system.
- Patient monitoring system.
- Space for anaesthetic staff and equipment if procedures under anaesthesia are undertaken.
- Piped oxygen and wall vacuum.
- Fluoroscopic equipment as well as lead protective gear for procedures done under fluoroscopy, e.g., ERCP. Appropriate lead shielding of walls according to radiation guidelines should be instituted.
- The number of procedure rooms in an endoscopy unit should be based on estimated number of procedures, type of procedures undertaken as well as planned expansion in the future.

7.4.5 Recovery area (Figure 2 and 3).

- The recovery area normally comprises 2 spaces. The first stage recovery area involves the patient recovering in the trolley with an access to their own curtained space.
- Each recovery area should have access to a wall oxygen port, vacuum suction equipment as well as clinical monitors for saturation and blood pressure.
- There should be a gap between trolleys (ideally 1.2 m minimum) to allow access to emergency resuscitation equipment if needed.
- The number of beds needed generally is around 3 to 4 beds per procedure room.
- The second stage recovery area is a communal seated area where refreshments may be served to patients who have recovered sufficiently from sedation.
- Recovery areas should have access to toilets and washing facilities.
- Both recovery areas should be easily monitored by staff based within the recovery area.

7.4.6 Staff facilities (Figure 2 and 3).

- The following should be available within the unit including male/ female changing rooms, and male/ female toilets.
- A staff rest room and adjoining pantry/kitchen should also be available.
- The number of staff as well as anticipated staff increases should dictate the size and number of staff facilities.
- A teaching room should be available in bigger endoscopy units to facilitate staff education.

7.4.7 Support services.

- Endoscopic cleaning/ reprocessing room
  - Ideally the cleaning area should be accessible to the endoscopy rooms and designed in such a way to include both clean area (scope storage) as well as dirty area (scope reprocessing area).
  - The dirty area should at a minimum contain an automated endoscope disinfector, sinks, work surface with cupboard space and drainers.
  - The area should be safe and dry with easily cleaned surfaces.
  - Ventilation and extraction facilities must be available to ensure staff are not exposed to hazardous chemicals.
  - A stock room and also disposal area for hazardous materials should be available.

7.4.8 Equipment in the endoscopy unit (Figure 3 and 5)

- Endoscopes, light sources, and image management systems are most central to the function of the endoscopy suite.
- Some of the typical capital equipment in the endoscopy unit include:
  i. Various endoscopes including gastroscopes, colonoscopes, duodenoscopes, enteroscopes and endoscopic ultrasonography (EUS) scopes (radial and linear).
  ii. Endoscope systems including processors and monitors.
  iii. Gurney beds.
  iv. Fluoroscopy units.
  v. Databases (endoscopy reporting systems).

vi. Electrosurgical generators.

vii. Monitoring devices

- E ndoscope repair and payment would be in accordance with Ministry of Health/hospital policy.

7.4.9 Staffing arrangements

- Staffing design

a) Nursing and ancillary staff.
This includes the nurse in charge (unit manager), GIAs (qualified nurses, AMOs, trained paramedics) and administrative staff.

b) Medical staff.
This includes doctors trained in endoscopy (gastroenterologists)

- Staffing requirements

Staffing requirements for the performance of GI endoscopy should be based on what is needed to ensure safe and proficient performance of the individual procedure. It should relate to the workload of the endoscopy unit including that after hours. Currently, staffing may vary as determined by local practice, patient characteristics, and the type of endoscopic procedures being performed

- The endoscopy unit manager

- This person is usually a senior registered nurse (RN) or AMO, who has overall responsibility for the unit including:

a) Day to day organisation and running of the unit

b) Training of endoscopy assistants

c) Care of equipment and the maintenance of high standards of patient care.

d) Arrangement of appointment and must be made in consultation with the clinician in charge of the unit

- The unit hierarchy (Figure 4).

a) The gastrointestinal assistant (GIA) may be an RN or AMO, with specific training and credentialing in endoscopy

b) The clerical/secretarial staff is responsible for the clerical and administrative side of the unit (patient notes, appointments, etc.)

c) Ancillary or supporting staff such as pottering, Scientific officers (endoscopy technicians) and domestic services have a support role within the unit, and may or may not come under direct control of the manager.

- Depending on the number of lists and the workload, the staffing requirements for an endoscopy unit are as follows:
  - Endoscopy assistants.
    - Generally a staffing ratio for endoscopy is a minimum of *qualified-to-trained ratio of 7:3

      * Note:'qualified' refers to staff holding professional qualification (e.g., RN), whilst 'trained' refers to staff who have had specific training in endoscopy.

- Requirements per list.

a) Endoscopy room.

Minimum two staff, at least one of which should be a RN or AMO. The RN will administer sedation and monitor the patient. The GIA will assist in the endoscopic procedure

b) Recovery area.

Depending on the number of patients to be recovered at any time.

- One to six patients - one RN
- Seven to twelve patients - two RNs or one RN and one HCA.
- Thirteen to eighteen patients - three RNs or two RNs and one HCA.

c) Admissions area.

One or two RNs are required for this area. It is essential that RNs are employed in this area because both the knowledge required assessing a patient's medical and psychological condition, and

also that needed to answer any questions regarding the patient's endoscopy or medical condition.

d) Reception/clerical staff.
Larger endoscopy units need two or more receptionists/clerical staff due to the increased workload.

e) Ancillary staff.
- Pottering assistants.
  Larger units with a high inpatient workload require two porters, perhaps working opposite shifts and overlapping at the busiest times, to provide this service.
- Endoscopy technicians.
  The majority of units will require at least one such person, and it may be that this role is part of a multiskilled role within the unit. These technicians or scientific officers may be involved in endoscope reprocessing and minor repairs.

Figure 1: Workflow of an Endoscopy Unit

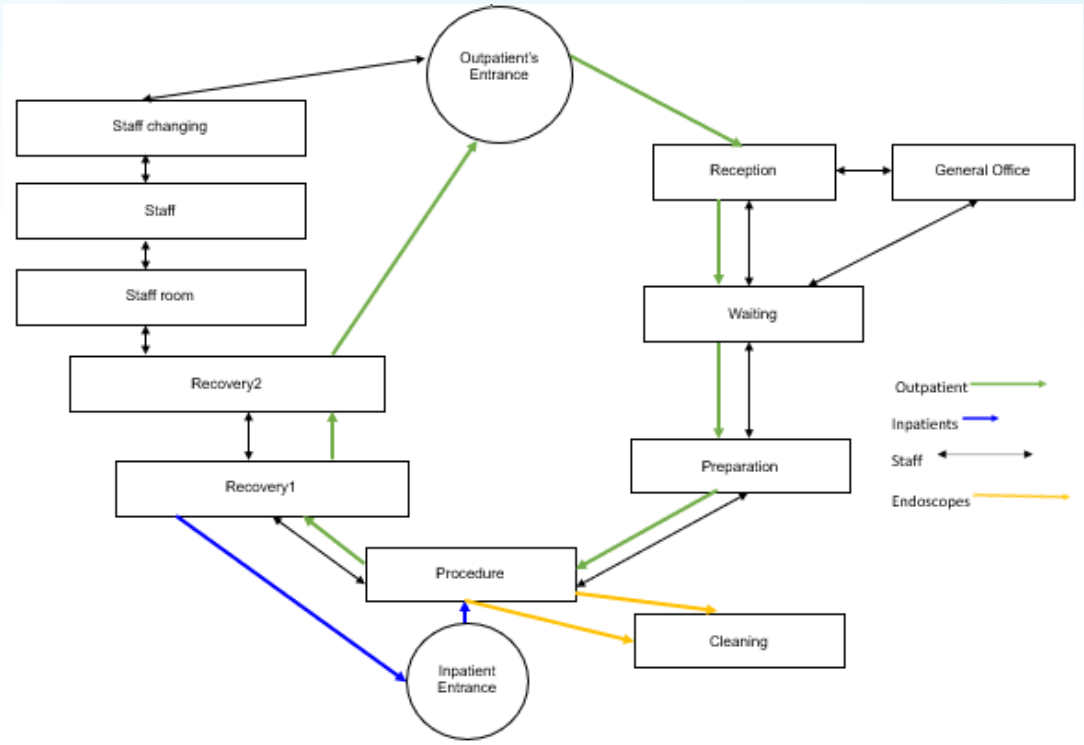


Figure 2: Example of a modern endoscopy unit with integrated staff facilities and an outpatient clinic situated around the endoscopy unit for easy hands-on supervision

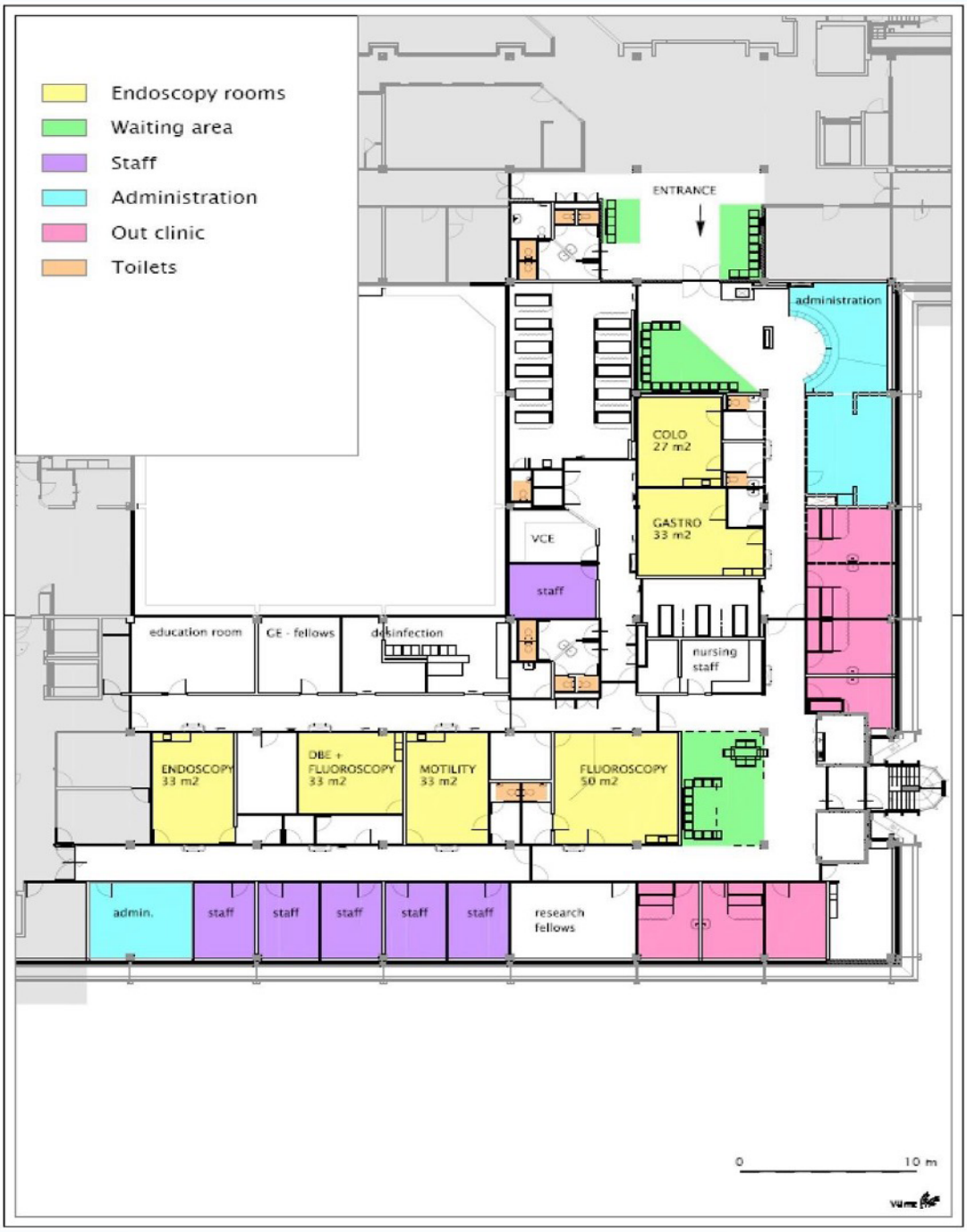


Table 4: Summary of essential and desirable components of a JAG compliant endoscopy environment

	Essential	Desirable
3	**Reception and waiting**	
3.1	Toilet facilities within or immediately nearby the waiting area without going into the restricted clinical area	Appointments allowing phased admission of patients
3.2		A low and open reception desk, with a lower counter area for wheelchair access
3.3		A waiting area with immediate access to the reception desk
3.4	Sufficient seating to house throughput	Appropriate seating for patients with special requirements. Patients may require additional seating space to accommodate their needs.
3.5	Relatives remain outside clinical area unless there are exceptional reasons to enter	
3.6	Access to the clinical area (post reception) via doors accessed only by clinical staff	A second entrance for in patients
4	**Patient assessment and preparation areas**	
4.1	At least one separate room to undertake patient assessments and discharge for privacy	
4.2	En suite toilet and washing facilities in one preparation room if enemas are given. A suitable alternative would be if this could be provided in a nearby clinical area.	
4.3	Separate gender specific changing facilities, with their own dedicated washing and toilets	Patients in a gown should be offered dignity shorts, and wearing of footwear and a dressing gown should be promoted.
4.4	A method of handling patients property throughout their endoscopy	

	Essential	Desirable
14.1	Video photography for trainee lists	Nearby seminar room with a video link to the endoscopy unit. Complete range of equipment for therapeutic and advanced technique endoscopy. Imagers, models or simulators, are available or readily accessible.
15	**Children and endoscopy**	
15.1	Separate dedicated endoscopy list for children if own facility not available Visible separation of adult and child patients in the unit if concurrent lists undertaken Children admitted and recovered directly in a paediatric facility.	Children treated within own unit. For concurrent adult/ child lists, communal areas (admission, recovery, pre discharge) divided by movable screens.

	Essential	Desirable
11.8	Scope trays identifying a clean or dirty instrument. Hard lid for movement outside the unit. Lockable case or tray if moved outside the hospital.	
11.9	Tracking system Storage for any dirty equipment for sterile services	
12	**Stock room and disposal area**	
12.1		Storage for laundry, major supplies. Dedicated area nearby for safe disposal of general and hazardous waste. Access to a sluice and facilities for use and disposal of urinals and bedpans
13	**Staff changing rooms and staff room**	
13.1		Staff access to a dedicated changing area, with secure property storage, toilet and washing facilities on the unit or nearby Dedicated staff room.
14	**Additional facilities**	

	Essential	Desirable
11.1	Dedicated decontamination facilities with clear separation of dirty and clean equipment and processes.	Door to have code locks
11.2	Medical grade surfaces Disinfectant storage Personal protective equipment Spillage kit Ventilation and extraction facilities according to chemicals used Doors shut at all times	
11.3	Sinks for manual cleaning should be of adequate height to prevent back related injuries for all staff	Adjustable height sinks or sinks of multiple heights
11.4	Double sink with a double drainer to fully submerge the largest scope cleaned. A system to check the detergent, water concentration and temperature. Manual leak testing facilities	Automated water, detergent and temperature systems
11.5	Automated endoscope reprocessing. AERs in good working order, and CFPP compliant, maintained in accordance with the manufacturers instructions	Pass through system of AERs
11.6	Endoscopes storage in a lockable medical grade storage cabinet	Endoscope drying and storage cabinets
11.7	Hand washing sink in decontamination area (two sinks if separate rooms for dirty and clean processes)	

	Essential	Desirable
	the patients feel as if they are in a separate room.	
8.4	If a second stage recovery base, is used, additional clinical monitors are required	
8.5	Each 1st stage recovery area should have toilet and washing facilities. If there are two recovery areas for gender separation, each should have its own toilet.	
8.6	1st stage recovery areas should have a hand washing sink. If any clinical procedures are undertaken in the second stage, e.g. removal of cannulas an additional sink is required, unless accessible room dividers are used	Dedicated base for patient records and general communications
8.7	Disposable crockery or crockery washed in an organisation approved dishwasher. Individual biscuits packs	Hand wipes
9	**Resuscitation area**	
9.1	Dedicated area within the unit should be identified to house the resuscitation trolley, oxygen, suction and emergency drug box	
10	**Off the unit endoscopy**	
10.1	Rooms, equipment and processes to the same standard for off unit or out of hours endoscopy, including decontamination	
10.2	Registered nurse or an anaesthetic practitioner remains with patient post sedation with oxygen, suction and patient monitoring	
11	**The decontamination environment**	

	Essential	Desirable
	Emergency call system Oxygen and suction facilities Patient monitoring for pulse, blood pressure and Sa02	
6.2	Complete range of modern endoscopy equipment available for use, with the ability to take still photography	
6.3	Endoscopy reporting system	
6.4	Register of trainees allowed to perform specified procedures independently	No thoroughfare to storage or unnecessary equipment
	Minimum entry to the room whilst patient within	Minimum of required staff in the room
7	**Fluoroscopy within the unit**	
7.1	For radiological guided procedures, a trolley suitable for a " C " arm to be used	
7.2	Lead aprons stored on a medical grade hanging frame	
8	**Recovery and discharge**	
8.1	Oxygen and suction supply, and clinical monitor to each curtained recovery space	Call system
8.2	Minimum gap of 1.2m between recovery trolleys.	3-4 beds per procedure room
8.3	Separate recovery rooms for males and females or room dividers. Room dividers fixed to the building structure and high enough to make	

	Essential	Desirable
5	**Patients prepared in the same area they are recovered in post procedure**	
5.1	A patient space for assessment, and later recovery should be curtained or screened	Patients who have not been treated do not meet patients who have been treated.
5.2		Food aromas do not pervade the area.
6	**The endoscopy room**	
6.1	Easy access and room for the patient trolley with accessibility to all sides Floor space for the endoscopist, two endoscopy assistants and a trainee Minimum of endoscopy equipment and cables on the floor or trailing, and a risk assessment undertaken to provide an achievable action plan. Space for a resuscitation trolley and emergency team to access the patient Clinical preparation space for procedural equipment Controlled drug cupboard. Clinical grade storage space for endoscopy supplies required during the session Foot operated bins or sack stands Hand washing sink	Desk space for the Endoscopy Reporting System and equipment, and record keeping

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Figure 3 : The unit hierarchy

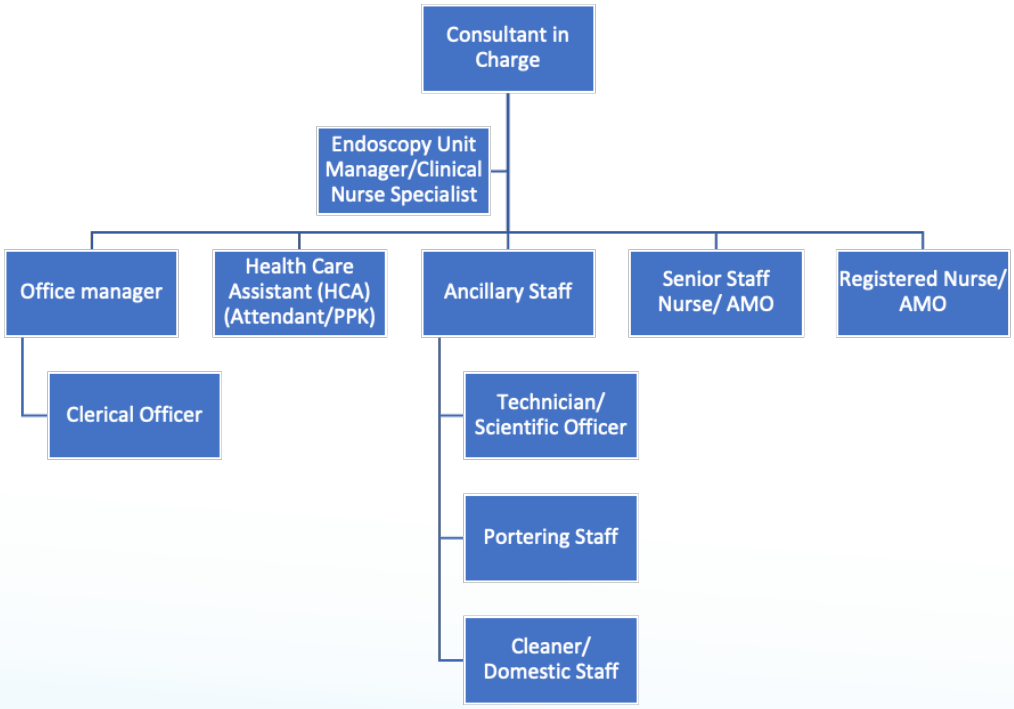
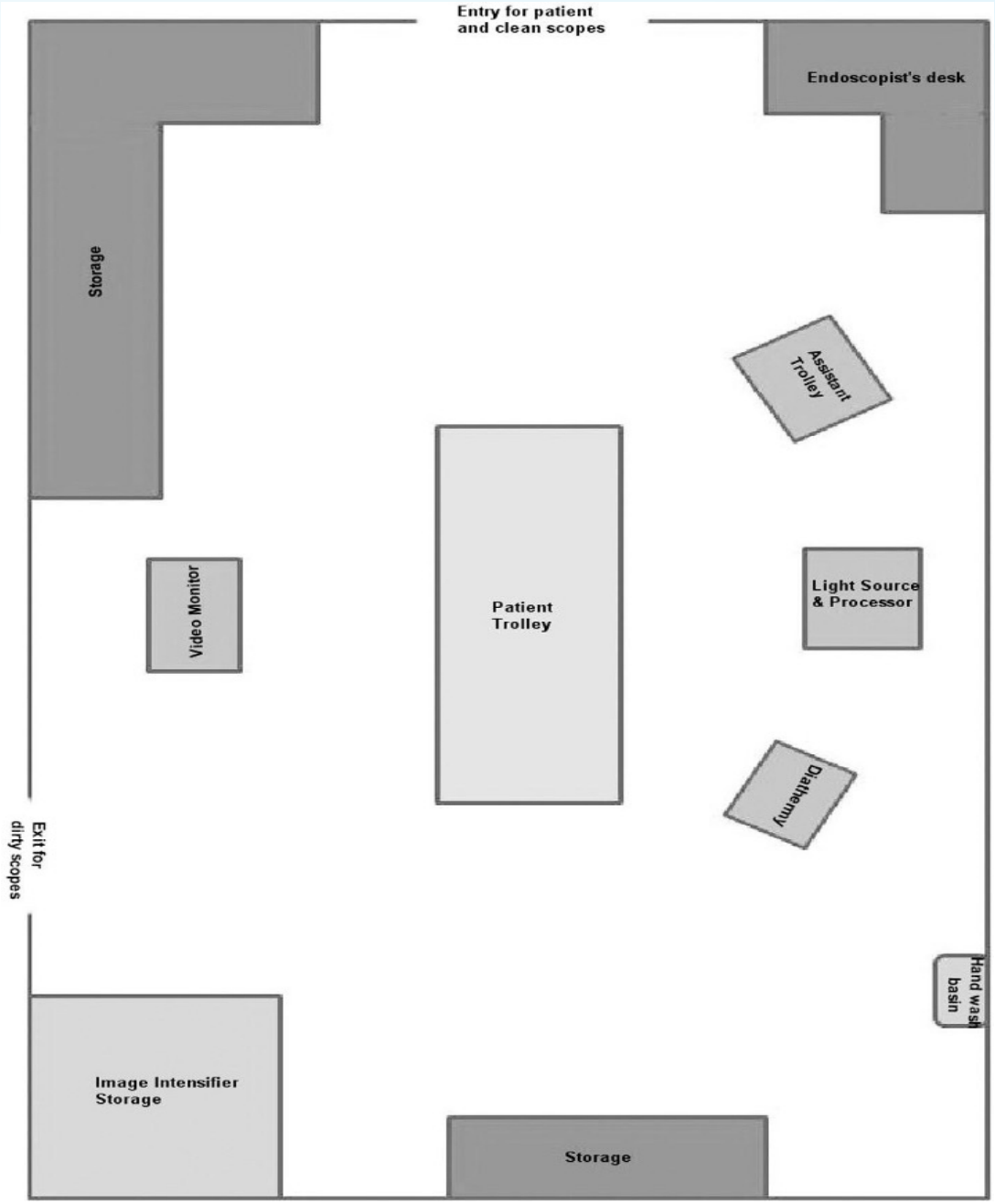


Figure 4: Sample layout of endoscopy room



7.5.0 Sedation And Analgesia In Endoscopic Service (Refer Appendix)

7.5.1. Admission and discharge

i) Ward patients.

- The respective wards phone the unit in the morning to confirm that the patient is on the list. They are then sent to the unit by the ward nurse.
- Following the procedure the ward is informed and the nurse returns to take the patient back to the ward.
- All patients who have a blood transfusion in progress must be accompanied by an RN. A patient ID and checklist will be undertaken in conjunction with the nurse.
- Inpatients are admitted in the recovery area and interviewed by the unit nurse prior to the procedure.
- The consent process must be carried out by the endoscopist.
- The endoscopy findings are noted in the patients file or records with a copy in the endoscopy unit.

ii) Tertiary referrals.

- Patients are transferred by ambulance and are escorted by a qualified nurse and/or doctor throughout their transfer, admission and discharge. A copy of the endoscopy report is filed in the patient's notes and a reply letter to the referring doctor written prior to discharge.

iii) Day care patients

- All patients booked for a procedure will report to the endoscopy reception upon arrival at the unit.
- All patients undergo a pre-endoscopic assessment by a GIA in a private area. The pre- endoscopic interview is documented on a clinical assessment form.
- Patients will be assessed and consent taken by the endoscopist.
- Patients booked for upper GI endoscopies are not required to change into gowns; however those booked for lower

GI endoscopy procedures do change into hospital gowns. The patients property will remain with them or the family members or designated staff in charge of safe keeping at all times.

- The patient will then be escorted into the procedure room by the staff.
- The procedure room is always set up prior to the patient entering the room and is staffed by the endoscopist and at least two GIAs. A 4th member of staff will be required for complex therapeutic procedures.
- Post-procedure, patients will be transferred to the recovery area by trolley by the team for a formal handover to recovery staff.
- Patients who have sedation will be closely monitored in the recovery area until the patient has recovered from sedation.
- Prior to discharge the patient will be informed of the outcome of their procedure by the endoscopist. The unit operates a policy of endoscopist-led discharge. Patients should be reviewed by the endoscopist when fully awake. In selected or complicated cases admission into the ward may be deemed necessary by the endoscopist.

iv) Resuscitation.

- All staff are required to undertake mandatory basic life support (BLS) training.
- Resuscitation trolleys are available in the unit and in the recovery bay. The trolleys are checked on a daily basis by designated staff.
- In the event of an emergency code blue procedures should be initiated.

7.5 UPPER ENDOSCOPY/ ESOPHAGOGASTRODUODENOSCOPY (OGDS)

7.5.1 Introduction

Oesophagogastroduodenoscopy (OGDS) refers to the endoscopic examination of the oesophagus, stomach and the first and second portions of the small intestine for the purpose of diagnosis and treatment of disorders of the upper gastrointestinal tract.

7.5.2 Indications for OGDS

- Diagnostic
  - Persistent upper abdominal pain or pain associated with alarming symptoms such as weight loss or anorexia
  - Dysphagia, odynophagia or feeding problems
  - Intractable or chronic symptoms of GERD
  - Persistent vomiting of unknown etiology or hematemesis
  - Iron deficiency anemia with presumed chronic blood loss when clinically an upper gastrointestinal (GI) source is suspected or when colonoscopy is normal
  - Surveillance for malignancy in patients with premalignant conditions such as polyposis syndromes, previous caustic ingestion, or Barrett esophagus
- Therapeutic
  - Foreign body removal
  - Dilation or stenting of strictures
  - Variceal management (variceal banding, histoacryl injection)
  - Securing hemostasis in Upper GI bleeding (Hemostasis clip, adrenaline injection, electrocautery and hemostatic powder)
  - Placement of feeding or draining tubes
  - Management of achalasia (botulinum toxin or balloon dilation)

7.5.3 Pre-procedure protocol

- Patient information sheet refer appendix
- Consent
- Medications:
  - Anticoagulant and antiplatelet – refer appendix
  - Antibiotics: as per guideline and recommendation – refer appendix

7.5.4 Infection Control

- Strict adherence to endoscope disinfection SOP (per MSQH and CDC standards)

7.6 COLONOSCOPY

7.6.1 Introduction

Colonoscopy is an endoscopic procedure that allows direct visual examination of the entire colon (from rectum to cecum) and distal terminal ileum using a flexible fiberoptic or video colonoscope.

7.6.2 Indications for colonoscopy

- Diagnostic
  - Screening for Colorectal Cancer
  - Chronic diarrhea
  - Occult gastrointestinal bleeding or stool positive for occult blood
  - Unexplained changes in bowel habits
  - Iron deficiency anemia or unexplained weight loss in elderly patients,
  - Persistent abdominal pain
  - Suspected inflammatory bowel disease
  - Post operative surveillance

- Therapeutic
  - Management of colonic polyps
  - Treatment of bleeding lesions
  - Dilation of stenosis or strictures
  - Foreign body removal
  - Decompression of colonic volvulus or megacolon
  - Palliative management of known neoplasms

This list is non exhaustive as there may be other indication warrant colonoscopy

7.6.3 Pre-procedure protocol

- Patient information sheet
- Consent
- Bowel Preparation refer appendix
- Option of bowel preparation

All bowel preparation agents must be used in accordance with the manufacturer's instructions.

- Medications:
  - Anticoagulant and antiplatelet – refer appendix
  - Antibiotics: as per guideline and recommendation – refer appendix

7.6.4 Infection Control

- Strict adherence to endoscope disinfection SOP (per MSQH and CDC standards)

7.7 CAPSULE ENDOSCOPY

7.7.1 Introduction

Capsule endoscopy (CE) is a non-invasive diagnostic modality that enables direct visualization of the mucosa of the small intestine using a miniature wireless camera encapsulated in a pill-sized device. It provides high-resolution imaging primarily of the jejunum and ileum, which are not easily accessible by conventional upper endoscopy or colonoscopy.

7.7.2 Indications:

- Obscure Gastrointestinal Bleeding (OGIB)
- Suspected Small Bowel Crohns Disease
- Small Bowel Tumors
- Surveillance in familial adenomatous polyposis (FAP) or Peutz-Jeghers syndrome
- Refractory cases or atypical presentation of Celiac Disease
- Postoperative Surveillance - Monitoring for recurrence of Crohn's disease or bleeding post small bowel surgery

7.7.3 Equipment - refer appendix

7.7.4 Pre-procedure

- Patient information sheet - refer appendix
- Consent refer appendix
- Bowel preparation - refer appendix for bowel preparation in colonoscopy
- Medications: withhold oral iron supplement, Prokinetics (e.g., metoclopramide) may be considered in patients with slow gastric emptying

7.8 ENTEROSCOPY

7.8.1 Introduction

A medical procedure used to examine and diagnose conditions within the small bowel. There are several types of enteroscopy which are device-assisted enteroscopy and push enteroscopy.

7.8.2 Indications for enteroscopy

- Treatment of small intestinal lesions such as angiodysplasia.
- Biopsies of lesions/ulcer seen on capsule endoscopy.
- Removal of retained objects in the small intestine.
- Small intestinal polypectomy in hereditary syndromes (e.g., in Peutz-Jeghers syndrome)
- Balloon dilatation of small bowel stricture.

7.8.3 Equipment – refer appendix

7.8.4 Pre-procedure protocol

- Patient information sheet refer appendix
- Consent
- Bowel preparation as per colonoscopy
- Medications:
  - Anticoagulant and antiplatelet – refer appendix
  - Antibiotics: as per guideline and recommendation – refer appendix

7.8.5 Infection Control

- Strict adherence to endoscope disinfection SOP (per MSQH and CDC standards)

7.9 ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY (ERCP)

7.9.1 Introduction

Endoscopic retrograde cholangiopancreatography (ERCP) is an endoscopic procedure to visualize the biliary and pancreatic ductal systems by selective cannulation of the ampulla of Vater and retrograde contrast injection using a side-viewing duodenoscope.

7.9.2 Indications

ERCP should ideally be therapeutic. Diagnostic ERCP alone is discouraged, to use preferably less invasive modality such as MRCP or EUS

- Biliary disorder (e.g. choledocholithiasis, strictures, malignancy)
- Pancreatic disorders (e.g. chronic pancreatitis, duct leaks)
- Therapeutic interventions (e.g. stent placement, sphincterotomy, stone extraction)
- Cholangioscopy

7.9.3 Equipments - refer appendix

7.9.4 Pre-procedure protocol

- Patient information sheet (as per appendix)
- Consent (as per appendix)
- Investigations: INR ≤ 1.5, Platelets > 50,000/µL, LFT, amylase (<72 hours), recent imaging (USG, CT/MRI/EUS)
- Medications:
  - Anticoagulant or antiplatelet – refer appendix
  - PEP prophylaxis before ERCP: rectal diclofenac/indomethacin 100mg is recommended
  - Antibiotics – refer appendix

7.9.5 Quality indicator

- Proposed quality indicators for ERCP
  - Appropriate indication documented
  - Informed consent
  - Cannulation success rate
  - Stone clearance rate
  - PEP rate
  - Rate of clinically significant hemorrhage after sphincterotomy/plasty

7.9 ENDOSCOPIC ULTRASOUND (EUS)

7.10.1 Introduction

Endoscopic Ultrasound (EUS) integrates high-frequency ultrasonography with endoscopy to provide detailed imaging of the gastrointestinal wall layers and adjacent structures. It serves both diagnostic and therapeutic roles.

7.10.2 Indication

- Diagnostic evaluation:
  - Evaluation of biliary system
  - Subepithelial lesions
  - Pancreatic disorders: chronic pancreatitis, pancreatic cysts, etc
- Tissue acquisition: FNA/FNB
- Tumor staging
- Interventions: pseudocyst drainage, celiac plexus neurolysis, biliary access, etc

7.10.3 Equipment – refer appendix

7.10.4 Pre-procedure

- Patient information sheet - refer appendix
- Consent refer appendix
- Medications:
  - Anticoagulation and antiplatelet management as per protocol – refer appendix
  - Antibiotic prophylaxis – refer appendix

7.10.5 Risks of EUS and sedation

There are risks and complications with this procedure. They include but are not limited to the following.

Common risks and complications include:

- Nausea and vomiting.
- Faintness or dizziness, especially when you start to move around.
- Pain, redness or bruising at the sedation injection site (usually in the hand or arm).
- Allergy to medications given at time of the procedure.

Uncommon risks and complications include:

- About 2 people in every 100 will get an infection from a fine needle biopsy/aspiration of a cyst. Antibiotics are given during and after the procedure to reduce the risk of this complication.

- About 1 person in every 100 will experience pancreatitis. This usually settles without spe***cific treatment.***
- ***About 2 people in every 1,000 will*** have minor bleeding from the gut where the fine needle biopsy was taken. This can usually be stopped through the endoscope. Rarely, surgery is needed to stop the bleeding.
- About 1 person in every 1,000 will experience bleeding from the oesophagus (food pipe), stomach and duodenum.

7.11 ENDOSCOPIC MUCOSAL RESECTION (EMR)

7.11.1 Introduction

EMR is a procedure used to remove superficial lesions, typically confined to the mucosa and superficial submucosa. EMR primarily utilises injection- assisted techniques to lift the lesion, allowing for safe and effective snare resection. EMR is effective for smaller lesions, but may result in piecemeal resections for larger areas, which can complicate pathological assessment and increase risk of local recurrence.

7.11.2 Indications

- As per latest recommendation by ESGE, ASGE

7.11.3 Submucosal injection solutions

Choice of fluid for injection depends on endoscopist preference, site and morphology of the lesion and local setting. Apart from solutions as below, dyes such as indigo carmine 4.5% are often incorporated to help delineate the lesion's margins. Dilute epinephrine (1:100 000) can be added due to theoretical benefits of reduced bleeding.

Table 5: Choice of fluid for injection depends on endoscopist preference, site and morphology of the lesion and local setting

Solution	Cushion Duration	Advantages	Disadvantages
Normal saline solution (0.9%)	+	Easy to inject, inexpensive, readily available	Dissipates quickly, short duration of mucosal lifting
Hypertonic sodium chloride (3.0%)	++	Easy to inject, inexpensive, readily available	Possible tissue damage and local inflammation at injection sites
Dextrose (20%, 30%, 50%)	++	Inexpensive, readily available	Possible tissue damage and local inflammation at injection sites Increased risk of postpolypectomy syndrome
Albumin	++	Easy to inject	Expensive
Succinylated gelatin	++	Easy to inject, inexpensive,	Contraindicated in patients with gelatin hypersensitivity
Fibrinogen	+++	Easy to inject, long-lasting cushion	Not readily available Expensive
Hyaluronic acid (0.13%-0.4%)	++++	Longest-lasting cushion	Limited availability Off-label use

7.11.4 Risk and complications

- Bleeding (5-10%): can be immediate or delayed (up to 14 days post-procedure)
- Perforation (1-2%)
- Post-polypectomy syndrome (0.07%)Stricture formation: esophageal EMR (>50% circumference resection)
- Recurrence (10-30%) but easily treated by endoscopic surveillance
- Incomplete removal further endoscopic resection or surgery may be indicate

7.11.5 Follow up

- Surveillance endoscopy: At 3-6 months post-resection for margin assessment then as subsequently as per recommendation on post-polypectomy surveillance program
- Biopsies: from scar site to detect residual/recurrent disease

Reference:

1. Colorectal polypectomy and endoscopic mucosal resection: ESGE Guideline 2024

7.12 ENDOSCOPIC SUBMUCOSAL DISSECTION (ESD)

7.12.1 Introduction

ESD is a minimally invasive therapeutic procedure for precise removal of larger polyps or early non-metastatic lesions. ESD offers significant advantages over EMR, including higher en-bloc resection rates, more complete histological resections, and consequently lower rates of local recurrence.

7.12.2 Indication

- **Esophageal lesion:**
  - En bloc resection of noncircumferential clinically staged T1a-m3/T1b-sm1 or circumferential clinically staged T1a-m1/m2 squamous cell carcinoma (SCC)
  - For Barrett's esophagus (BE)-associated lesions, the ESGE suggests ESD for lesions suspicious for submucosal invasion (Paris type 0-Is, 0-IIc), for malignant lesions > 20mm, and for lesions located in scarred or fibrotic areas.
  - ASGE suggest ESD over EMR for SCC >15mm and EAC >20mm

- **Gastric lesion:**
  - Differentiated gastric lesions clinically staged as dysplastic or as intramucosal carcinomas (of any size if not ulcerated and ≤ 30 mm if ulcerated), with EMR being an alternative for Paris 0-IIa lesions of size ≤ 10 mm with low likelihood of malignancy.
  - Gastric adenocarcinomas that are ≤ 30mm, superficial, submucosal (sm1), and well-differentiated, or ≤ 20mm,

intramucosal, and poorly differentiated type, both without ulcerative findings, can be considered for ESD, although the decision should be individualized.

- **Colorectal tumor**
  - o ESD should be considered for en bloc resection of colorectal lesions, particularly rectal lesions, with suspicion of limited submucosal invasion. This suspicion is raised by features such as a demarcated depressed area with an irregular surface pattern or a large protruding or bulky component, especially if the lesions are larger than 20mm. It is also indicated for lesions that otherwise cannot be completely removed by snare-based techniques

7.12.3 Risks and complications

- Bleeding 5-10%
- Perforation 1-3%
- Stenosis: particularly increased risk after extensive ESD (>3/4 circumferential resection)
- Aspiration pneumonia

7.13 PERCUTANEOUS ENDOSCOPIC GASTROSTOMY (PEG)

7.13.1 Introduction

PEG is a feeding tube inserted through the abdominal wall directly into the stomach. It is to provide nutrition and hydration to selected individuals.

7.13.2 Indication for PEG

Patient with swallowing difficulties which requires NG tube longer than 4 weeks (e.g. stroke, cerebral palsy, reduced consciousness, other neurological disorders, head and neck cancer, etc)

7.13.3 Pre-procedure preparation

- Patient information sheet – refer appendix
- Consent refer appendix

- Medication:
  - Anticoagulant and antiplatelet – refer appendix
  - Antibiotic prophylaxis – refer appendix

7.13.4 Method

- Push method
- Pull method

7.13.5 Complications and management

- Minor Bleeding - 1.4% to 9.7%
- PEG site infection - 4% to 30% (short-term/ peristomal)
- Adjacent organ injury - 0.5% to 1.3% (Laceration of the stomach, colon, or small bowel) C
- Dislodged PEG - Around 12.8% (Late/ long-term)
- PEG blockage

  Buried Bumper Syndrome (Major) - Around 1% (0.3%–2.4%)

7.14 LIVER ELASTOGRAPHY

7.14.1 Introduction

Liver elastography is a non-invasive diagnostic tool to assess the presence of liver fibrosis and steatosis; avoiding the need for invasive liver biopsy.

7.14.2 Indication

- Staging of liver fibrosis
- Monitoring of disease progression
- Screening of compensated advanced chronic liver disease/cirrhosis
- Assessment of liver fibrosis in other chronic liver diseases such as autoimmune hepatitis, primary biliary cirrhosis etc
- Evaluation of liver graft fibrosis post transplantation

7.14.3 Contraindication

- Absolute contraindication: None
- Previously contraindicated in pregnancy and patient with active implantable medical devices (i.e. pacemaker, ICD, cochlear devices)

but has been lifted since year 2016

7.14.4 Factors affecting test reliability and potential false elevation

- Acute hepatitis
- Cholestasis
- Mass lesion in the liver causing localized increased in stiffness
- Liver congestion due to heart failure
- Obesity excessive BMI can impede propagation of vibration
- Ascites prevents effective propagation of vibration
- Old age

7.14.5 Procedure

- Patient preparation
  - Fasting – for at least 3 hours. Can take clear fluids only.
  - Lying on the bed for examination for 5 minutes before examination for the body to rest
  - Positioning: supine, right arm elevated to widen intercostal space
  - Appropriate probe selected
  - At least 10 measurements at the same spot
  - Liver stiffness IQR/Median ratio (%) shall remain ≤30% when final median stiffness result exceeds 7.1 kPa.

7.15 LIVER BIOPSY

7.15.1 Introduction

A liver biopsy is a medical procedure where a small sample of tissue is taken from the liver using a biopsy needle. The sample will be sent to the laboratory and examined under a microscope.

7.15.2 Indication

- to assist doctor in finding the cause and extent of liver abnormality
- This will help plan correct management treatment plans for the patient.

7.15.3 Workflow - refer appendix

7.15.4 Methods

- Percutaneous liver biopsy
- Transjugular liver biopsy
- EUS liver biopsy

7.15.5 Pre-procedure protocol

- Patient information sheet refer appendix
- Consent refer appendix

7.16 THERAPEUTIC PLASMA EXCHANGE (TPE) PROTOCOL

7.16.1 Introduction to Therapeutic Plasma Exchange (TPE)

Therapeutic Plasma Exchange (TPE) is a procedure proven effective in autoimmune conditions and increasingly supported for managing liver failure, specifically Acute Liver Failure (ALF) and Acute-on-Chronic Liver Failure (ACLF).

7.16.2 Pathophysiology & Rationale:

- Multi-organ failure (MOF) in ALF and ACLF is attributed to Damage-Associated Molecular Patterns (DAMPs) from injured liver cells and Pathogen-Associated Molecular Patterns (PAMPs) from infections or bacterial translocation.

7.16.3 Benefits of TPE:

- Reduces inflammatory cytokines.
- Modulates adaptive immunity, potentially reducing susceptibility to infections.
- Reduces albumin-bound and water-bound toxins.
- Provides hemodynamic benefits.
- Reduces ammonia levels.
- Improves Hepatic Encephalopathy (HE) grades and cerebral hemodynamics (independent of simultaneous filtration/dialysis).

7.16.4 Methodology

- TPE can be performed using either centrifugation or filtration-based mechanisms. Both methods are similar in safety, efficiency,

and therapeutic effects.

7.16.5 Workflow for TPE Procedure – refer appendix

7.16.6 Adverse Event Management

- Monitoring Adverse Events:
  - A detailed note of all adverse events will be recorded for each plasma exchange session.
- Managing Possible Adverse Events:
  - Hypocalcemia: Administer replacement calcium (intravenously or orally).
  - Hypomagnesemia: Administer replacement magnesium (intravenously).
  - General Discomfort: Adjust the return rate downward.
  - Hypotension: Administer normal saline boluses.
  - Transfusion Reaction:
    i. Discontinue FFP product.
    ii. Administer IV Piriton and Hydrocortisone.
    iii. In cases of anaphylaxis or respiratory distress, administer epinephrine.

7.17 LIVER TRANSPLANT SERVICE PROTOCOL

7.17.1 Introduction to Liver Transplantation

Liver transplantation is a highly specialized, life-saving procedure for patients with end-stage liver disease. It is currently the only effective treatment for liver failure, as no artificial support device is available.

7.17.2 Liver failure can be:

- Acute: Rapid onset due to toxic or viral diseases.
- Chronic: Gradual onset from insidious inflammatory diseases leading to cirrhosis.

7.17.3 Patient Categories and Eligibility – refer appendix

7.17.4 Transplant Assessment and Listing – refer appendix

7.17.5 Intra-operative and Post-operative Care Principles

- Minimizing Time in Hospital (Operating Suite Availability):
  - Timely operating theatre availability (24/7 expectation) to ensure optimal cold ischemia times.
  - Deceased donor transplants receive priority in the operating suite.
  - A dedicated transplant theatre and scrub team should be immediately available.

- Minimizing Complications, Side Effects, and Co-morbidity:
  - Infection Control: Effective preventive therapy for CMV, Pneumocystis, Tuberculosis, and influenza vaccination (minimum).
  - Immunosuppression: Appropriate regimen to maintain graft function, avoid rejection, and minimize adverse effects.
  - Monitoring: Effective monitoring of immunosuppressive treatment.

7.17.6 Staffing and Multidisciplinary Team (MDT)

- Surgical Staffing:
  - At least five consultant surgeons capable of liver transplantation, all MDT members.
  - Robust, published duty rotas for continuous consultant cover for surgical transplant activity (including out-of-hours and weekends).
  - Sufficient surgical support and operating department staff.
  - Explicit consultant involvement in retrieval program education.

- Hepatology:
  - Consultant hepatologist available at all times for management of fulminant hepatic failure patients, and those with waiting list or post-transplant problems.
  - Long-term transplant care provided by consultant hepatologists, supported by junior medical staff, in wards and outpatient

clinics.

- Anaesthesia and Intensive Care:
  - Consultants experienced in liver transplant patient management should supervise anaesthesia and intensive care.
  - These consultants, supported by junior medical staff, should be MDT members.
  - Sufficient critical care facilities and nursing staff to support the program and allow emergency admission of fulminant hepatic failure patients.

- Radiology Support:
  - MDT includes a named consultant radiologist with specific interest in liver imaging and interventional procedures.
  - 7-day access to diagnostic imaging (ultrasound, CT, MR) and interventional radiology (biliary and vascular interventions).
  - Robust, published consultant duty rotas for emergency imaging and interventions in liver transplant patients.

- Liver Transplant MDT Composition. The MDT should include:
  - Direct Patient Care Clinicians: Liver transplant surgeons, hepatologists, transplant anesthetists/critical care specialists, and junior staff in these specialties.
  - Transplant Support Staff: Transplant nurses and recipient coordinators.
  - Allied Health Professionals: Dietician, pharmacist, physiotherapist, psychiatric liaison nurse.
  - Specialist Diagnostic Services: Liver radiology, histopathology, and microbiology.

Note: MDT composition can be adjusted based on the needs of different service aspects (e.g., assessment, post-operative care, clinico-pathological, audit meetings).

7.17.7 Follow-up Care

- Frequency: Initially frequent (2-3 times/week), gradually decreasing (often 3-4 times/year).
- Early Follow-up: Shared between transplant surgical team and transplant hepatologists. Most patients followed up at the transplanting center.
- Long-Term Care:
  - Holistic assessment, including pre-emptive strategies to minimize future health, physical, and psychological problems.
  - Regular review of immunosuppressive therapy to prolong graft life while minimizing drug-related side effects.
  - Assessment and minimization of risks for future cardiovascular disease, renal dysfunction, and bone disease.
  - Patients educated about increased malignancy risk (especially skin cancer) and counseled on lifestyle changes.
  - Close links established between transplant center, local physician, and hepatologist for post-operative management.
  - Encouragement to attend appropriate cancer screening programs.

7.18 UREA BREATH TEST

7.18.1 Introduction

Simple non-invasive modality to diagnose H. pylori infection

7.18.2 Scope and responsibilities – applies to

- Gastroenterologist/ Fellows/ Physicians patient preparation, interpretation of results and prescription of medication
- GIA performing the test

7.18.3 Indications

- Dyspepsia to diagnose H.pylori
- Assessment of H.Pylori clearance post eradication therapy

7.18.4 Equipment

- 13C- UBT tablet
- Sampling bag and analyser

7.14.5 Patient preparation – refer appendix

7.14.6 Procedure, analysis and reporting

- Following the standard steps suggested by the manufacturer
- Results are available upon completion

7.14.7 Infection control

- The bags used for sample collection are single used and disposable

7.14.8 Quality control

- Equipment maintenance and calibration

References:

1. Goh KL, Lee YY, Leow AH, Ali RAR, Ho SH, Mahadeva S, Mohd Said RH, Muthukaruppan Chettiar R, Tee HP. A Malaysian consensus report on the diagnosis and treatment of Helicobacter pylori infection. JGH Open. 2023;7(4):261-71. PMID: 37125243.
1. Chey WD, Howden CW, Moss SF, Morgan DR, Greer KB, Grover S, Shah SC. ACG Clinical Guideline: Treatment of Helicobacter pylori Infection. Am J Gastroenterol. 2024;119(9):1730-53. PMID: 39626064.

7.19 HIGH RESOLUTION IMPEDANCE MANOMETRY

7.20 24 HOURS PH IMPEDANCE STUDIES

Table 6: Difference Between HRIM and 24 Hours pH Impedance Study

	HIGH RESOLUTION IMPEDANCE MANOMETRY (HRIM)	24 HOURS pH IMPEDANCE STUDY
Introduction	· HRIM is a gold standard test to assess the motility function of the esophagus	· Gold standard test for the detection of reflux episodes · Enables the detection of the composition and extent of the reflux (liquid, gas or mixed)
Scope & Responsibilities	Applies to · Gastroenterologist/ Fellows/ Physicians – trained in the procedure · GIA patient preparation, preparation of the GI lab pre and post procedure	
Indications	· Dysphagia · Non-Cardiac Chest pain · Evaluation of GERD · Diagnosing Primary Esophageal Motility Disorders (eg; achalasia cardia) · Identifying Secondary Esophageal Motility Disorders (eg; Systemic sclerosis) · To determine the location of LES prior to the placement of 24-hour pH impedance catheter · Pre operative assessment of anti-reflux procedures · Post operative/ post procedure assessment for patients with persistent symptoms (eg dysphagia post dilatation in achalasia)	· Evaluation of suspected reflux related symptoms · Persistent reflux symptoms; either partially responsive or unresponsive to treatment · Pre operative evaluation of GERD related procedures eg fundoplication · Post operative evaluation of patients with persistent symptoms – eg post fundoplication/ post POEM · Evaluation of symptoms related to disorders related to Disorders of Gut Brain Interaction (DGBI) eg belching disorders, globus & rumination syndrome
Equipment	High Resolution Impedance Manometry System & Catheter– depending on the manufacturer type and recommendation	24 hours pH Impedance Reflux Monitoring System – inclusive of recorder and catheter / probes

	HIGH RESOLUTION IMPEDANCE MANOMETRY (HRIM)	24 HOURS pH IMPEDANCE STUDY
Patient preparation	As per appendix	As per appendix
Procedure; analysis and reporting	The procedure is performed, analysed and interpreted according to the Chicago 4.0 protocol	The procedure is performed, analysed and interpreted according to the Lyon Consensus
Infection Control	Cleaning and reprocessing of the catheter follows the standard recommendation as recommended by the manufacturer	Single use catheter
Quality Control	· Equipment maintenance and calibration · Reporting	

Reference for High Resolution Impedance Manometry (HRIM)

1. Yadlapati R, Kahrilas PJ, Fox MR, Bredenoord AJ, Prakash Gyawali C, Roman S, Babaei A, Mittal RK, Rommel N, Savarino E, Sifrim D, Smout A, Vaezi MF, Zerbib F, Akiyama J, Bhatia S, Bor S, Carlson DA, Chen JW, Cisternas D, Cock C, Coss-Adame E, de Bortoli N, Defilippi C, Fass R, Ghoshal UC, Gonlachanvit S, Hani A, Hebbard GS, Wook Jung K, Katz P, Katzka DA, Khan A, Kohn GP, Lazarescu A, Lengliner J, Mittal SK, Omari T, Park MI, Penagini R, Pohl D, Richter JE, Serra J, Sweis R, Tack J, Tatum RP, Tutuian R, Vela MF, Wong RK, Wu JC, Xiao Y, Pandolfino JE. Esophageal motility disorders on high-resolution manometry: Chicago classification version 4.0©. Neurogastroenterol Motil. 2021;33(1):e14058. Erratum in: Neurogastroenterol Motil. 2024;36(2):e14179. PMID: 33373111.

Reference for 24 hours pH Impedance Study

1. Gyawali CP, Yadlapati R, Fass R, Katzka D, Pandolfino J, Savarino E, Sifrim D, Spechler S, Zerbib F, Fox MR, Bhatia S, de Bortoli N, Cho YK, Cisternas D, Chen CL, Cock C, Hani A, Remes Troche JM, Xiao Y, Vaezi MF, Roman S. Updates to the modern diagnosis of GERD: Lyon consensus 2.0. Gut. 2024;73(2):361-71. PMID: 37734911.

7.21 HIGH RESOLUTION ANO-RECTAL MANOMETRY

7.22 BIOFEEDBACK THERAPY

Table 7: Difference Between High Resolution Ano-Rectal Manometry And Biofeedback Therapy

	HIGH RESOLUTION ANORECTAL MANOMETRY (HR-ARM)	BIOFEEDBACK
Introduction	· HR-ARM provides a picture of the pressure activity and sensory component at the rectum and anal canal · Data obtained can be used to guide in the diagnosis and management of defecatory disorders	· Systematic training and behaviour education program with direct feedback response to address defecatory disorders
Scope & Responsibilities	Applies to · Gastroenterologist/ Fellows/ Physicians trained in the procedure · GIA – patient preparation, preparation of the GI lab pre and post procedure	
Indications	· Chronic constipation / evacuation disorders · Fecal Incontinence · Symptoms suggestive of functional anorectal pain · Abnormal rectal sensitivity (both hyper & hyposensitivity) · Pre operative assessment prior to surgery that may involve the anal sphincter · Post obstetric injury / traumatic delivery/ post op intervention involving anal sphincter	· Defecation dyssynergia · Fecal incontinence · Levator Ani syndrome · Solitary Rectal Ulcer Syndrome (SRUS)
Equipment	High Resolution Anorectal Manometry System & Catheter – depending on the manufacturer type	Biofeedback system - depending on the type of device available
Patient preparation	· Ideally performed in an empty rectum · Enema is given prior to procedure if the rectum is filled with stools	
Procedure; analysis and reporting	The procedure is performed, analysed and interpreted according to the London Classification	· There is no standard or uniform protocol · Protocol varies according to type of device used as per manufacturers recommendation

	HIGH RESOLUTION ANORECTAL MANOMETRY (HR-ARM)	BIOFEEDBACK
Infection Control	Cleaning and reprocessing of the catheter follows the standard recommendation as recommended by the manufacturer	Depending on the type of system used and manufacturers recommendation
Quality Control	· Equipment maintenance and calibration · Reporting	

Reference for High Resolution Anorectal Manometry (HR-ARM)

1. Scott SM, Carrington EV. The London Classification: Improving Characterization and Classification of Anorectal Function with Anorectal Manometry. Curr Gastroenterol Rep. 2020;22(11):55. PMID: 32935278.

References for Biofeedback

1. Rao SS, Benninga MA, Bharucha AE, Chiarioni G, Di Lorenzo C, Whitehead WE. ANMS-ESNM position paper and consensus guidelines on biofeedback therapy for anorectal disorders. Neurogastroenterol Motil. 2015;27(5):594-609. PMID: 25828100.
2. Rao SS. Gastroenterol Clin N Am. 2008;37:569–86.

7.23 INTESTINAL ULTRASOUND

7.22.1 Introduction

- Additional bedside tool in the management of IBD patients

7.22.2 Scope and responsibilities:

- Gastroenterologist / fellows –adequate training, education and credentialing
- Nurse equipment maintenance

7.22.3 Indications:

- Screening tool to rule out IBD
- Evaluation of the disease severity
- Assessment of therapeutic response

- Identifying complications eg abscess or strictures
- Detects recurrence post operatively

7.22.4 Equipment - ultrasound machine with:

- low-frequency curvilinear probe
- high-frequency linear probe

7.22.5 Patient preparation:

- Verbal consent
- Lay flat on a couch / bed

7.22.6 Procedure; analysis and reporting:

- Systematic approach in performing IUS following international guidelines
- Real time availability of results

7.22.7 Infection controls

- Cleaning of the probes as per recommendation

7.22.8 Quality control

- Equipment maintenance and calibration

References:

1. Pal P, Mateen MA, Pooja K, Marri UK, Gupta R, Tandan M, et al. Leveraging existing mid-end ultrasound machines for point-of-care intestinal ultrasound in low-resource settings: prospective, realworld impact on clinical decisionmaking. Aliment Pharmacol Ther. 2024;60(5):633-47.
2. WEO Newsletter. Tips and tricks for ultrasound assessment of inflammatory bowel disease. Dig Endosc. 2024;36(4):510-5.

8.0 TRAINING AND EDUCATIONS

8.1 Training of Trainee Gastroenterologist and Hepatologist

All potential candidates need to have completed a minimum period of 4 years training in general internal medicine. The candidates from the MOH should fulfil the current criteria set by the MOH prior to enrolment. Recognised postgraduate qualifications for internal medicine include MMed (Mal), MRCP and FRACP and equivalent qualifications

8.1.1 Programme Design

- The programme is a THREE (for basic training) + ONE (for advanced training) year programme.
- Training will be conducted at a recognised training center, either locally or abroad
- The first three years will be focused on basic competency training in gastroenterology and hepatology.
- For trainees with interest in Hepatology, they are encouraged to spend the 3rd year in a centre with hepatology subspecialty.
- The final year will consist of subspecialty training of choice, subject to availability. Sub-specialty training will also help to develop certain services that remain limited in Malaysia, for example advanced endoscopy. During this fourth year, the trainee will continue to develop their acquired skills in the first three years but can focus on their sub-specialty area of interest.
- It is required that the trainees embark on a relevant research/audit project to further enhance their development.
- Options advanced training in 4th year:
  i. Advanced therapeutic endoscopy
  ii. Hepatology
  iii. Inflammatory bowel conditions
  iv. Functional GI disorders
  v. Nutrition
  vi. Digestive Oncology

8.1.2 Assessment methods

- Supervisor reports

- Log book
- Exit exam
  i. Theory exam : European Specialty Examination in Gastroenterology and Hepatology (ESEGH)
  ii. Oral Viva : will be conducted on an annual basis.

Reference:

1. MSGH Trainee Committee. National Specialist Training Programme Curriculum for Gastroenterology and Hepatology.

8.2 Training of Physicians and Medical Officers

- Training of physicians or medical officers during the medical rotation in the MOH is in accordance with the logbook based upon the MMED and MRCP programme and in endoscopy through Special Interest Group (SIG) initiatives.

8.3 Training of Allied Health Professionals (Nurses, Technicians, Dietitians, Pharmacists)

- Nurses and endoscopy assistants must complete formal training in:
  - Gastrointestinal anatomy and physiology
  - Endoscope handling, reprocessing, and infection control
  - Patient preparation and recovery
  - Sedation safety and monitoring
- Dietitians managing GI and liver cases must be trained in:
  - Nutritional management of cirrhosis, IBD, and pancreatic insufficiency
  - Enteral and parenteral nutrition protocols
- Technicians must be competent in the operation and maintenance of:
  - Endoscopic equipment
  - Liver elastography (e.g., FibroScan), capsule endoscopy readers, and infusion pumps
- Ongoing competency assessments and CPD are mandatory per MOH standards.

Reference:

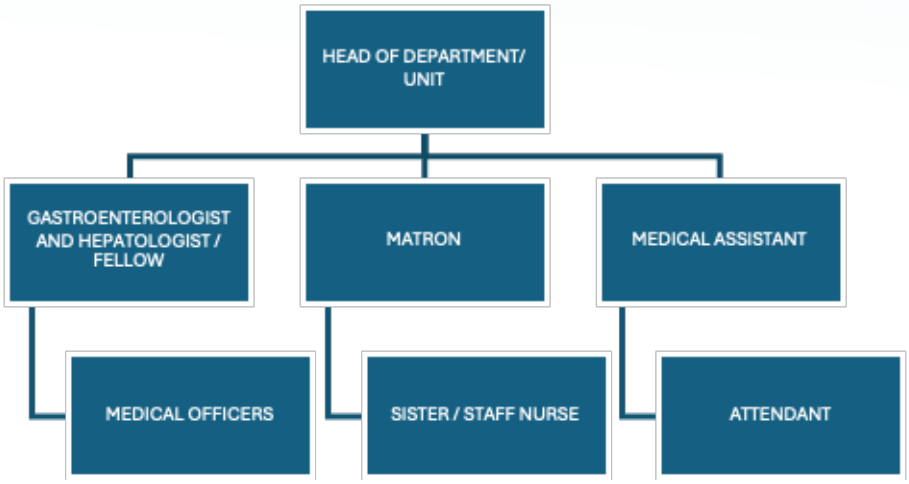
1. MOH Competency Standards for Nurses in Endoscopy, Allied Health Professional Act 2016 (Malaysia). 2016.

9.0 CLINICAL PRACTICE GUIDELINES

- Gastroenterology and Hepatology services in Malaysia follows the latest and updated Clinical Practice Guidelines in Malaysia
- Updated guidelines from international peer reviewed societies and associations shall be used as references in the absence of local CPG
- Among the local CPG / guidelines available include:
  - Management of Chronic Hepatitis B in Adults
  - Management of Chronic Hepatitis C in Adults
  - Management of Inflammatory Bowel Disease
  - Management of Colorectal Cancer

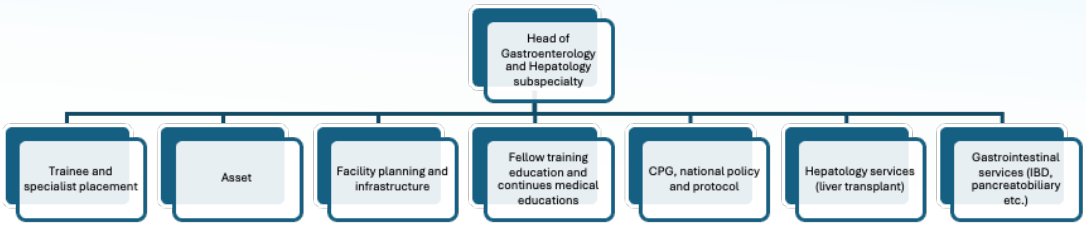
APPENDIX 1

ORGANISATIONAL CHART OF GASTROENTEROLOGY AND HEPATOLOGY DEPARTMENT / UNIT



APPENDIX 2

ORGANISATIONAL CHART OF THE GASTROENTEROLOGY AND HEPATOLOGY MANAGEMENT COMMITTEE IN NATIONAL LEVEL



TERMS OF REFERENCE FOR MANAGEMENT COMMITTEES

The management committees are responsible for formulating, implementing and monitoring strategic plans for development of Gastroenterology and Hepatology service. Members shall be appointed by the National Advisor of the Gastroenterology and Hepatology service.

- Plan the development and implementation of the MOH Gastroenterology and Hepatology Subspecialty services strategically and comprehensively.
- Plan and provide input to upgrade the MOH Gastroenterology and Hepatology Subspecialty services across all MOH facilities involved.
- Assess the current situation, gaps and opportunities for improvement of the MOH Gastroenterology and Hepatology Subspecialty services in MOH hospitals, including planning training and the number of Gastroenterology and Hepatology Specialists per population to achieve the target of a developed country.
- Develop a comprehensive plan for the MOH Gastroenterology and Hepatology Subspecialty services including outlining key elements such as service delivery, resource development and expenditure allocation.
- Develop and submit proposals to facilitate the implementation and improvement of the MOH Gastroenterology and Hepatology Subspecialty services.
- Establish performance indicators to monitor and evaluate the effectiveness of the MOH Gastroenterology and Hepatology Subspecialty services.
- Collaborate with stakeholders and interested parties including government agencies and non-governmental organizations (NGOs) to ensure that planning and implementation reflect the diverse needs and perspectives of the MOH Gastroenterology and Hepatology Subspecialty services.
- Provide feedback to the MOH Medical Program on relevant inputs for the implementation and improvement of the MOH Gastroenterology and Hepatology Subspecialty services.

APPENDIX 3

GASTROENTEROLOGY AND HEPATOLOGY SERVICES MOH BASIC REQUIREMENT OF SERVICE

Please scan this QR code:

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APPENDIX 4

BOWEL PREPARATION

1. Patient Education & Instructions
   - Clear instructions (oral and written) should be provided on:
     - Diet before colonoscopy (typically low-fibre diet 3 days prior; clear liquids the day before).
     - Timing and method of bowel prep.
   - Use validated educational tools (videos, booklets, apps) to improve compliance and prep quality.

2. Choice of Preparation Regimen
   - Split-dose regimen is strongly recommended for all elective colonoscopies:
     - Half the dose the evening before.
     - The other half 4–6 hours before the procedure, with completion at least 2 hours before sedation.
   - Same-day preparation is acceptable for afternoon colonoscopies using PEG-based solutions.
   - To start the last dose of bowel preparation within 5 hours of colonoscopy, and to complete it at least 2 hours before the beginning of the procedure.

3. Clinical consideration
   - PEG is the preferred choice in patients with renal dysfunction, heart failure, or electrolyte imbalance risk.
   - Picosulfate is often used in younger, healthier patients due to better tolerability and taste.
   - Split dosing improves cleansing efficacy and patient comfort in both preparations.

FEATURE	PEG (POLYETHYLENE GLYCOL)	PICOSULFATE (SODIUM PICOSULFATE + MG CITRATE)
Mechanism of Action	Osmotic lavage with large volume water retention	Stimulant laxative + osmotic effect via magnesium citrate
Volume Required	High volume: 3–4 liters	Low volume: ~300 mL prep + additional clear fluids (~2 L)
Taste/Palatability	Poor taste; often unpalatable	Better tolerated; flavored options available
Timing	Split dose or same-day dosing	Typically split dose (evening + early morning)
Efficacy (Bowel Cleansing)	Excellent cleansing, especially for entire colon	Comparable efficacy for colon cleansing
Patient Tolerance/Compliance	Lower (due to large volume and taste)	Higher (due to low volume and better taste)
Electrolyte Disturbances Risk	Minimal (isotonic)	Higher risk, especially in elderly or renal impairment
Use in Renal/CHF Patients	Safe (preferred in renal/ cardiac patients)	Caution in renal insufficiency, CHF, or electrolyte issues
Cost	Generally, more expensive	Typically, less expensive
Side Effects	Bloating, nausea, vomiting	Cramping, dehydration, electrolyte imbalance
Contraindications	GI obstruction, perforation	Renal failure, severe electrolyte disturbance, CHF

APPENDIX 5

CAPSULE ENDOSCOPY

1. Equipment required
   - Video capsule
   - Data recorder with built in battery
   - Crossbody belt
   - Software package
   - Cable connecting data recorder to computer (optional to check real time)
   - Computer
   - Cradle
   - Capsule locator
   - Glass of water

APPENDIX 6

ENTEROSCOPY

1. Equipment required
   - Enteroscopy
   - Overtube
   - Balloon control unit
   - Imaging equipment
   - Biopsy forceps
   - Retrieval devices
   - Cleaning brush
   - Other accessories: injection needles, irrigating adaptors and cautery devices.

APPENDIX 7

ENDOSCOPIC RETROGRADE CHOLANGIOPANCREATOGRAPHY (ERCP)

1. Equipment required
   - Endoscopy suite equipment with fluoroscopy
   - Side-viewing endoscope (duodenoscope)
   - Ionic contrast agent
   - Sphincterotomes
   - ERCP catheters
   - Guide wires
   - Electrocautery unit
   - Snares, Soehendra stent retriever and rat-tooth forceps for stent removal
   - Stone retrieval balloons (8.5-20 mm balloon diameters)
   - Stone retrieval baskets
   - Mechanical lithotripter
   - Soehendra lithotripter
   - Biopsy forceps
   - Plastic stents of various types, lengths and diameters (according to indications)
   - Nasobiliary/nasopancreatic catheters.
   - Injection needles.
   - Brush cytology catheters.
   - Dilating balloons
   - Dilating catheters
   - Lead aprons, lead goggles, lead cap, thyroid shields and radiation film badge.

2. Additional equipment that may be needed.
   - Self-expandable metallic stents of various types, size and diameters
     - uncovered SEMS
     - partially covered SEMS
     - fully covered SEMS
   - Intraductal biopsy forceps.
   - Cholangioscope with electro-hydraulic lithotripsy (EHL)/laser.

APPENDIX 8

ENDOSCOPIC ULTRASOUND (EUS)

1. Equipment required
    a. Endoscopy suite equipment
    b. Ultrasound unit.
    c. EUS endoscope - radial and linear scopes.
    d. Needle for fine needle aspiration (FNA) (19G, 22G, 25G).
    e. Glass slides.
    f. Alcohol 99.98%.
    g. FNA samples preservative solution (optional).
    h. Coplin jar.
    i. Mouth guard.

2. Additional equipment that may be needed
    a. Equipment for celiac plexus block/neurolysis.
    b. Spray needle for celiac plexus neurolysis.
    c. Alcohol 99.9% 20 cc.
    d. Bupivacaine 20% 20 cc.

3. Equipment for pseudocyst drainage.
    a. 19G fine needle aspiration needle.
    b. Guide wire 0.035 inches.
    c. Cystotome/needle knife.
    d. Electrocautery unit.
    e. Balloon dilator (8-15 mm).
    f. Double pigtailed 7F or 10F plastic stents of various lengths.
    g. Covered metal stent (optional).

APPENDIX 9

ENDOSCOPIC SUBMUCOSAL DISSECTION

1. Equipment required
   - Distal cap
   - ESD Knife/Knives
   - Coagulation Grasper
   - Injector needle
   - Injectate and/or dye (e.g. indigo carmine and methylene blue)
   - Snare at appropriate size
   - Haemostatic clips
   - Endoscopic loop
   - Closure device (e.g. Over the scope clip, Dual Action Tissue Closure Clip, Suturing Device - Overstitch)
   - Traction Device (e.g. dental floss, dental rubber band, S-O clip)

APPENDIX 10

LIVER BIOPSY

1. Workflow
   - Doctors involved in patient care will perform assessment of indication for liver biopsy and provide explanation regarding reason for liver biopsy, potential risks and what are the alternative options should a patient decline liver biopsy.
   - Patients are encouraged to clarify any doubts and understanding of the procedure is checked.
   - Baseline blood tests will be done. This is important to ensure that liver biopsy is done safely with minimal bleeding risk.
   - You should bring along the list of your regular medications, including any you have bought over the counter at your local pharmacy.
   - Medications antiplatelets and anticoagulation such as aspirin, clopidogrel and warfarin will need to be stopped in advance of the procedure.
   - One day prior to liver biopsy - Patient will be admitted to ward and will be reviewed by ward doctor.
   - 20G IV Cannula is inserted.
   - Blood investigations : FBC/ RP/ Coagulation profile/ LFT/ GSH sent and reviewed.

2. Percutaneous Liver Biopsy

Investigation	Results	Actions
INR	<1.5 1.6 – 1.8	Percutaneous liver biopsy will be performed Transfuse FFP 15ml/kg in the ward 30minutes prior to procedure.
Platelet	>75,000 <75,000	Percutaneous liver biopsy will be performed Transfuse platelet 10-20ml/kg in the ward 30minutes prior to procedure.
Hb	<8	Transfuse packed cell to aim Hb > 8 prior to procedure.

3. Transjugular Liver Biopsy
   - This is an alternative way of obtaining the liver specimens. This method is used in patients who have abnormal clotting of the blood or fluid collecting within the abdomen. This technique reduces the risk of bleeding after the biopsy.
   - Transjugular liver biopsy involves use of X-rays to visualize the blood vessels. Radiation doses for this procedure are generally low, though occasionally higher doses are required if the procedure is long or technically challenging.

Investigation	Results	Actions
INR	<1.7 1.8 – 2.5	Transjugular liver biopsy will be performed Transfuse FFP 15ml/kg in the ward 30minutes prior to procedure.
Platelet	>50,000 <50,000	Transjugular liver biopsy will be performed Transfuse platelet 10-20ml/kg in the ward 30minutes prior to procedure.
Hb	<8	Transfuse packed cell to aim Hb > 8 prior to procedure.

4. EUS guided liver biopsy

   Endoscopic ultrasound (EUS)-guided liver biopsy is a new modality to sample liver parenchyma. This technique allows sampling of both liver lobes and obviates the need for sampling error.

Investigation	Results	Actions
INR	<1.7 >1.8	EUS guided liver biopsy will be performed Transfuse FFP 15ml/kg in the ward 30minutes prior to procedure.
Platelet	>75,000 <75,000	EUS guided liver biopsy will be performed Transfuse platelet 10-20ml/kg in the ward 30minutes prior to procedure.
Hb	<8	Transfuse packed cell to aim Hb > 8 prior to procedure.

   - To consider additional blood product transfusion during procedure upon request from the endoscopist, based on patient characteristics.

5. What happens during the biopsy

    - Informed consent for liver biopsy will be obtained. You will be taken to the radiology department for percutaneous or transjugular liver biopsy. You will be taken to the endoscopy suite for EUS guided liver biopsy.
    - Once in the room, you will meet the radiologist/ endoscopist who will perform the biopsy.
    - Sedation +/- local anesthesia will be given.

6. What happens after the biopsy
    - You will be asked to lie flat and will have pulse and blood pressure measured at regular intervals to look for signs of bleeding.
    - The nurse will bring you back to the ward and ensure tissue biopsy specimens are inside labelled specimen bottles.
    - Vital signs monitoring for pulse and blood pressure.
        - 15mins for 1 hour
        - 30mins for 1 hour
        - Hourly for 2 hours
        - 2 hourly for 4 hours

7. Doctors need to be informed if there are any concerns, bleeding at the biopsy site or if the patient is in pain. The patient should be in bed for 6 hours post procedure and be allowed orally.

8. The day after the liver biopsy, the patient will be reviewed during the morning round. The biopsy site will be checked. If patient is well and there are no complications, he will be discharged with advice

9. Patient can shower as per usual

10. To avoid heavy lifting (>5kg) for 1 week after procedure

11. To present to the nearest Accident & Emergency department if developed fever, redness around the biopsy site or experience pain.

APPENDIX 11

THERAPEUTIC PLASMA EXCHANGE (TPE) PROTOCOL

1. Patient Admission: ACLF/ALF patients will be admitted to the High Dependency Ward (HDW) or Intensive Care Unit (ICU) for the procedure.
2. Standard Medical Therapy: All ACLF/ALF patients will receive standard medical therapy as required (e.g., cerebral protection, hydration, lactulose, albumin, terlipressin, antibiotics, antifungals, electrolyte correction, antivirals for Hepatitis B reactivation). All medical therapy will be continued and recorded in the Case Report Form (CRF).
3. Nephrologist Referral: Patients will be referred to a nephrologist for assessment.
4. TPE Machine: TPE will be performed using a cell separator (e.g., HEMONETICS MCS+ / Spectra Optia).
5. Coagulopathy Correction: Prior to double-lumen catheter insertion, coagulopathy must be corrected to achieve:
6. INR <1.8
7. Platelet count >80×109/L
8. Vascular Access: A double-lumen catheter will be inserted into the patient's femoral vein using a sterile, ultrasound-guided technique.
9. Total Blood Volume (TBV) Estimation: Patient's height and weight are entered into the system.
    - TBV = 0.07×patient's weight (kg)
    - Estimated Plasma Volume (PV) Calculation: PV = TBV ×(1−hematocrit)
    - Example: For BW 70 kg, HCT 27% (0.27):
    - Estimated PV = 0.07×70×(1−0.27)=3.5 L
10. Replacement Product: Fresh Frozen Plasma (FFP) is used as the replacement product at 1−1.5×PV.
    - Example (continued): 3.5 L×1.5=5.3 L (Total FFP to be replaced).
11. Pre-TPE Medications: Prior to each cycle, the following medications will be administered:
    - IV Hydrocortisone 100 mg
    - IV Piriton 10 mg
    - IV Calcium gluconate 10% 10cc
12. Session Duration and Exchange Rate: Each session will last 2-4 hours, with a plasma exchange rate of 25-30 mL/min.

13. Post-Session Procedure: After the desired plasma volume is removed, the machine is disconnected, and citrate is instilled into each catheter lumen to prevent clotting until next access.
14. Treatment Cycles:
    - Three cycles of TPE treatment are planned on three consecutive days.
    - Patients will be assessed for treatment response on Day 4.
    - TPE will be stopped if the patient becomes ineligible due to worsening liver failure, new sepsis development, or hemodynamic instability.

· **Monitoring**

1. During Procedure (by staff nurse every 15 minutes):
    - Patient's vital signs: Blood pressure, heart rate, oxygen saturation.
    - Hourly urine output.
    - Monitor for signs of volume depletion (e.g., tachycardia, hypotension).
    - Monitor for signs and symptoms of hypocalcemia (e.g., numbness or tingling of fingers, nose, or tongue).
    - GCS and Dextrostix every 2 hours.
    - Long-term monitoring: Alert patients to signs and symptoms of delayed transfusion reactions that may appear several days after transfusion.

2. Monitoring Parameters (Before and After Each Session):
    - Mean arterial pressure (MAP)
    - Grading of hepatic encephalopathy (West Haven Scale)
    - Glasgow Coma Scale (GCS)
    - Laboratory Studies:
        i. Full Blood Count (FBC)
        ii. Calcium
        iii. Prothrombin Time (PT)/INR
        iv. Ammonia
        v. Liver Function Tests (LFTs)
        vi. Lactate Dehydrogenase (LDH)
        vii. Fibrinogen
        viii. Venous Blood Gas (VBG)
        ix. Renal Profile

APPENDIX 12

LIVER TRANSPLANT WORKFLOW

1. Patient Categories and Eligibility
   - Patients requiring liver transplantation fall into two main categories:
     i. "Super Urgent" Patients:
        - Sudden liver failure.
        - Likely to die within 48 hours without transplantation.

     ii. Elective Patients:
        - More insidious disease progression.
        - Eligibility Criteria:
          a) MELD-Na score ≥15.
          b) Complications of liver cirrhosis, such as:
          c) Hepatocellular Carcinoma (HCC) within transplant criteria.
          d) Recurrent Hepatic Encephalopathy.
          e) Hepatic Hydrothorax.
          f) Recurrent Ascites requiring repeated Large Volume Paracentesis (LVP).
   - Generally, patients with chronic liver disease are expected to die within 12 months without transplant.
   - Timely Referral: Close liaison between local Gastroenterologists/Hepatologists and the transplant center's hepatologists is crucial for timely referral of end-stage liver disease patients.

2. Objective, Fair, and Equitable Assessment:
   - Patients should be listed when fit enough to survive the operation, but not so early as to be exposed to premature risks.
   - Prognostic models (e.g., MELD-Na) are used to predict survival without transplant and on the waiting list.
   - Minimal Listing Criteria: MELD-Na ≥15.
   - Prioritization: Patients with higher MELD-Na scores are prioritized when a donor organ becomes available.
   - Decision-Making:
     - Recommendation for transplantation must be agreed upon by the multidisciplinary team (MDT), including a transplant **hepatologist** and surgeon.

- The decision must be documented.
- In emergencies, decisions can be made outside of MDT meetings but must be subsequently recorded.

3. Transplant Work-up (Recipient and Donor)
   - Assessment tailored to the recipient's liver function decline rate, disease-specific considerations, and individual circumstances to prevent unnecessary investigations.
   - Patients undergo surgical and anesthetic assessment before listing.
   - Living Donation: Information provided early; discussions with potential donors and recipients can begin during deceased donor list assessment.
   - Donor evaluation starts sufficiently early to allow for assessment of multiple donors if needed.
   - HCC Patients: Must have access to interventional radiology (e.g., TACE, ablation) to maintain tumor within transplant criteria.
   - Transplant work-up protocol as attached below

4. Optimizing the Transplant Waiting List:
   - Medically suitable patients are placed on the list in a timely manner, regardless of presentation time.
   - Patients receive information about the transplant pathway during medical/surgical assessment.
   - Patients with progressive liver function deterioration who are medically suitable will be offered listing within 1 month of MDT assessment and acceptance.
   - MELD-Na scores for ESLF patients on the waiting list will be reviewed quarterly.

APPENDIX 13

LIVER TRANSPLANT ASSESSMENT (ADOPTED FROM HOSPITAL SELAYANG)

Assessment date: _____ **Referring Doctor:** _____
MRN: _____ **Date of birth:** _____
Name: _____
Address: _____
Telephone: _____ **Blood Group:** _____

- **Aetiology of liver disease:**
- **Indications for transplant:**

1. **History:** _____
2. **Past medical history:** _____
3. **Past surgical history:** _____
4. **Medications:** _____
5. **Allergies:** _____
6. **Social history:** _____

7. **Physical examinations**

Height(m): _____ **Weight(kg):** _____
Pulse: _____ **BP:** _____
CVS: _____ **RS:** _____
Abdo: _____
Jaundice- / Pedal oedema- / Ascites- / Asterixes- _____
Cutaneous stigmata of chronic liver disease:

8. **Haematology**

Haemoglobin	White cell count	Platelets
INR	PT	APTT
Fibrinogen	Antibody screen	

9. **Biochemistry**

Sodium	Potassium	Urea
Creatinine	Glucose	GGT
Total protein	Albumin	Bilirubin
ALP	ALT	AST

10. Immunology

ANA	AMA	ASMA
AntiLKM1	ANCA	Rheumatoid factor
Double stranded DNA	IgG	IgA
IgM	C3	C4

11. Tumour markers (based on risk and age).

AFP	Ca19-9	CEA	PSA

12. Virology

HBsAg	AntiHBs (if negative needs HBV vaccination):	HbeAg
AntiHBe	AntiHBc (total/IgM)	HBV DNA
AntiHAV total (if negative needs HAD vaccination)	AntiHCV	HCV RNA PCR
HIV1/2	IgG antiCMV	IgG antiEBV
IgG antiHSV	IgG toxoplasma	IgG VZV/mumps/ measles

13. Miscellaneous:

Caeruloplasmin	Urinary copper	Serum copper
Serum ferritin	TSH and FT4	G6PD level

14. Prognostic Scores:

Maximum encephalopathy grade:	Ascites:	Bilirubin:
Albumin:	INR:	Total CPS=

15. MELD/ MELD-Na:

16. Respiratory:

PaO2	PaCO2	pH	BE

17. Chest X-Ray report:

	Actual	Predicted
FEV1		
VC		
FEV/VC		
Peak Flow		
TCO		

18. Lying and standing pulse oximetry on room air:

19. Cardiovascular:

ECG	
ECHO	
EST/ Dibutamine stress ECHO (if cardiac risk factor- hyperlipidemia, hypertension, diabetes, smoker, age>60 years, MFLD))	
Coronary angiogram (if any of above investigations is abnormal)	

20. Renal: 24 hours urine for creatinine clearance:

21. Imaging results:

Doppler Ultrasound of hepatobiliary system	
CTscan	
MRI	
Mammogram (female > 40 yo or > 35 yo if has family history of breast cancer)	
Endoscopy: (colonoscopy if 50 yo or older or PSC)	

22. Liver histopathology:

23. Nutritional evaluation and advise:

24. Dental clearance:

25. Gynaecological clearance (>35yo female):

26. Psychiatrist assessment (for psychiatric illness, adjustment difficulties (e.g. behavioral or adherence problems) :

27. Anesthetist review:

28. Hepatitis A and B vaccinations information

29. Further plan and management:

APPENDIX 14

UREA BREATH TEST

DATE:
TIME:

PATIENTS INFORMATION
Name _____
IC _____
RN number _____ **Tel number** _____

- UBT INDICATION
  Dyspepsia
  Post eradication assessment (at least 4 weeks post eradication)
  Others (specify)

- ENDOSCOPY UNIT LOCATION & CONTACT NUMBER

- PREPARATION BEFORE UBT

  - Antibiotics should be stopped 4 WEEKS before the test
    i. Bismuth
    ii. Amoxicillin
    iii. Clarithromycin or macrolides
    iv. Metronidazole
    v. Ciprofloxacin or levofloxacin

  - The following medications should be stopped 2 WEEKS before the test
    i. Omeprazole
    ii. Pantoprazole
    iii. Esomeprazole
    iv. Dexlansoprazole
    v. Lansoprazole
    vi. Sucralfate

  - The following medications should be stopped 2 DAYS before the test
    i. Ranitidine @ Cimetidine
    ii. Probiotics

  - The following medications should be stopped 1 DAY before the test
    i. MMT / Gelusil
    ii. Gaviscon

- PREPARATION ON THE DAY OF UBT
  - Do not eat or drink 6 HOURS before the test
  - Stop smoking or chewing gums 2 HOURS before the test

- AFTER THE UBT
  - The results of the test will be explained to you
  - If indicated, a course of antibiotics will be prescribed, and you will be

- Instructed to complete them accordingly
  - You may resume your meals
  - An appointment to the clinic will be given

APPENDIX 15

ANTIPLATELET AND ANTICOAGULANT IN ENDOSCOPY

1. Antiplatelet Agents
   i. Aspirin
      - Continue for almost all procedures (strong recommendation, low-quality evidence).
      - Exception: Ampullectomy—consider stopping on an individual basis.

   ii. $P2Y_{12}$ inhibitors (e.g., clopidogrel, ticagrelor, prasugrel)
      - Low-risk procedures: Continue them, whether single or dual therapy
      - High-risk procedures:
        - In low thrombotic-risk patients: stop 5–7 days before (clopidogrel/ticagrelor: 5 days; prasugrel: 7 days). Continue aspirin if on dual therapy.
        - In high thrombotic-risk (e.g., recent stent): continue aspirin and consult cardiology before stopping $P2Y_{12}$ agents

2. Anticoagulants
   i. Warfarin (VKAs)
      - Low-risk procedures: Continue warfarin; ensure INR remains within therapeutic range (< 3). If INR >5, defer and adjust.
      - High-risk procedures:
        - Low thrombotic-risk: Stop 5 days prior, check INR <1.5 before procedure.
        - High thrombotic-risk: Stop 5 days prior and bridge with LMWH—start LMWH 2 days after warfarin is stopped, omit last dose ≥24 hours pre-procedure, resume post-procedure until INR therapeutic again

   ii. DOACs (dabigatran, rivaroxaban, apixaban, edoxaban)
      - Low-risk procedures: Omit morning dose on the day of procedure.
      - High-risk procedures:
        - Low thrombotic-risk: Last dose 3 days before procedure. If dabigatran and CrCl 30–50 mL/min, delay last dose to 5 days prior.
        - High thrombotic-risk: Same pre-procedure timing; restart 2–3 days after

3. Resumption After Procedure
   - For antiplatelet or anticoagulant therapy interrupted for elective procedures, restart typically 2–3 days post-procedure, depending on bleeding and clotting risks

4. Acute GI Bleeding Context
   - Aspirin for secondary prevention: generally continue or restart once hemostasis is confirmed.
   - Dual antiplatelet therapy with coronary stents: continue if at all possible, coordinate with cardiology
   - Interrupt anticoagulants during acute bleeding, then correct coagulopathy appropriately (VKA reversal, DOAC management)

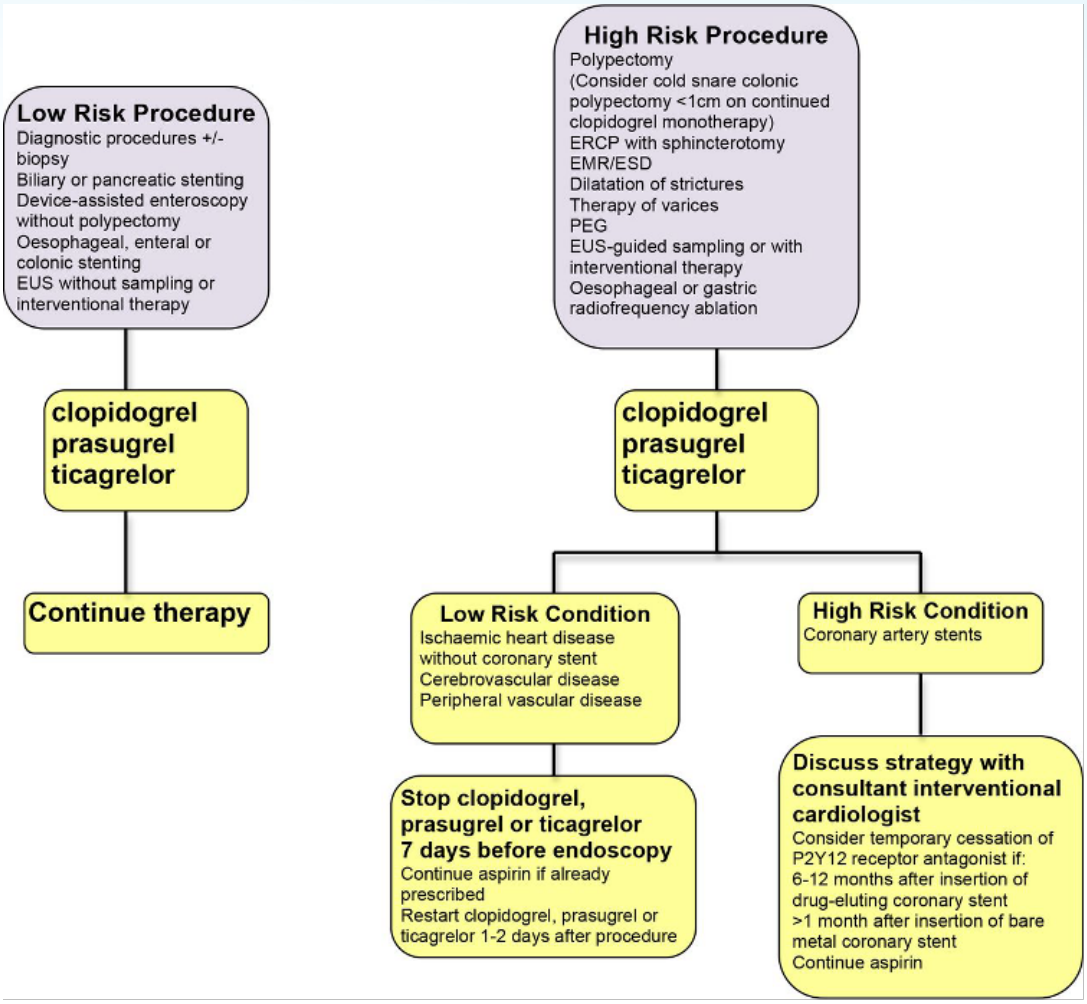


Figure 5 : Management of patients on P2Y12 receptor antagonist antiplatelet agents undergoing endoscopic procedures

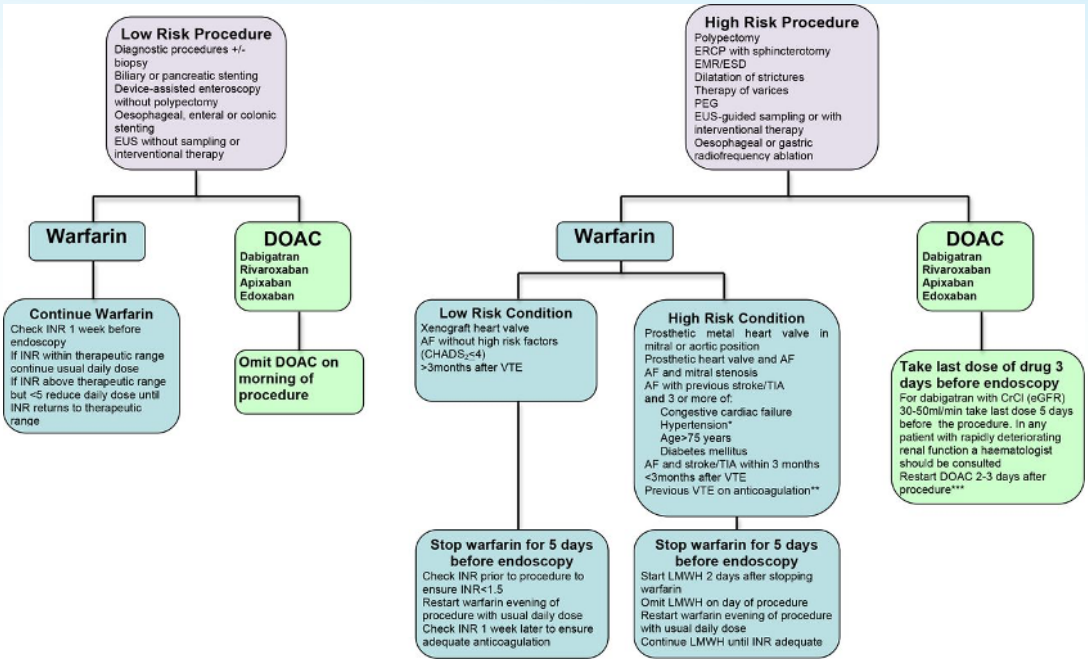


Figure 6 : Management of patients on anticoagulants undergoing endoscopic procedures

APPENDIX 16

ANTIBIOTIC PROPHYLAXIS IN ENDOSCOPY

1. Introduction.
   - Bacteraemia is common following some forms of gastrointestinal endoscopic therapy, such as dilatation or injection sclerotherapy, and can occur with diagnostic endoscopy alone.

Table 8: Classification of bacterial infectious risk levels for endoscopic procedures

Low-risk endoscopy	High-risk endoscopy
Diagnostic endoscopy with or without biopsy	Colonoscopy in a peritoneal dialysis patient, in combination with the aspiration of dialysate before the procedure
ERCP without suspected incomplete drainage	ERCP with suspected incomplete drainage
Diagnostic EUS-FNA/B (excluding mediastinal or pelvic cystic lesions, ascites, peritoneal nodules in ascites, pleural fluid)	PEG and jejunostomy
Endoscopic dilation	Endoscopy in peritoneal dialysis patients
Placement of digestive stent (excluding incomplete biliary drainage)	Endoscopic ultrasound with biliary-digestive or cysto-gastrostomy anastomosis
Esophagogastric and rectal radiofrequency	EUS-FNA/B of mediastinal or pelvic cystic lesions, ascites, peritoneal nodules in ascites, pleural fluid
Endoscopic mucosal resection or submucosal dissection	

Table 9: Antibiotics prophylaxis in gastrointestinal endoscopy

Endoscopic procedure	Administration modalities (products, initial dose, dosage and duration)
Low-risk endoscopy	No Antibiotic prophylaxis
ERCP with suspected incomplete drainage* EUS-FNA/B of ascites, peritoneal nodules in ascites or pleural fluid EUS with biliary-digestive anastomosis Cystogastrostomy	Administration of cefoxitin (2 g, slow IV, single dose) In the case of allergy, administration of gentamicin 6–7 mg/kg/day combined with metronidazole (1000 mg, slow IV, single dose) To be completed ideally 60 minutes before and no later than the start of the intervention
PEG	Administration of cefazolin (2 g, slow IV, single dose)
Peritoneal dialysis	Administration of AP 30 minutes before the procedure, including ampicillin (1 g) and a single dose of aminoglycoside In addition, complete drainage of all peritoneal dialysate before the endoscopic procedure should be performed according to the recommendations of the ISPD(International Society for Peritoneal Dialysis)

Reference : Antibiotic prophylaxis in digestive endoscopy: Guidelines from the French Society of Digestive Endoscopy

APPENDIX 17

SEDATION AND ANALGESIA

DRUG	DOSE	COMMENTS
Midazolam	Initial dose: 0.5-2 mg iv	· Sedative/hypnotic · Non analgesic · Induces amnesia · Good for prolonged sedation; may result in very prolonged sedation, particularly in the elderly · Increase the risk of respiratory depression when in association with opioid · Maximum effect at 3-5 minutes after administration · Duration of effect: 1-3 hours · Side-effects: respiratory depression, · hypotension
Pethidine	Initial dose: 20-50 mg iv	· An analgesic opioid with mild sedative effect · Maximum effect: at 10 minutes after administration · Duration of effect: 2-3 hours · Side effects: respiratory depression, hypotension, nausea, vomiting
Fentanyl	Initial dose: 50-100 mcg iv Dose: 25-50 mcg, repeated after 3-5 minutes if necessary, maximum of 100 mcg	· An analgesic opioid with mild sedative effect · Rapid onset of effect · Rapid recovery · Maximum effect: 5-8 minutes · Duration of effect: 1-3 hours · Side effects: respiratory depression · Less accumulation in renal failure

DRUG	DOSE	COMMENTS
Flumazenil	Initial dose: 0.2 mg iv over 15 sec. If after 45 sec, no response, administer 0.2 mg again over 1 min; may repeat at 1 min intervals; not to exceed total dose of 1 mg	· Reverse benzodiazepine-induced sedation · Doubtful or late efficacy in reversing benzodiazepine-induced respiratory depression · Maximum effect: 3-5 minutes · Duration of effect: 1-2 hours · Side-effects: re-sedation, seizures
Naloxone	0.4–4 mg IV initial dose Repeat q2–3 min PRN; not to exceed 0.01 mg/kg	· Reverses opioid-induced analgesia, opioid effects on the CNS, and respiratory depression · Maximum effect: 1-2 minutes · Duration of effect: 1-3 hours · Side-effects: pain, agitation, nausea, vomiting, tachycardia, arrhythmias, lung oedema, deprivation syndrome, renarcotization

APPENDIX 18

PATIENT INFORMATION SHEET - ESOPHAGOGASTRODUODENOSCOPY (OGDS)

Identification details
Procedure
An upper gastrointestinal (GI) endoscopy is where the doctor uses an instrument called an endoscope to look at the inside lining of your oesophagus (food pipe), stomach and duodenum (first part of the small intestine). This is done for patients with swallowing problems, nausea, vomiting, reflux, bleeding, indigestion, abdominal pain or chest pain.
Risks of OGDS and sedation
There are risks and complications with this procedure. They include but are not limited to the following. Common risks and complications include: ● Nausea and vomiting. ● Pain, redness or bruising at the sedation injection site (usually in the hand or arm). ● Allergy to medications given at time of the procedure. Uncommon risks and complications include: ● About 1 person in every 1,000 will ● experience bleeding from the oesophagus (food pipe), stomach and duodenum where a lesion or polyp was removed. This is usually stopped through the endoscope. Rarely, surgery is needed to stop bleeding. ● Damage to your teeth, jaw or throat due to ● the presence of instruments in your mouth. ● An existing medical condition that you may have getting worse. Rare risks and complications include: ● Missed abnormalities. ● About 1 person in every 10,000 will accidentally get a tear (perforation) in the esophagus, stomach or duodenum. This can cause a leak of stomach contents into the abdomen. If a tear occurs, you will be admitted to hospital for further treatment which may include surgery or therapy through the endoscope.

I have been given the following patient information form:

ESOPHAGEOGASTRODUODENOSCOPY (OGDS)

- I was able to ask questions and raise concerns with the doctor about my condition, the proposed procedure and its risks, and my treatment options. My questions and my concerns have been discussed and answered to my satisfaction.
- I understand I have the right to change my mind at any time, including after I have signed this form but, preferably following with my doctor.
- I understand that image/s or video/ s may be recorded during my procedure and that these image/s or video/ s will assist the doctor to provide appropriate treatment.

I request to have the procedure.

Name of Patient:

Signature:

Date:

Patients who lack capacity to provide consent
Consent must be obtained from a substitute decision maker.
Name of substitute decision maker: Signature: Relationship to patient: Date: I/C No:
Doctor's statement
I have explained to the patient all the above points under the patient consent section and I am of the opinion that the patient/substitute decision maker has understood the information. Name of Doctor: Designation: Signature: Date:

APPENDIX 19:

PATIENT INFORMATION SHEET -COLONOSCOPY

Identification details
Procedure
A colonoscopy is where the doctor uses an instrument called a colonoscope to look at the inside lining of your large bowel. This procedure starts from your back passage (anus) and goes up to the right side of your large bowel (caecum) and part of the small bowel (ileum). This is done to see if there are any growths, polyps or disease in your bowel. Small pieces of your bowel may need to be removed for pathology tests. This procedure may or may not require a sedative injection or anaesthetic. Dead arm' type feeling due to positioning with the procedure is usually temporary. An existing medical condition that you may already have getting worse. **Rare risks and complications include:** ● Missed abnormalities. ● Anaphylaxis (severe allergy) to medication given at the time of procedure. ● Heart and lung problems such as heart attack or vomit in the lungs causing pneumonia. Emergency treatment may be necessary.

Risks of colonoscopy and sedation

There are risks and complications with this procedure. They include but are not limited to the following.

Common risks and complications include:

- Mild pain and discomfort in the abdomen after the procedure. This usually settles with walking and moving around to get rid of the trapped air.
- Pain, redness or bruising at the sedation injection site (usually in the hand or arm).

Uncommon risks and complications include:

- About 1 person in every 1,000 will accidentally get a tear (perforation) to the bowel causing leakage of bowel contents into the abdomen. Therapy through the colonoscope may be needed to repair the tear failing which surgery may be required.
- About 1 person in every 100 will experience a significant bleed from the bowel where a polyp is removed. Further endoscopy, a blood transfusion or an operation may be necessary.
- Occasionally we may not be able to see the entire large bowel. This can happen if your bowel is not completely clean or the colonoscope could not be passed to the end of your large bowel.
- Missed polyps, growths or bowel disease.
- Change of anaesthetic from a sedative injection to a general anaesthetic.

I have been given the following patient information form:

COLONOSCOPY

- I was able to ask questions and raise concerns with the doctor about my condition, the proposed procedure and its risks, and my treatment options. My questions and my concerns have been discussed and answered to my satisfaction.
- I understand I have the right to change my mind at any time, including after I have signed this form but, preferably following with my doctor.
- I understand that image/s or video/ s may be recorded during my procedure and that these image/s or video/ s will assist the doctor to provide appropriate treatment.

I request to have the procedure.

Name of Patient:

Signature:

Date:

Patients who lack capacity to provide consent
Consent must be obtained from a substitute decision maker.
Name of substitute decision maker: Signature: Relationship to patient: Date: I/C No:
Doctor's statement
I have explained to the patient all the above points under the patient consent section and I am of the opinion that the patient/substitute decision maker has understood the information. Name of Doctor: Designation: Signature: Date:

APPENDIX 20:

PATIENT INFORMATION SHEET - CAPSULE ENDOSCOPY

Identification details
Procedure
A capsule endoscopy is where a pill-sized video capsule is swallowed. The capsule slowly travels through your digestive system, the same as food would normally travel. This capsule is disposable and usually passed within 24-48 hours. The capsule has its own built-in light source and camera to take pictures of the inside of your small bowel. 2-4 images are taken per second for up to 8 hours. The images are transmitted to a radio recorder that is worn around your waist. You should NOT remove the belt at any time during the procedure. This procedure is safe, easy to do, and permits examination of the entire small bowel. It does not require sedation as the procedure is usually painless. The capsule procedure does have some limitations. It does not allow any treatment such as removing a polyp. A further endoscopy procedure or surgery will be required for this.

Risks of complication of capsule endoscopy
There are risks and complications with this procedure. They include but are not limited to the following. **Common risks and complications include**: ● About 1 person in every 100 will have difficulty passing the capsule. This can be due to a narrowing (stricture) due to a tumour, inflammation or scarring from previous surgery. This is not usually serious in the short term, but surgery or another endoscopic procedure may sometimes be needed to remove it. **Uncommon risks and complications include:** ● Missed abnormalities. ● Incomplete study of the small bowel due to slow bowel function.

I have been given the following patient information form:

CAPSULE ENDOSCOPY

- I was able to ask questions and raise concerns with the doctor about my condition, the proposed procedure and its risks, and my treatment options. My questions and my concern have been discussed and answered to my satisfaction.
- I understand I have the right to change my mind at any time, including after I have signed this form but, preferably following with my doctor.
- I understand that image/s or videos may be recorded during my procedure and that these image/s or videos will assist the doctor to provide appropriate treatment.

I request to have the procedure.

Name of Patient:

Signature:

Date:

Patients who lack capacity to provide consent
Consent must be obtained from a substitute decision maker.
Name of substitute decision maker: Signature: Relationship to patient: Date: I/C No:
Doctor's statement
I have explained to the patient all the above points under the patient consent section and I am of the opinion that the patient/substitute decision maker has understood the information. Name of Doctor: Designation: Signature: Date:

APPENDIX 21

PATIENT INFORMATION SHEET- ENTEROSCOPY

Identification details
Procedure
Enteroscopy is a procedure where the doctor uses an instrument called an endoscope to look at the small bowel. It can be performed via the mouth or the back passage (anus). It is done to rule out any disease in the small bowel. This procedure may or may not require a sedative injection or anaesthetic.

Risks of complication of enteroscopy

There are risks and complications with this procedure. They include but are not limited to the following.

Common risks and complications include:

- Nausea and vomiting.
- Faintness or dizziness, especially when you start to move around.
- Pain, redness or bruising at the sedation injection site (usually in the hand or arm).
- Allergy to medications given at time of the procedure.

Uncommon risks and complications include:

- About 1 person in every 1,000 will experience bleeding where a lesion or polyp was removed. This is usually stopped through the endoscope. Rarely, surgery is needed to stop bleeding
- Damage to your teeth, jaw or throat due to the presence of instruments in your mouth.
- An existing medical condition that you may have getting worse.
- About 1 in 100 people will get swelling and inflammation of the pancreas (pancreatitis).
- This may need pain relief. This usually settles over the next 24- 48 hours. It can be severe and need further treatment, which may result in admission to hospital.

Rare risks and complications include:

- Missed polyps or growths.
- About 1 person in every 10,000 will accidentally get a tear (perforation) in the oesophagus, stomach or duodenum. This can cause a leak of stomach contents into the abdomen. If a tear occurs, you will be admitted to hospital for further treatment which may include surgery or therapy through their endoscope.
- 'Dead arm' type feeling due to positioning with the procedure - usually temporary.
- Anaphylaxis (severe allergy) to medication given at the time of procedure.
- Heart and lung problems such as heart attack or vomit in the lungs causing pneumonia.

I have been given the following patient information form:

ENTEROSCOPY

BOWEL PREPARATION FOR ENTEROSCOPY

- I was able to ask questions and raise concerns with the doctor about my condition, the proposed procedure and its risks, and my treatment options. My questions and my concerns have been discussed and answered to my satisfaction.
- I understand I have the right to change my mind at any time, including after I have signed this form but, preferably following with my doctor.
- I understand that image/s or video/ s may be recorded during my procedure and that these image/s or video/ s will assist the doctor to provide appropriate treatment.

I request to have the procedure.

Name of Patient:

Signature:

Date:

Patients who lack capacity to provide consent
Consent must be obtained from a substitute decision maker.
Name of substitute decision maker: Signature: Relationship to patient: Date: I/C No:
Doctor's statement
I have explained to the patient all the above points under the patient consent section and I am of the opinion that the patient/substitute decision maker has understood the information. Name of Doctor: Designation: Signature: Date:

APPENDIX 22

PATIENT INFORMATION SHEET - ENDOSCOPIC RETROGRADE CHOLANGIOPANCEATOGRAPHY (ERCP)

Identification details
Procedure
An ERCP is where the doctor examines the tubes (ducts) that drain your liver, pancreas and gallbladder. You will lie on the x-ray table on your tummy. The doctor will pass the endoscope into the food pipe, stomach and the small bowel. A fine plastic tube will be passed inside the endoscope into the liver and/or pancreas. Contrast material (dye) will be injected and x- rays taken. The doctor may then remove stones to relieve duct blockage or insert stents (plastic/metal devices) as appropriate. This procedure may or may not require a sedative injection or anaesthetic.

Risks of ERCP and sedation

There are risks and complications with this procedure. They include but are not limited to the following.

Common risks and complications include:

- About **1-7 people out of every 100 people** will get swelling and inflammation of the pancreas (pancreatitis). This may need pain relief. This usually settles over the next 24-48 hours. It can be severe and need further treatment, which may result in admission to hospital.
- Nausea and vomiting.
- Pain, redness or bruising at the sedation injection site (either in the hand or arm).
- Allergy to medications given at time of the procedure.

Uncommon risks and complications include:

- Less than **1 person in every 100** will have a bleed as a result of the procedure. This can happen if a cut is made in the duct to remove a stone. This is usually stopped through the endoscope.
- About **1 person in every 100** will have a tear through the bowel or duct wall. This complication may sometimes require surgery or further therapy through the endoscope.
- Bacteraemia (infection of the blood) or cholangitis (infection of the bile). This will need antibiotics.
- The procedure may not be able to be finished due to technical problems.
- Change of anaesthetic from a sedative injection to a general anaesthetic.
- Dead arm' type feeling due to positioning with the procedure - usually temporary.
- An existing medical condition that you may have gotten worse.

Rare risks and complications include:

- Missed abnormalities.
- Anaphylaxis (severe allergy) to medication given at the time of procedure.
- Heart and lung problems such as heart attack or vomit in the lungs causing
- pneumonia. Emergency treatment may be necessary.
- Death as a result of complications to this procedure is rare.

I have been given the following patient information form:

ENDOSCOPIC RETROGRADE CHOLANGIOPANCEATOGRAPHY (ERCP)

- I was able to ask questions and raise concerns with the doctor about my condition, the proposed procedure and its risks, and my treatment options. My questions and my concerns have been discussed and answered to my satisfaction.
- I understand I have the right to change my mind at any time, including after I have signed this form but, preferably following with my doctor.
- I understand that image/s or video/ s may be recorded during my procedure and that these image/s or video/ s will assist the doctor to provide appropriate treatment.

I request to have the procedure.

Name of Patient:

Signature:

Date:

Patients who lack capacity to provide consent
Consent must be obtained from a substitute decision maker.
Name of substitute decision maker: Signature: Relationship to patient: Date: I/C No:
Doctor's statement
I have explained to the patient all the above points under the patient consent section and I am of the opinion that the patient/substitute decision maker has understood the information.   Name of Doctor: Designation: Signature: Date:

APPENDIX 23

PATIENT INFORMATION SHEET - ENDOSCOPIC ULTRASOUND (EUS)

Identification details
Procedure
An endoscopic ultrasound (EUS) is where the doctor uses an instrument called an endoscope, which has an ultrasound probe at its tip to examine the wall layers (inside and outside) of the upper and lower gastrointestinal tract. It also provides excellent pictures of your pancreas, bile ducts and organs in your chest. The EUS allows a fine needle biopsy (sample) of tissue to be taken inside or outside the wall of the gut. Further therapy may be performed as appropriate. This procedure may or may not require a sedative injection or anaesthetic.

Risks of EUS and sedation

There are risks and complications with this procedure. They include but are not limited to the following.

Common risks and complications include:

- Nausea and vomiting.
- Faintness or dizziness, especially when you start to move around.
- Pain, redness or bruising at the sedation injection site (usually in the hand or arm).
- Allergy to medications given at time of the procedure.

Uncommon risks and complications include:

- About 2 people in every 100 will get an infection from a fine needle biopsy/aspiration of a cyst. Antibiotics are given during and after the procedure to reduce the risk of this complication.
- About 1 person in every 100 will experience pancreatitis. This usually settles without specific treatment.
- About 2 people in every 1,000 will have minor bleeding from the gut where the fine needle biopsy was taken. This can usually be stopped through the endoscope. Rarely, surgery is needed to stop the bleeding.
- About 1 person in every 1,000 will experience bleeding from the oesophagus (food pipe), stomach and duodenum where a lesion or polyp was removed. This is usually stopped through the endoscope. Rarely, surgery is needed to stop bleeding.
- Heart and lung problems such as heart attack or vomit in the lungs causing pneumonia. Emergency treatment may be necessary.
- Damage to your teeth, jaw or throat due to the presence of instruments in your mouth.
- An existing medical condition that you may have getting worse.

Rare risks and complications include:

- Missed abnormalities.
- About 1 person in every 10,000 will accidentally get tear (perforation) in the oesophagus, stomach or duodenum. This can cause a leak of stomach contents into the abdomen. If a tear occurs, you will be admitted to hospital for further treatment which may include surgery or therapy through the endoscope.
- Dead arm type feeling due to positioning with the procedure usually temporary.
- Anaphylaxis (severe allergy) to medication given at the time of procedure.

I have been given the following patient information form:

ENDOSCOPIC ULTRASOUND (EUS)

- I was able to ask questions and raise concerns with the doctor about my condition, the proposed procedure and its risks, and my treatment options. My questions and concerns have been discussed and answered to my satisfaction.
- I understand I have the right to change my mind at any time, including after I have signed this form but, preferably following a discussion with my doctor.
- I understand that image/s or video/s may be recorded as part of and during my procedure and that these image/s or video/s will assist the doctor to provide appropriate treatment.

I request to have the procedure.

Name of Patient:

Signature:

Date:

Patients who lack capacity to provide consent
Consent must be obtained from a substitute decision maker.
Name of substitute decision maker: Signature: Relationship to patient: Date: I/C No:
Doctor's statement
I have explained to the patient all the above points under the patient consent section and I am of the opinion that the patient/substitute decision maker has understood the information. Name of Doctor: Designation: Signature: Date:

APPENDIX 24

PATIENT INFORMATION SHEET - ENDOSCOPIC SUBMUCOSAL DISSECTION (ESD)

I have been given the following patient information form:

ENDOSCOPIC SUBMUCOSAL DISSECTION (ESD)

- I was able to ask questions and raise concerns with the doctor about my condition, the proposed procedure and its risks, and my treatment options. My questions and my concerns have been discussed and answered to my satisfaction.
- I understand I have the right to change my mind at any time, including after I have signed this form but, preferably following with my doctor.
- I understand that image/s or video/ s may be recorded during my procedure and that these image/s or video/ s will assist the doctor to provide appropriate treatment.

I request to have the procedure.

Name of Patient:

Signature:

Date:

Patients who lack capacity to provide consent
Consent must be obtained from a substitute decision maker.
Name of substitute decision maker: Signature: Relationship to patient: Date: I/C No:
Doctor's statement

I have explained to the patient all the above points under the patient consent section and I am of the opinion that the patient/substitute decision maker has understood the information.

Name of Doctor:
Designation:

Signature:

Date:

APPENDIX 25

PATIENT INFORMATION SHEET - PERCUTANEOUS ENDOSCOPIC GASTROSTOMY (PEG) TUBE

I have been given the following patient information form:

PERCUTANEOUS ENDOSCOPIC GASTROSTOMY (PEG) TUBE

- I was able to ask questions and raise concerns with the doctor about my condition, the proposed procedure and its risks, and my treatment options. My questions and my concerns have been discussed and answered to my satisfaction.
- I understand I have the right to change my mind at any time, including after I have signed this form but, preferably following with my doctor.
- I understand that image/s or video/ s may be recorded during my procedure and that these image/s or video/ s will assist the doctor to provide appropriate treatment.

I request to have the procedure.

Name of Patient:

Signature:

Date:

Patients who lack capacity to provide consent
Consent must be obtained from a substitute decision maker.
Name of substitute decision maker: Signature: Relationship to patient: Date: I/C No:

Doctor's statement
I have explained to the patient all the above points under the patient consent section and I am of the opinion that the patient/substitute decision maker has understood the information. Name of Doctor: Designation: Signature: Date:

APPENDIX 26

PATIENT INFORMATION SHEET - LIVER BIOPSY

Identification details
Procedure
Liver biopsy is a procedure that involves taking a small piece of liver tissue which is sent to the laboratory for analysis. The purpose of a liver biopsy is to investigate the cause of liver disease and also to assess the stage of the disease.

Risks of liver biopsy

There are risks and complications with this procedure. They include but are not limited to the following.

- **Pain at the biopsy site** can be experienced by around **25 people in every 100**. This pain is usually not severe and lasts for several hours. It can be treated with pain relievers such as paracetamol. If severe pain occurs, complications may have occurred and the doctor needs to be informed.
- **Low blood pressure due to vasovagal attack** in **10 people in every 100 cases** – can happen especially after liver biopsy causing sensation of near fainting. However it will be transient and can be treated by intravenous fluids. If prolonged it may be due to bleeding.
- **Bleeding** in **3 people in every 1000** patients. Usually the bleeding can be detected within 4 hours after the liver biopsy. Most of the time it will be self limiting, if prolonged blood transfusion may be given. Surgical intervention or angiography may be needed if the bleeding is severe.
- **Bile peritonitis (0.1%).** The liver and gallbladder contains bile. Injury to bile ducts may cause bile leak into the abdomen causing abdominal pain. Bile peritonitis usually heals spontaneously but sometimes surgery is needed to remove the gallbladder
- Infection - some patients are susceptible to infection because bacteria in the bile duct may spill into the bloodstream causing fever. Treatment is antibiotic.
- Internal organ injury – biopsy needle may cause injury to surrounding organs such as lung, kidney, small bowel. Usually this rarely leads to serious problems.
- Death can occur in **1 in 1000** to **1 in 10,000** cases of liver biopsy and is often caused by severe bleeding.

Post procedure advice

- Do not do heavy work for 5 to 7 days. Avoid lifting heavy objects weighing more than 5 kg.
- If you experience any of the symptoms listed after a liver biopsy, seek medical help right away:
    - Shortness of breath
    - Severe pain at biopsy site or at the shoulder
    - Chest pain
    - Fever
    - Abdominal pain
    - Feeling weak
    - Dizziness or fainting

I have been given the following patient information form:

LIVER BIOPSY

- I was able to ask questions and raise concerns with the doctor about my condition, the proposed procedure and its risks, and my treatment options. My questions and my concerns have been discussed and answered to my satisfaction.
- I understand I have the right to change my mind at any time, including after I have signed this form but, preferably following with my doctor.
- I understand that image/s or video/ s may be recorded during my procedure and that these image/s or video/ s will assist the doctor to provide appropriate treatment.

I request to have the procedure.

Name of Patient:

Signature:

Date:

Patients who lack capacity to provide consent
Consent must be obtained from a substitute decision maker.
Name of substitute decision maker: Signature: Relationship to patient: Date: I/C No:
Doctor's statement
I have explained to the patient all the above points under the patient consent section and I am of the opinion that the patient/substitute decision maker has understood the information. Name of Doctor: Designation: Signature: Date:

APPENDIX 27

PATIENT INFORMATION SHEET - HIGH RESOLUTION ESOPHAGEAL MANOMETRY PREPARATION GUIDE

NAME : _____
IC / RN NUMBER : _____
INDICATION : _____

PREPARATION

- The following medications must be stopped at least 2 days prior to the procedure

Type of medication	Example
Opioid Analgesics	Tramadol, Codeine, Morphine
Sedatives	Midazolam, Diazepam
Antispasmodics	Hyoscine (Buscopan)
Prokinetics	Erythromycin, Metoclopramide, Domperidone, Itopride
Proton Pump Inhibitors	Pantoprazole, Esomeprazole, Lansoprazole

- Kindly ask the doctor or the endoscopy staff should you have further questions about a specific medication or the procedure
- **You need to start fasting (DO NOT EAT OR DRINK)** after midnight until the test is over
- Other medications including antihypertensives or diabetic medications can be consumed up to **2 hours** prior

PROCEDURE

- The doctor will spray one of the nostrils with local anesthesia before inserting a catheter into the esophagus which is then connected to the manometry system.
- During the procedure, you will be asked to swallow sips of water as part of the test
- In certain situations, you will be given food too as part of the test
- The catheter is removed upon completion

RISK

- There is a small risk of nasal bleeding / soreness and irritation.

PATIENT'S STATEMENT

- I have been given the following patient information sheet
- I was able to ask questions and raise concerns with the doctor about my condition, the proposed procedure and its risks, and my treatment options.
- My questions and concerns have been discussed and answered to my satisfaction.
- I understand I have the right to change my mind at any time, including after I have signed this form but, preferably following a discussion with my doctor.

Name of Patient / Next of Kin : _____
Relationship to patient : _____
I/C No : _____
Date : _____
Signature : _____

DOCTOR'S STATEMENT

I have explained to the patient all the above points under the patient consent section and I am of the opinion that the patient/substitute decision maker has understood the information.

Name of Doctor : _____
Designation : _____
Date : _____
Signature : _____

APPENDIX 28

PATIENT INFORMATION SHEET - 24 HOUR pH IMPEDANCE STUDY PREPARATION GUIDE

PREPARATION

- The doctor will request for this test depending on the indication
- It may be performed either ON PPI or OFF PPI

Type of medication	Examples	Duration to withhold
PPI	Esomeprazole Omeprazole Lansoprazole Pantoprazole Rabeprazole	7 days before procedure
Mucosal Protective Agents	Sucralfate	
Drugns with prokinetic effect	Metoclopramide Erythromycin Itopride Domperidone	
Antacids	Ranitidine Famotidine Gaviscon MMT	24 Hours before procedure

- Kindly ask the doctor or the endoscopy staff if you have further questions regarding the procedure or additional medications to withhold
- You need to start fasting (DO NOT EAT OR DRINK) after midnight
- On the day of the test, its advisable to wear a shirt or blouse which opens in the front. This is to facilitate the probe placement and to dress once the probe is placed.

PROCEDURE:

- The doctor will spray one of the nostrils with local anaesthesia before inserting the catheter/ probe into the esophagus which is then connected to the portable recording device which you will wear at your waist and carry on your daily chores
- A diary will be provided and you should document accurately the symptoms, food intake and activities such as eating or sleeping in the diary
- The probe is removed after 24 hours
- The results will be interpreted and briefed during the next appointment

RISK

- There is a small risk of nasal bleeding, soreness or irritation

PATIENT'S STATEMENT

- I have been given the following patient information sheet
- I was able to ask questions and raise concerns with the doctor about my condition, the proposed procedure and its risks, and my treatment options.
- My questions and concerns have been discussed and answered to my satisfaction.
- I understand I have the right to change my mind at any time, including after I have signed this form but, preferably following a discussion with my doctor.

Name of Patient / Next of Kin : _____
Relationship to patient : _____
I/C No : _____
Date : _____
Signature : _____

DOCTOR'S STATEMENT

I have explained to the patient all the above points under the patient consent section and I am of the opinion that the patient/substitute decision maker has understood the information.

Name of Doctor : _____
Designation : _____
Date : _____
Signature : _____

APPENDIX 29

PATIENT INFORMATION SHEET - HIGH RESOLUTION ANORECTAL MANOMETRY PREPARATION GUIDE

NAME : _____
IC / RN NUMBER : _____
INDICATION : _____

PREPARATION

- Ideally the procedure is performed in an empty rectum. It is highly recommended to have a bowel movement prior to the procedure
- If your rectum is filled with feces, you will be given an enema prior to the procedure
- You DO NOT NEED TO FAST; you may eat or drink up to the time of the procedure
- Other medications including antihypertensives or diabetic medications can be continued as usual
- Please ask the Doctor / GIA
  - if you need an enema
  - should you have further questions about a specific medication or the procedure

PROCEDURE

- The doctor will insert a thin catheter into the rectum; about 12-15cm in length and fixed with a plaster
- There will be a balloon attached to the tip of the catheter
- During the procedure, you will be asked to perform certain maneuvers such as push, squeeze, cough and assessment of the rectal sensation when the balloon is inflated with air according to a set of protocol
- The catheter is removed upon completion
- Subsequently, a catheter attached to a balloon is inserted. 50mls of water will be inflated and you will be requested to sit on a commode and try to expel the balloon out
- The whole procedure takes about 30 minutes

RISK

- Mild anal discomfort
- Slight bleeding which resolves on its own

PATIENT'S STATEMENT

- I have been given the following patient information sheet
- I was able to ask questions and raise concerns with the doctor about my condition, the proposed procedure and its risks, and my treatment options.
- My questions and concerns have been discussed and answered to my satisfaction.
- I understand I have the right to change my mind at any time, including after I have signed this form but, preferably following a discussion with my doctor.

Name of Patient / Next of Kin : _____
Relationship to patient : _____
I/C No : _____
Date : _____
Signature : _____

DOCTOR'S STATEMENT

I have explained to the patient all the above points under the patient consent section and I am of the opinion that the patient/substitute decision maker has understood the information.

Name of Doctor : _____
Designation : _____
Date : _____
Signature : _____

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