

# Malaysian Gastro-Intestinal Registry



**1st Report 2009**

**Includes Endoscopic Procedures from  
National Endoscopy Registry (NER)**



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## FOREWORD

Endoscopy in Malaysia first began primarily as a surgical discipline. It has gradually evolved to embrace both Medical and Surgical gastroenterology. The practice of both diagnostic and therapeutic endoscopy is observed in hospitals and clinics in both the government and private sectors. The organization of endoscopic units varies widely in complexity throughout Malaysia. Such units are well developed in accredited centres for Gastroenterology in both the Ministry of Health and the Ministry of Education as well as in certain well established private hospitals.

There has been a dearth of information and literature with respect to diagnostic and therapeutic endoscopy in Malaysia as a whole. Thus far isolated reports and studies on the various facets of endoscopic practice have come from established endoscopic units in the Ministry of Health and the Ministry of Education. There is thus an urgent need to gather information from multiple endoscopic centres in Malaysia so that a clearer picture arises regarding endoscopic practice as a whole. Ideally this method of gathering information should embrace each and every accredited endoscopic unit in the country. This need spawned the concept of a National Endoscopic Registry (NER) under the umbrella of the Malaysian Gastrointestinal Registry (MGIR).

The broad objective of the NER was to establish the pattern of both diagnostic and therapeutic gastrointestinal (GI) endoscopic practice in Malaysia. This would encompass studying the full spectrum of findings related to all aspects of diagnostic upper and lower GI endoscopy, including gastroscopy, enteroscopy and colonoscopy. In addition, it would also provide valuable information on the full spectrum of therapeutic endoscopy including gastroscopy, enteroscopy, colonoscopy, and ERCP (Endoscopic Retrograde Cholangio- Pancreatography). In the fullness of time data on newer and evolving technologies in GI endoscopy such as EUS (Endoscopic Ultrasonography) and Video Capsule Endoscopy will also be included. Such information would be invaluable in recording epidemiological time trends in GI disease as well as in the practice of GI endoscopy in Malaysia. The format of the NER presents us with a unique opportunity to study specific aspects of GI disease and GI endoscopy thus far unavailable in Malaysia. It is therefore imperative that every effort be made to ensure the continuity of this invaluable registry as it will clearly have a profound impact on the practice of GI endoscopy in this country.

Dr. Jayaram Menon FRCP

Chairman

Gastroenterology Fellowship Committee and National Adviser for Gastroenterology

Ministry of Health Malaysia

1 October 2009

## ABBREVIATIONS

MOH	Ministry Of Health
MGIR	Malaysian Gastrointestinal Registry
NER	National Endoscopy Registry
OGDS	Oesophagogastroduodenoscopy
ERCP	Endoscopic Retrograde Cholangiopancreatography
EUS	Endoscopic Ultrasound
CT	Computed Tomography
MRI	Magnetic Resonance Imaging
FNA	Fine Needle Aspiration
SDP	Source Data Producers

## REPORT SUMMARY

The Malaysian Gastrointestinal Registry (MGIR) was established in September 2009. This report includes the first analysis of the National Endoscopy Registry that is a part of the MGIR. The data analysed were collected over a period of 9 months from September 2008 till May 2009. There were a total of 6 participating centers in the Ministry of Health:

1. Hospital Kuala Lumpur
2. Hospital Queen Elizabeth, Kota Kinabalu
3. Hospital Sultanah Aminah, Johor Bahru
4. Hospital Sultanah Bahiyah, Alor Setar
5. Hospital Selayang
6. Hospital Raja Perempuan Zainab 11, Kota Baru

A total of 16447 patients underwent Gastrointestinal Endoscopy with 55.4% males and 44.6% females. The most common procedure was OGDS (10037) followed by Colonoscopy (4522), ERCP (1159), Endoscopic Ultrasound (615). There were other procedures (127) performed such as Capsule Endoscopy, Double and Single ballon Enteroscopy.

The most common indication for OGDS was Dyspepsia followed by Upper Gastrointestinal bleeding. GERD symptoms are not a common indication for OGDS in Malaysian patients.

The 3 main indications for colonoscopy were alteration in bowel habit, unexplained GI bleeding and surveillance for colonic neoplasia. A total of 259 cases of colorectal carcinoma were detected. The majority of cases were detected in the above 50-age group and the commonest sites were the rectum followed by the sigmoid colon.

The common indications for performing ERCP were bile duct stones, obstructive jaundice and dilated biliary system noted on imaging. The majority of cases were therapeutic with sphincterotomy, stone extraction and stenting being the most common procedures performed.

Endoscopic Ultrasound is a relatively new procedure and has both diagnostic and therapeutic capabilities. It is an important tool for staging upper GI malignancy and assessment of pancreatic lesions. EUS is often performed to obtain tissue via fine needle aspiration. This is to confirm a malignant lesion, guide palliative therapy and rule out possible diagnosis such as lymphoma and tuberculosis.

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## CHAPTER 1 : ORGANIZATION OF NER

### 1.1 BACKGROUND

MGIR consists of National Endoscopy Registry (NER) and the Colorectal started recruiting patients who undergo GI endoscopy from 1<sup>st</sup> September 2008. It is a timely event to provide the real world view of clinical practice and patient outcomes. The evidence from the registry data will support our policy and clinical decision-making in improving access to treatment and in improving the provision and delivery of clinical services in Malaysia.

### 1.2 GENERAL OBJECTIVES OF MGIR

1. To establish and maintain a web based gastrointestinal health information system on natural history of gastrointestinal diseases including those of public health importance. The information may be used in the planning and evaluation of gastrointestinal care services.
2. To assess the outcomes of gastrointestinal care including the evaluation of various forms of treatments available, its effectiveness and associated complications, costs and effectiveness in delivery of care
3. To provide information necessary to evaluate Gastrointestinal services through quality assurances of services used in treatment of gastrointestinal diseases. This contributes to continuous quality initiatives.
4. To facilitate research on gastrointestinal diseases in Malaysia

### 1.3 SPECIFIC OBJECTIVES OF DATABASES UNDER MGIR

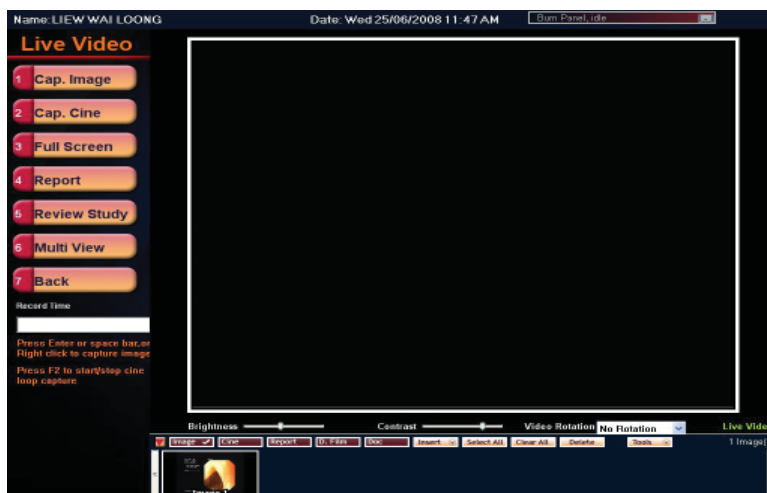
#### 1.3.1 National Endoscopic Registry

1. To study the pattern of diagnostic and therapeutic gastrointestinal endoscopy in Malaysia
2. To study the endoscopic presentation of common gastrointestinal diseases in Malaysia
3. To identify the Epidemiological pattern of Gastrointestinal diseases in Malaysia
4. To ascertain the gastrointestinal disease burden in Malaysia

### 1.4 NER SYSTEM & IT'S WORKFLOW

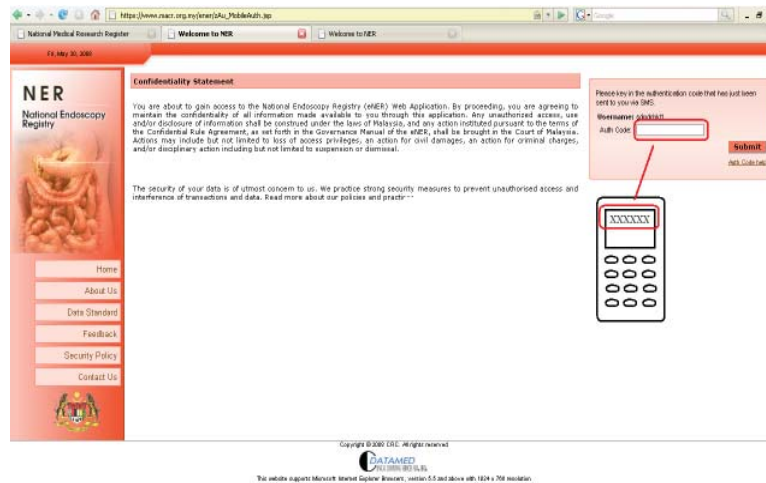
The system comprises of two parts i.e.

1. Report Pro Family software – image capturing software
  - Register patient and study (procedure OGDS / ERCP / Colonoscopy /.)
  - Capture procedure image
  - Print image



## 2. NER Web application

- Go to [www.acrm.org.my](http://www.acrm.org.my) and click on NER
- Login to NER
- Select patient and fill up NER Notification and relevant procedure form.
- Print out report



## 1.5 DATA COLLECTION

The 6 source data providers were

1. Hospital Queen Elizabeth, Sabah
2. Hospital Sultanah aminah Johor Baharu
3. Hospital Kuala Lumpur
4. Hospital Selayang
5. Hospital Raja Perempuan Zainab 11 Kota Bahru
6. Hospital Sultanah Bahiyah, Alor Setar



## CHAPTER 2 : DEMOGRAPHICS

### 2.1 INTRODUCTION

#### *Participating Centres*

For the period September 2008 – November 2009, there were a total of 6 participating centres in the Ministry of Health, Malaysia. These were Hospital Sultanah Aminah, Johor Bahru ( 4093 patients), Hospital Queen Elizabeth, Kota Kinabalu ( 3643 patients), Hospital Selayang, Selangor ( 2893 patients), Hospital Kuala Lumpur ( 2416 patients), Hospital Sultanah Bahiyah, Alur Setar ( 2137 patients) and Hospital Raja Perempuan Zainab II, Kota Bharu (1265 patients)(*Table 2.1*). These accredited endoscopy units contributed 24.89%, 22.15%, 17.59%, 14.69%, 12.99% and 7.69% respectively of the total patient load. As these centres were located in both East and West Malaysia, they were a fair representation of endoscopic practice in the Ministry of Health, Malaysia. In all a total of 16 447 patients underwent GI endoscopy in these 6 centres over a period of 9 months. (*Table 2.1*).

**Table 2.1** : Reporting centres

Reporting Centre	No.	%
Hospital Sultanah Bahiyah	2137	12.99
Hospital Kuala Lumpur	2416	14.69
Hospital Queen Elizabeth	3643	22.15
Hospital Raja Perempuan Zainab II	1265	7.69
Hospital Selayang	2893	17.59
Hospital Sultanah Aminah	4093	24.89
<b>Total</b>	<b>16447</b>	<b>100</b>

### 2.2 SOURCE OF REFERRAL

It is interesting to note that the vast majority of referrals for GI Endoscopy in these MOH centres were primarily internal (90.61%) (*Table 2.2.1*). Only 5.02% of referrals came from outside the particular hospital. These external sources of referral were mainly from Government hospitals without specialists (43.39%), Government hospitals with specialists (21.7%) and Government Health Clinics (7.39%). There were fewer referrals from the private sector i.e. Private hospitals (7.15%) and private clinics (1.82%) (*Table 2.2.2*).

**Table 2.2.1** : Source type

Source	No.	%
Internal	14903	90.61
External	825	5.02
Not Available	719	4.37
<b>Total</b>	<b>16447</b>	<b>100</b>

**Table 2.2.2 :** Hospital type (Section II no 6, External, ii)

Hospital Type	No.	%
Government Hospital with specialist	179	21.7
Government Hospital without specialist	358	43.39
Government Health Clinic	61	7.39
Private Hospital	59	7.15
Private Clinic	15	1.82
Not Available	153	18.55
<b>Total</b>	<b>825</b>	<b>100</b>

### 2.3 GENDER OF PATIENTS

A total of 9111 males (55.4%) and 7336 (44.6%) females underwent GI endoscopy during this period (*Table 2.3*). The proportion of male to female patients undergoing GI endoscopy in these centres was 1.2 : 1 suggesting that there was an almost equal distribution of male and female patients undergoing GI endoscopy.

**Table 2.3 :** Gender group

Gender	No.	%
Male	9111	55.4
Female	7336	44.6
<b>Total</b>	<b>16447</b>	<b>100</b>

### 2.4 ETHNIC GROUPS

The vast majority of patients belonged to the three main ethnic groups in Malaysia viz. the Malays (40.91%), Chinese (30.58%) and Indians (11.18%). This was followed by the Kadazans (4.69%), Bajau (2.38%), Murut (0.49%), Iban (0.09%), Orang Asli (0.06%), Melanau (0.01%) and Bidayuh (0.01%). Interestingly other Malaysians contributed 8.27% while foreigners accounted for 1.3% (*Table 2.4*).

**Table 2.4 :** Ethnic group

Ethnic Group	No.	%
Malay	6728	40.91
Chinese	5030	30.58
Indian	1838	11.18
Orang Asli	10	0.06
Kadazan	771	4.69
Melanau	2	0.01
Murut	81	0.49
Bajau	391	2.38
Bidayuh	2	0.01
Iban	15	0.09
Other Malaysian	1360	8.27
Foreigner	213	1.3
Not Available	6	0.04
<b>Total</b>	<b>16447</b>	<b>100</b>

## 2.5 AGE GROUPS

The large majority of patients undergoing GI endoscopy were between 50-60 years of age (24.33%) and 60-70 years of age (22.26%) (Table 2.5). This was followed by the 40-50 year age group (16.41%) and the 70-80 year age group (15.67%). The mean age was 55.2 while the median age was 56.8 years. Middle-aged and elderly adults therefore contributed to the bulk of the endoscopy workload. This has important implications in the context of a rapidly aging population. Young adults accounted for a smaller proportion of endoscopies viz. 30-40 years (8.54%) and 20-30 years (6.48%). The adolescent population, i.e. 10-20 year age group, accounted for 2.19% while the paediatric age group below the age of 10 accounted for only 0.28%. Paediatric gastroenterology is only beginning to evolve in Malaysia.

**Table 2.5 :** Age group

Age Group (Years)	No.	%
0-<10	46	0.28
10-<20	361	2.19
20-<30	1066	6.48
30-<40	1404	8.54
40-<50	2699	16.41
50-<60	4002	24.33
60-<70	3661	22.26
70-<80	2578	15.67
>=80	630	3.83
<b>Total</b>	<b>16447</b>	<b>100</b>

## 2.6 TYPE OF ENDOSCOPIC PROCEDURES PERFORMED

A total of 16 447 endoscopic procedures were performed over the 9 month period from September 2008 till May 2009 in these 6 centres. Of these the vast majority (60.95%) were OGDS ( Oesophagogastroduodenoscopies ) while colonoscopies accounted for 27.49% (Table 2.6). ERCP accounted for 7.05% while EUS accounted for only 3.74%. Other procedures , which include enteroscopy and capsule endoscopy, only accounted for only 0.77%. Hence the majority of GI endoscopic procedures revolved mainly around upper and lower GI endoscopies. This appears to be the pattern of practice.

**Table 2.6 :** Procedures selected (Section IV no 1)

Procedures	No.	%
OGDS	10024	60.95
ERCP	1159	7.05
Colonoscopy	4522	27.49
EUS	615	3.74
Others	127	0.77
<b>Total</b>	<b>16447</b>	<b>100</b>

## 2.7 INDICATION BY AGE DISTRIBUTION

In general, the main indications for GI endoscopy were similar across all age groups. (Table 2.7). The proportion of OGDS by age group varied between 56.98% for the 30-40 yrs age group to 69.57% for those below 10yrs of age with an average of 61.03% for all age groups. The proportion of colonoscopies varied between 22.7% for the 20-30 yrs age group to 31.69% for the 70-80 yrs age group with an average of 27.54% for all age groups. The proportion of ERCPs varied between 4.35% in those below 10yrs of age to 8.16% in the 20-30yrs age group with an average of 7.05% across all age groups.

**Table 2.7 :** Indication by age distribution (Section II no 2 & section II no 8)

Indication	0-<10		10-<20		20-<30		30-<40	
	No.	%	No.	%	No.	%	No.	%
OGDS	32	69.57	241	66.76	689	64.63	800	56.98
ERCP	2	4.35	17	4.71	87	8.16	194	13.82
Colonoscopy	12	26.09	85	23.55	242	22.7	324	23.08
EUS	0	0	12	3.32	42	3.94	75	5.34
Not Available	0	0	6	1.66	6	0.56	11	0.78
<b>Total</b>	<b>46</b>	<b>100</b>	<b>361</b>	<b>100</b>	<b>1066</b>	<b>100</b>	<b>1404</b>	<b>100</b>

Indication	40-<50		50-<60		60-<70		70-<80	
	No.	%	No.	%	No.	%	No.	%
OGDS	1673	61.99	2500	62.47	2178	59.49	1527	59.23
ERCP	196	7.26	251	6.27	214	5.85	159	6.17
Colonoscopy	707	26.19	1061	26.51	1105	30.18	817	31.69
EUS	108	4	164	4.1	139	3.8	62	2.4
Not Available	15	0.56	26	0.65	25	0.68	13	0.5
<b>Total</b>	<b>2699</b>	<b>100</b>	<b>4002</b>	<b>100</b>	<b>3661</b>	<b>100</b>	<b>2578</b>	<b>100</b>

Indication	>=80		Total	
	No.	%	No.	%
OGDS	397	63.02	10037	61.03
ERCP	40	6.35	1160	7.05
Colonoscopy	176	27.94	4529	27.54
EUS	13	2.06	615	3.74
Not Available	4	0.63	106	0.64
<b>Total</b>	<b>630</b>	<b>100</b>	<b>16447</b>	<b>100</b>

## CHAPTER 3 : OGDS

### 3.1 INTRODUCTION

Oesophagogastroduodenoscopy (OGDS) is an examination of the lining of the esophagus, stomach and upper duodenum with a small flexible endoscope, which is inserted down the throat. It is one of the most commonly performed endoscopic procedures and provides valuable information in patients with upper gastrointestinal (GI) conditions. Additionally, therapeutic OGDS forms the mainstay of treatment for upper GI bleeding.

A total of 10037 patients were referred for OGDS. The most common age distribution was 50-59 (24.9%) followed by 60-69 (21.7%).

**Table 3.1** : Age distribution in OGDS

Age	No.	%
0-<10	32	0.32%
10-<20	241	2.40%
20-<30	689	6.86%
30-<40	800	7.97%
40-<50	1673	16.67%
50-<60	2500	24.91%
60-<70	2178	21.70%
70-<80	1527	15.21%
>=80	397	3.95%
<b>Total</b>	<b>10037</b>	<b>100</b>

### 3.2 INDICATIONS

The appropriateness of the indications for upper gastrointestinal endoscopy (OGDS) is recognized as a quality indicator for Endoscopy Units. It has been demonstrated that there is a statistically higher rate of significant pathologic findings when GI endoscopy is performed for indications listed in the American Society for Gastrointestinal Endoscopy (ASGE) guidelines for GI endoscopy.

The most common indication for OGDS in this series was Dyspepsia (23.14%) followed by gastrointestinal bleeding (17.31%). GERD symptoms were the indication in only 447 patients (4.45%). (Table 3.2)

**Table 3.2** : Indications for OGDS

Indicators for OGDS	No. N=10037	%
Dyspepsia	2323	23.14
GERD symptoms	447	4.45
Dysphagia / Odynophagia	230	2.29
Gastrointestinal bleeding	1737	17.31
Treatment of bleeding lesions	110	1.1
Re-evaluation of previously bleeding lesion	553	5.51
Investigation of Iron-deficiency Anaemia	402	4.01
Suspected Portal Hypertension	343	3.42
Variceal therapy	309	3.08
Evaluation of caustic injury	7	0.07
Other therapeutic procedures	134	1.34
Other indication	184	1.83
Others	432	4.3
Not Available	3459	34.46
<b>Total</b>	<b>10670</b>	

*\*Several patients had more than one indication*

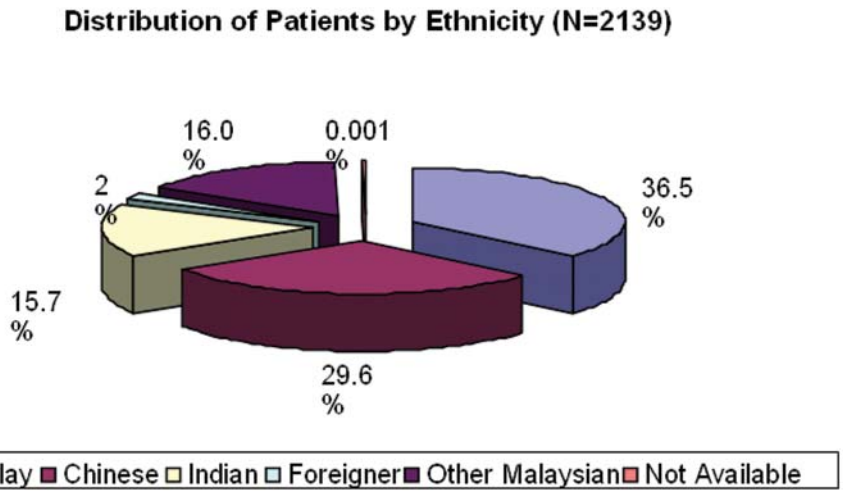
The National Endoscopy Registry is an online database that has six participating large public hospitals. The current practice of open – access endoscopy allows physicians to directly schedule procedures without prior consultation. Therefore appropriate indication is important for proper utilization of endoscopy facilities. The majority of physicians adhered to the ASGE guidelines. Among 432 patients (4.3%), which did not meet the guidelines, the common reasons for requesting the procedure were anaemia, screening and surveillance for malignancy and chronic diarrhoea. However a significantly large proportion of patients (34.46%) did not have the indications documented.

Among the documented indications for OGDS, 95.7% met the ASGE guidelines. The most common indication was Dyspepsia followed by Upper Gastrointestinal Bleeding. GERD symptoms are not a common indication for OGDS in Malaysian patients.

### 3.3 DYSPEPSIA

2139 patients had OGDS done for dyspepsia during study period. 48.2% (1030) were male patients. Breakdown based on ethnicity were Malays 36.5%, Chinese 29.6%, Indian 15.7%, other Malaysian 16.0% and 2.0% were foreigner. Ethnicity of 3 patients was not available. 58.7% of patients were 50 and above, 38.2% were between ages of 20 to 50.

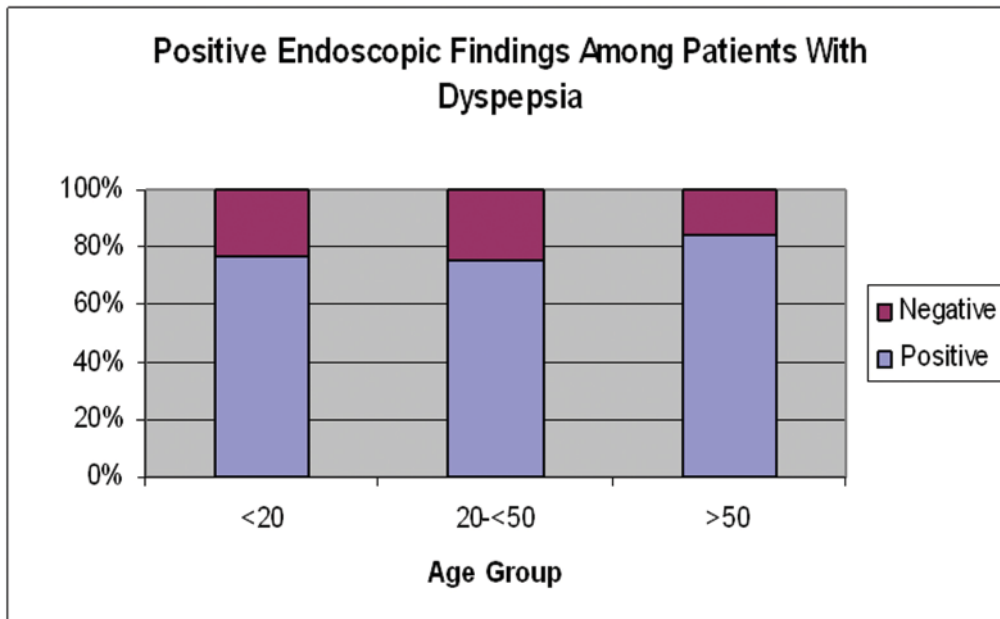
**Figure 3.3.1** : Distribution of patients with dyspepsia by ethnicity



1719 (80.4%) patients had positive OGDS findings. Positive endoscopic findings were defined as any endoscopic abnormalities of esophagus, stomach and duodenum reported by the endoscopists. Positive findings were found in 86.0% of male and 75.1% of female. There were significant chances of having positive OGDS findings among male patients ( $p < 0.001$ ,  $OR = 2.04$ ). Indians has a highest rate of positive findings (81.9%) and Malays has a lowest (78.4%) positive finding rate ( $p = 0.49$ ).

Positive endoscopic finding were found in 84.0% of patients age 50 and above, 81.0% in patients below 20 and 75% of patients between 20 and 50 of age. There were higher chances of having positive endoscopic findings among patients above 50 year-old as compare to those patients between 20 and 50 ( $p < 0.001$ ,  $OR = 1.75$ ) and those below 20 years old ( $p = 0.153$ ).

**Figure 3.3.2** : Distribution of Positive endoscopic Findings Among Patients with Dyspepsia

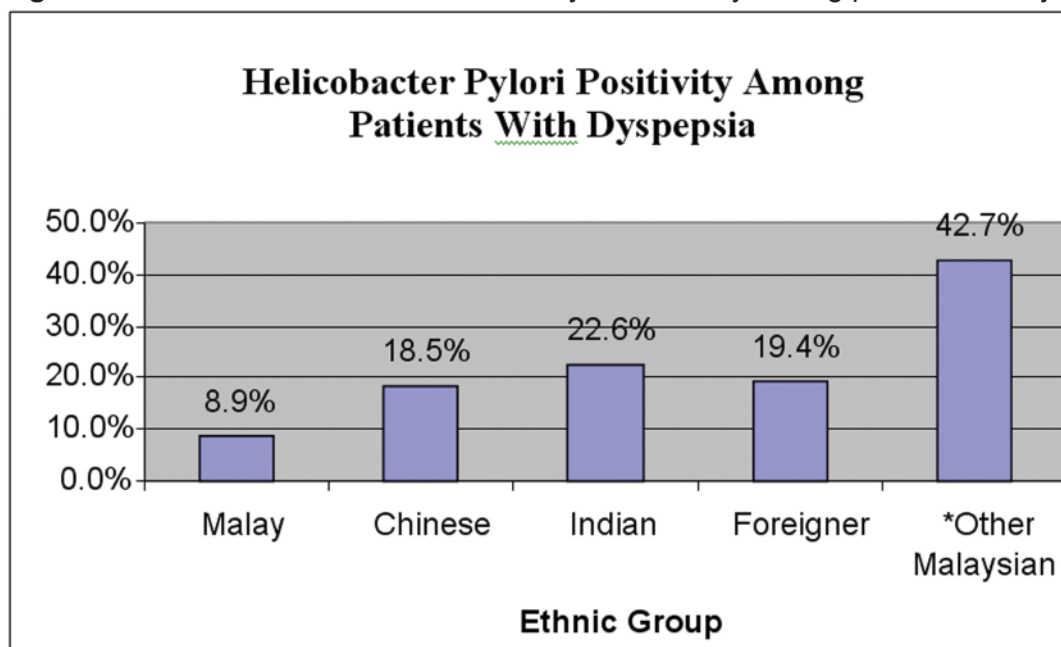


The top 5 positive findings were gastritis (n=1066, 62.0%), esophagitis (n=272, 15.8%), gastric ulcer (n=210, 12.2%), duodenitis (n=203, 11.8%) and duodenal ulcer (n=115, 6.7%).

2.4% of patients with dyspepsia had a malignancy (esophageal tumour n=11, gastric tumour n=41). The youngest age group with a malignancy detected was between age 20 and 30 (esophageal tumour 1 and gastric tumour 1).

1625 (76.0%) patients with dyspepsia had a biopsy done for rapid urease test. Only 19.4% had positive rapid urease test. There was no significant difference in H pylori positivity rates between male and female patients (p=0.06). Malays (8.89%), Chinese (18.50%), Indians (22.61%), other Malaysians (42.74%) and foreigner (19.44%) with dyspepsia were positive for H pylori infection. Malays with dyspepsia were significantly less likely to have H pylori infection as compare to Chinese (p<0.001, OR=2.33), Indian (p<0.001, OR=2.99), other Malaysians (p<0.001, OR=7.65) and foreigner (p=0.042, OR=2.47).

**Figure 3.3.3** : Distribution of Helicobacter Pylori Positivity among patients with dyspepsia



*\*mainly orang asli and indigenous East Malaysia*

There was no significant difference in H pylori positivity rates among patients below 20, 20 to 50 and above 50 years old, respectively (p=0.41).

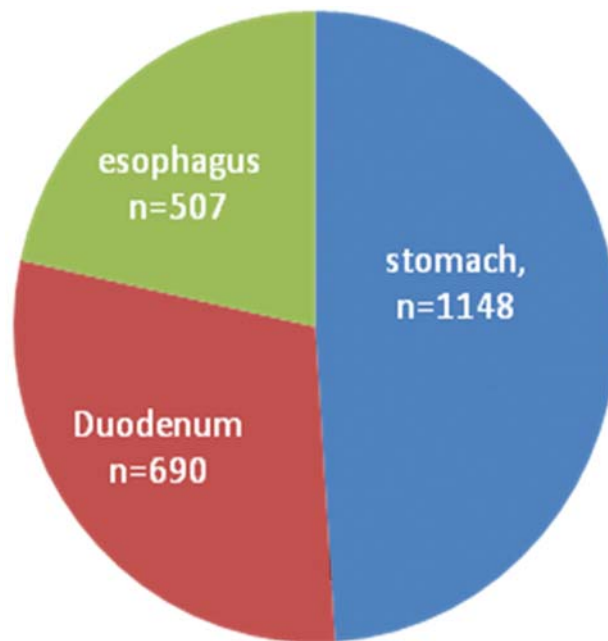
There was high likelihood of having positive endoscopic findings for patients presented with dyspepsia though the association with the symptoms was not known. Male patients and those above 50 years old were more likely to have positive findings. Although the malignancy was found in only 2.4% of patients, but there were 3 patients below 40 years old had a malignancy detected. Although there was no significant difference of having positive findings among difference races in Malaysia, Malays patients with dyspepsia had a significant lower H pylori positivity rates.

### 3.4 UPPER GASTROINTESTINAL BLEEDING

A total of 1708 patients were enrolled out of which 64.1% (1095) were males and 35.9% (613) were females. Malays comprised 34.6% (597), Chinese 28.7% (493), Indians 6.6% (112), Indigenous people and other Malaysians 27.7% (472) while the remainder (34 patients) were either foreign citizens (29) or their identity could not be ascertained (5). The majority of patients were above 50 years of age (1232 patients, 72.1%).

The stomach was the site of lesion in 1148 patients, 690 patients had duodenal lesions and 507 patients were identified with esophageal lesions. The majority of gastric lesions were due to ulcer disease (49.8%), gastritis (35.5%) and portal hypertensive gastropathy (5.9%) while duodenal ulcers (72.1%), duodenitis (31.3%) and erosions (9.7%) accounted for most of the duodenal pathology. Esophagitis (40%), varices (23.5%) and ulceration (10%) were the major lesions identified in the esophagus. A total of 233 (20.3%) lesions in the stomach and 43 (6.2%) in the duodenum were categorised as “others while 145 (28.6%) lesions in the esophagus were listed as “missing”.

**Figure 3.4.1** : Distribution of site of lesions for patients with upper gastrointestinal bleeding



The majority of UGIB patients were males and above 50 years of age. Most causes of bleeding were localized to the stomach, followed by the duodenum and esophagus. The most common cause of gastric and duodenal bleeding is ulcer disease. In a proportion of patients, more than one lesion was identified. It is unlikely that some of these lesions (e.g. gastritis) were directly related to UGIB. A significant portion of lesions especially in the stomach and esophagus were not adequately documented. These shortcomings need to be addressed in future.

Figure 3.4.2 : Distribution of aetiology of gastric bleeds

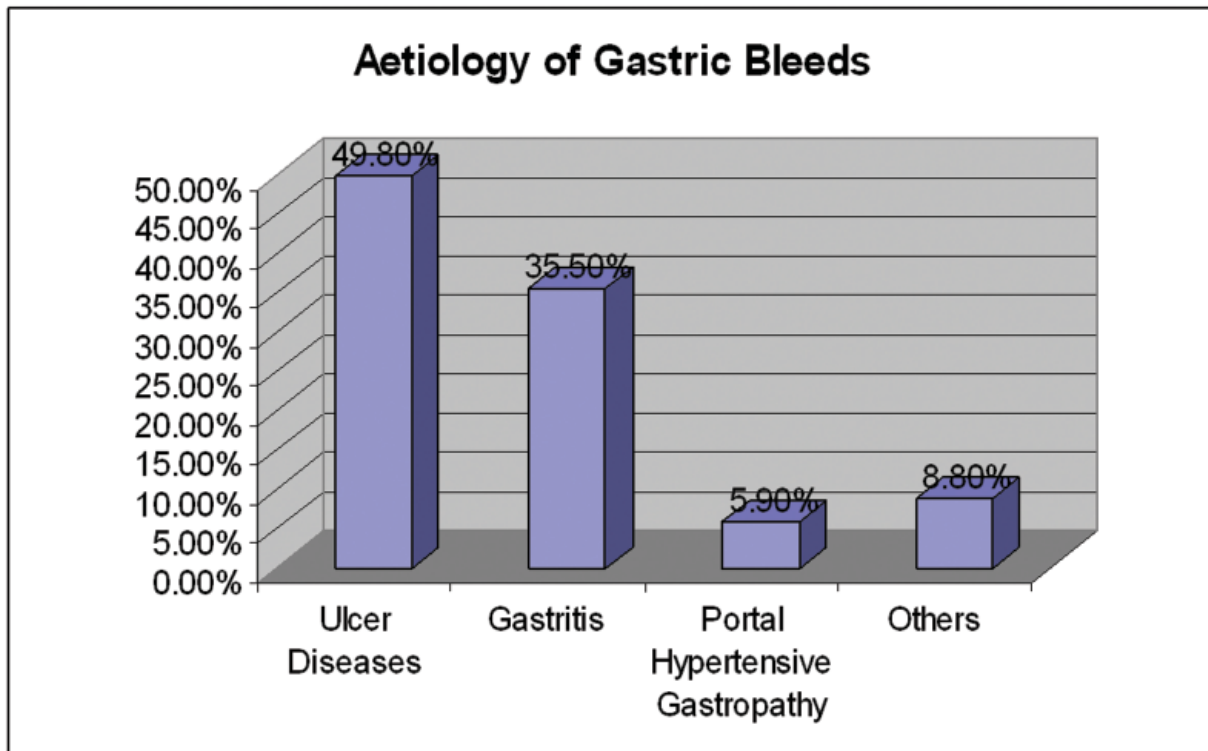
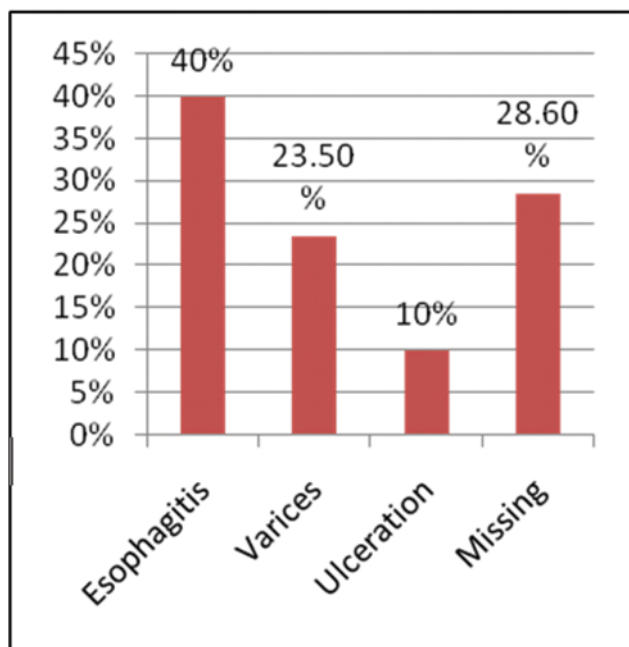
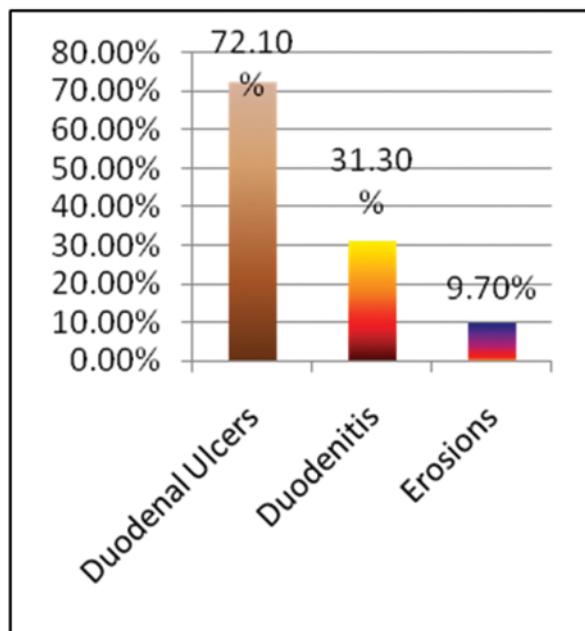


Figure 3.4.3 : Distribution of aetiology of esophageal bleeds



**Figure 3.4.4** : Distribution of aetiology of duodenal bleeds

### 3.5 GASTROESOPHAGEAL REFLUX DISEASE (GERD)

426 patients had OGDS done for GERD symptoms during study period. 50.0% were male patients. Breakdown based on ethnicity were Malays 41.5%, Chinese 26.5%, Indian 22.5%, other Malaysian 6.8% and 2.6% were foreigners.

Majority (56.1%) of patients was 50 and above, 40.6% were between ages of 20 to 50. Patients with age between 50 and 60 constitute the highest numbers of OGDS for GERD symptoms (27.5%), where rest patients more than 80 only contribute 1.6% of total GERD patients.

29.8% patients had erosive esophagitis as compare to 70.2% of endoscopic negative esophagitis (NERD). 33.3% of male patients with GERD symptoms had erosive esophagitis as compare to only 26.3% (56/213) in female patients.

Among the 3 major races, Malays had highest percentage of erosive GERD (30.5%, 54/177); follow by Indians (29.2%, 28/96) and Chinese (28.3%, 32/113).

Erosive GERD were more common among patients with age between 30 and 70 (31.7%, 99/312) followed by patients below 30 years old (25.0%, 16/64) and 24.0% (12/50) of patients more than 70 years old.

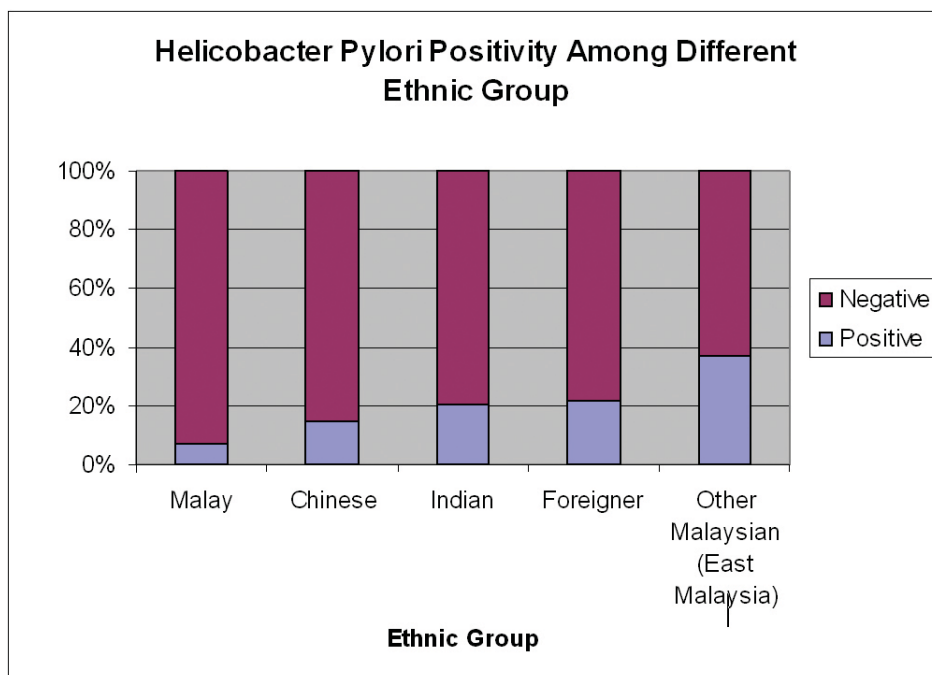
### 3.6 HELICOBACTER PYLORI INFECTION

Rapid urease test for H pylori were available for 4277 patients who had OGDS done for various indications during the study period. 53.6% were male patients.

The overall positive result for H pylori was 17.2%. 17.9% of male patients had positive H pylori as compare to 16.4% of female. There was no significant difference of H pylori infection rate between male and female patients (p=0.20)

Highest H pylori positivity (37.0%, 308/833) was found in patients originated from East Malaysia, followed by Indians (20.4%, 123/604), Chinese (15.0%, 177/1177) and Malays (6.8%, 108/1586). H pylori test was positive in 21.5% (14/65) of foreigners. Ethnicity of 12 patients was not available. All other ethnic groups had significant higher odd of H pylori infection compare to Malays. [Chinese (p<0.001, OR=2.42), Indians (p<0.001, OR=3.50), other Malaysians (p<0.001, OR=8.03) and foreigners (p<0.001, OR=3.76)]

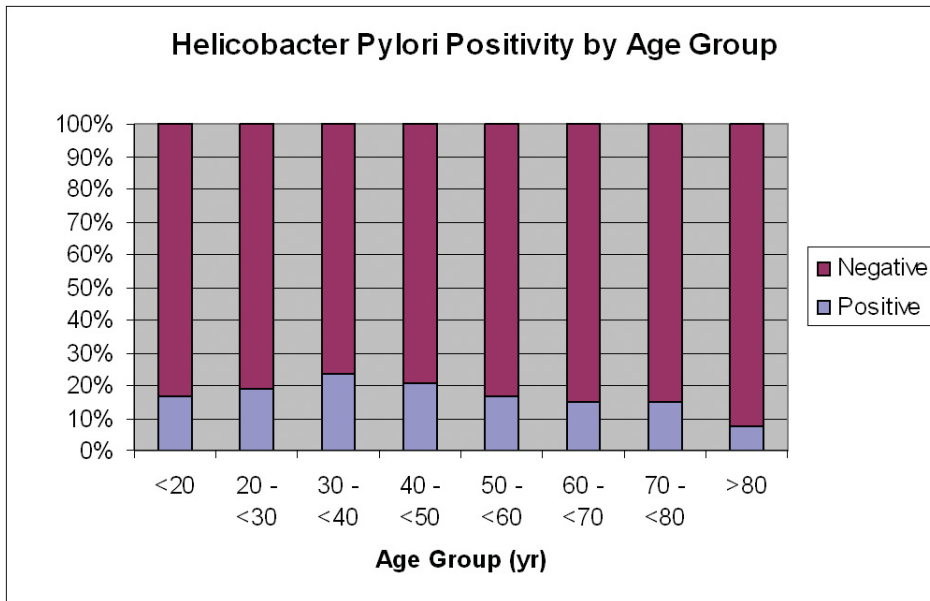
Figure 3.6.1 : Distribution of patients with Helicobacter pylori infection by ethnicity



\* mainly orang asli and indigenous East Malaysia

H pylori infection rates were increasing with age, 16.8% for those below 20 to the highest of 23.7% for those patients between 30 and 40. Subsequently the rates decrease progressively with age to the lowest of 7.2% for patients above 80. However, only patients more than 80 years old had statistically significant (compare to patients below 20 years old) lower H pylori infection rates; p<0.02, OR=0.38.

**Figure 3.6.2** : Distribution of patients with Helicobacter pylori infection by age group



The overall H pylori infection rate among Malaysians was low except for ethnic group from Sabah. This reflects the fact that H pylori are closely tied to socioeconomic conditions. The lower H pylori infection rates, though not statistically significant, among younger age groups may be due to improve in socioeconomic conditions of the country as this infection is usually acquired during childhood. The study also underestimated the number of H pylori infection as rapid urease test is the sole diagnostic test used



**CHAPTER 4 : COLONOSCOPY****4.1 INTRODUCTION**

Colonoscopy is an endoscopic procedure that examines the inner lining of the large intestine with the use of a flexible endoscope. A total of 3965 colonoscopy cases were performed from September 2008 to May 2009 in six centers. Hospital Sultanah Aminah had the highest number of cases (1084) cases and Hospital Raja Perempuan Zainab II had the least number (309). Other centers include Hospital Sultanah Bahiyah, Hospital Kuala Lumpur, Hospital Selayang and Hospital Queen Elizabeth. (*Table 4.1.1*).

**Table 4.1.1** : Colonoscopies by Reporting Centre

<b>Reporting Centre</b>	<b>No.</b>	<b>%</b>
Hospital Sultanah Bahiyah	620	15.64
Hospital Kuala Lumpur	638	16.09
Hospital Queen Elizabeth	918	23.15
Hospital Raja Perempuan Zainab II	309	7.79
Hospital Selayang	396	9.99
Hospital Sultanah Aminah	1084	27.34
<b>Total</b>	<b>3965</b>	<b>100</b>

The 3 main indications for colonoscopy were alteration in bowel habit, 19.82 % (786 cases); evaluation of unexplained gastrointestinal bleeding, 14.17 % (562 cases) and surveillance for colonic neoplasia, 10.37 % (411 cases). Other indications are as shown in *Table 4.1.2* below.

**Table 4.1.2** : Colonoscopies by Indication

	<b>Indications for Colonoscopy</b>	<b>No.</b>	<b>%</b>
1	Unexplained iron deficiency anemia	225	5.67
2	Evaluation Unexplained Gastrointestinal Bleeding	562	14.17
	a. Haematochezia	370	9.33
	b. Melena after an upper GI source has been excluded	102	2.57
	c. Presence of fecal occult blood	25	0.63
3	Alteration in bowel habits	786	19.82
4	Chronic diarrhea	175	4.41
5	Screening for colonic neoplasia	198	4.99
	a. Average risk group	104	2.62
	b. High risk group	41	1.03
	c. Hereditary non-polyposis colorectal cancer	2	0.05
	d. Sporadic colorectal cancer	21	0.53
6	Surveillance for colonic neoplasia	411	10.37
	a. Polyps	147	3.71
	b. Inflammatory bowel disease	18	0.45
	c. Previous colorectal cancer	197	4.97
	d. Others	53	1.34
7	Inflammatory bowel disease	90	2.27
8	Abnormal imaging study	85	2.14
9	Evaluation Gastrointestinal infection	36	0.91
10	Therapeutic	55	1.39
	a. Treatment for bleeding	12	0.3
	b. Removal of foreign body	0	0
	c. Excision of colonic polyp	10	0.25
	d. Decompression of megacolon / volvulus	3	0.08
	e. Intraoperative identification of lesion	0	0
	f. Dilatation	19	0.48
	g. Palliative treatment	9	0.23
11	Marking neoplasm for localization	20	0.5
12	Unclear	90	2.27
13	Others	7	0.18
	<b>Total (N=3965)</b>	<b>3873</b>	

A total number of 259 cases of carcinoma of colon were detected, 56.37 % were male (146 cases). The Malays constituted 41.31 % (107 cases) followed by Chinese 37.07% (96 cases). The majority of carcinoma cases were detected in the above 50 age group i.e. 212 cases out of 259 cases. The common sites for the occurrence of carcinoma were the rectum 45.56 % (118 cases), recto-sigmoid 18.53 % (48 cases) and sigmoid colon 13.13% (34 cases). The commonest appearance of the tumor was circumferential 42.86 % (111 cases), fungating 32.05% (83 cases), polypoidal 28.96% (75 cases) and ulcerating 23.17% (60 cases). Colonoscopy was completed in 52.12% (135 cases). (Table 4.1.3).

**Table 4.1.3 :** Carcinoma by gender, ethnicity, age group, site, appearance, distance from anal verge and length of lesion.

	Carcinoma Cases (N=259)	
	No.	%
<b>Gender</b>		
Male	146	56.37
Female	113	43.63
<b>Ethnic Group</b>		
Malay	107	41.31
Chinese	96	37.07
Indian	13	5.02
Others	42	16.22
Not Available	1	0.39
<b>Age Group</b>		
0-<50	47	18.14
≥ 50	212	81.86
<b>Site</b>		
Anus	13	5.02
Rectum	118	45.56
Recto-Sigmoid	48	18.53
Sigmoid Colon	34	13.13
Descending Colon	13	5.02
Transverse Colon	22	8.49
Ascending Colon	26	10.04
Caecum	10	3.86
Anastomotic	3	1.16
<b>Appearance of Carcinoma</b>		
Polypoidal	75	28.96
Fungating	83	32.05
Ulcerating	60	23.17
Circumferential	111	42.86
<b>Lumen</b>		
Able to pass scope	135	52.12
Unable to pass scope	124	47.88
<b>Length of lesion</b>		
N	115 (44.4%)	
Mean	5.86	
Sd	6.52	
Missing	144 (55.6%)	
<b>Total</b>	259	

The main indications for colonoscopy in males were alteration in bowel habit 48.22 % (379 cases), evaluation unexplained gastrointestinal bleeding 57.83 % (325 cases) and surveillance for colonic neoplasia 59.12% (243 cases). The main indications for colonoscopy in females were similar. (Table 4.1.4).

**Table 4.1.4 :** Indications for Colonoscopy by gender

No.	Indications for Colonoscopy	Gender				Total No.
		Male		Female		
		No.	%	No.	%	
1	Unexplained iron deficiency anemia	111		114		225
2	Evaluation Unexplained Gastrointestinal Bleeding	325		237		562
	a. Haematochezia (per rectal bleed)	208		162		370
	b. Melena after an upper GI source has been excluded	69		33		102
	c. Presence of fecal occult blood	12	48	13	52	25
3	Alteration in bowel habit	379		407		786
4	Chronic diarrhea	90		85		175
5	Screening for colonic neoplasia	111		87		198
	a. Average risk group	61		43		104
	b. High risk group	20		21		41
	c. Hereditary non-polyposis colorectal cancer	1	50	1	50	2
	d. Sporadic colorectal cancer	13	61.9	8	38.1	21
6	Surveillance for colonic neoplasia	243		168		411
	a. Polyps	97		50		147
	b. Inflammatory bowel disease	10		8		18
	c. Previous colorectal cancer	111		86		197
	d. Others	26		27		53
7	Inflammatory bowel disease	49		41		90
8	Abnormal imaging study	37		48		85
9	Evaluation of Gastrointestinal infection	19		17		36
10	Therapeutic	36		19		55
	a. Treatment for bleeding	6	50	6	50	12
	b. Removal of foreign body	0		0		0
	c. Excision of colonic polyp	7	70	3	30	10
	d. Decompression of megacolon / volvulus	3	100	0	0	3
	e. Intraoperative identification of lesion	0		0		0
	f. Dilatation	13		6		19
	g. Palliative treatment	6		3		9
11	Marking neoplasm for localization	11	55	9	45	20
12	Unclear	50		40		90
13	Others	1		6		7
	<b>Total</b>					<b>3873</b>

The 3 main indications in patients above the age of 50 were alteration in bowel habit 69.46% (546 cases), evaluation of unexplained gastrointestinal bleeding 68.31% (384 cases) and surveillance for colonic neoplasia 84.19% (346 cases). The main indications were similar in those below 50 years of age. (Table 4.1.5)

**Table 4.1.5 :** Indications for Colonoscopy by Age group

Indications for Colonoscopy	Age 0-<50 years		Age ≥ 50 years		Total No.
	No.	%	No.	%	
1 Unexplained iron deficiency anemia	62	27.56	163	72.46	225
2 Evaluation of Unexplained Gastrointestinal Bleeding	178	31.68	384	68.31	562
a. Haematochezia	125	33.78	245	66.21	370
b. Melena after an upper GI source has been excluded	29	28.43	73	71.57	102
c. Presence of fecal occult blood	8	32	17	68	25
3 Alteration in bowel habit	240	30.53	546	69.46	786
4 Chronic diarrhea	75	42.86	100	57.14	175
5 Screening for colonic neoplasia	54	27.29	144	72.74	198
a. Average risk group	20	19.24	84	80.77	104
b. High risk group	14	34.15	27	65.86	41
c. Hereditary non-polyposis colorectal cancer	2	100	0	0	2
d. Sporadic colorectal cancer	4	19.05	17	80.95	21
6 Surveillance for colonic neoplasia	65	15.82	346	84.19	411
a. Polyps	24	16.32	123	83.67	147
b. Inflammatory bowel disease	9	50	9	50	18
c. Previous colorectal cancer	21	10.66	176	89.34	197
d. Others	13	24.53	40	75.47	53
7 Inflammatory bowel disease	59	65.56	31	34.45	90
8 Abnormal imaging study	25	29.42	60	70.59	85
9 Evaluation of Gastrointestinal infection	24	66.67	12	33.34	36
10 Therapeutic	19	34.55	36	65.45	55
a. Treatment for bleeding	7	58.33	5	41.67	12
b. Removal foreign body	0		0		0
c. Excision colonic polyp	2	20	8	80	10
d. Decompression of megacolon / volvulus	0	0	3	100	3
e. Intraoperative identification of lesion	0		0		0
f. Dilatation	8	42.10	11	57.90	19
g. Palliative treatment	1	11.11	8	88.88	9
11 Marking neoplasm for localization	4	20	16	80	20
12 Unclear	28	31.12	62	68.88	90
13 Others	5	71.43	2	28.58	7
<b>Total</b>	<b>1125</b>	<b>29.05</b>	<b>2748</b>	<b>70.95</b>	<b>3873</b>

In conclusion, the indicators for the colonoscopy are fairly similar across the gender, race and age group as shown in the tables above. The 3 main indications for colonoscopy were alteration in bowel habit, evaluation of unexplained gastrointestinal bleeding, and surveillance for colonic neoplasia. Two hundred and fifty nine carcinomas were diagnosed in the study of 65% of total colonoscopies done. This study would help us improve quality and service provided specifically in terms of proper indication and effectiveness of the procedure.

## CHAPTER 5: ERCP

### 5.1 INTRODUCTION

There were a total of 1160 ERCP cases (7.1%) out of 16447 endoscopic procedures performed at the six participating centers. At least 247 (21.29%) of the procedures were repeat procedures as previous sphincterotomy was noted.

### 5.2 INDICATIONS FOR ERCP

The common indications for performing ERCP were bile duct stones (24.3%), obstructive jaundice (19.5%) and dilated biliary system noted on imaging (7.3%). The other indications are as listed in *Table 5.2*.

**Table 5.2** : Indications for ERCP

Indications for ERCP*	No.	%
Bile Duct Stone	282	24.3
Obstructive Jaundice	226	19.5
Dilated Biliary System	85	7.3
Ascending Cholangitis	71	6.1
Removal / Change of Stents	46	4
Acute Pancreatitis	31	2.7
Bile Duct Injury	19	1.6
Chronic Pancreatitis	16	1.4
Pseudocyst drainage	1	0.1
Others	40	3.4
Not Available	518	44.7

\*Note : There may be more than one indications listed for the same patient

### 5.3 FINDINGS AT BILE DUCT CANNULATION

Bile duct cannulation was successful in 779 cases (76.4%) and unsuccessful in 78 (7.7 %). No data was available in 162 (15.9 %) cases and it is not known whether among some of these whether any attempt was made (eg pancreatic duct cannulation attempted only, removal of previous stent, etc)

For those cases in which bile duct cannulation were successful, the findings are as in *Table 5.3.1*. Bile duct stones are the most common pathology encountered during ERCP. Most of the stones are located in the common bile duct (*Table 5.3.2*). Fifty two (18.5%) of the cases had stones within the intrahepatic ducts. It is not known whether intrahepatic ductal stones are relatively common or they require more sessions for their extraction

**Table 5.3.1** : Findings at bile duct cannulation

Findings at Bile Duct	No.
Normal	136
Dilated Calibre	372
Stricture	131
Bile Duct Stone	262
Mirizzi Syndrome	4
Bile Duct Injury	5
Sclerosing cholangitis	1
Choledochal Cyst	7
Biliary worm Infection	3
Others	29

**Table 5.3.2** : Site and number of bile duct stone

Site of Bile Duct Stone	Number of Bile Duct Stone			Total	
	Single	Multiple	Not specified	No.	%
Right Intrahepatic Duct	10	13	0	23	8.1
Left Intrahepatic Duct	4	14	0	18	6.3
Intrahepatic Ducts	1	10	0	11	3.9
Cystic Duct	3	0	0	3	1.1
Common Bile Duct	105	121	3	229	80.6
<b>Total</b>	<b>123</b>	<b>158</b>	<b>3</b>	<b>284</b>	<b>100</b>

A variety of methods were employed in attempting stone extraction (*Table 5.3.3*). Commonest method used was the balloon. Stone extraction was complete in 271 (74.2%) cases (*Table 5.3.4*). It is not known how many of these cases with successful stone clearance had previous unsuccessful attempts.

**Table 5.3.3** : Method of stone extraction (Note: More than one method may be employed)

Method of Stone Extraction	No.	%
Balloon	285	58.2
Basket	107	21.8
Mechanical Lithotripsy	87	17.8
Electric hydraulic lithotripsy (EHL)	2	0.4
Others	9	1.8
<b>Total</b>	<b>490</b>	<b>100</b>

**Table 5.3.4** : Result of stone extraction

Result of Stone Extraction	No.	%
Failed	22	6.0
Partial	63	17.3
Complete	271	74.2
Missing	9	2.5
<b>Total</b>	<b>365</b>	<b>100</b>

**Table 5.3.5 :** Findings at pancreatic duct

<b>Findings at pancreatic duct</b>	<b>No</b>	<b>%</b>
Normal	394	38.7
Abnormal	39	3.8
Dilated	14	35.9
Chronic pancreatitis	12	30.8
Stones	6	15.4
Others	6	15.4
Not available	10	25.6

701 cases (60.4%) had an additional procedure done. Majority of them were therapeutic in nature (*Table 5.3.6*). 651 of the cases had one additional procedure and 50 cases had two additional procedures.

**Table 5.3.6 :** Type of additional procedure

<b>Type of additional procedure</b>	<b>No</b>
Diagnostic procedure	59
Therapeutic procedure	692
<b>Total</b>	<b>751</b>

The types of diagnostic procedures done are as listed in *Table 5.3.7* below. Some patients had more than one type of diagnostic procedure performed. Majority of bile aspiration were for cholangitis. However it was noted that for 71 cases with cholangitis, about half of them did not have their bile aspirated and sent for cultures.

**Table 5.3.7 :** Type of diagnostic procedure

<b>Type of Diagnostic Procedure</b>	<b>No.</b>
Bile aspiration	34
Biopsy	23
Brushings	12
<b>Total</b>	<b>69</b>

#### 5.4 ERCP THERAPEUTIC PROCEDURES

The common types of therapeutic procedures done were sphincterotomy, stone extraction and stenting (*Table 5.4.1*). There were more pre-cut reported than conventional sphincterotomy. It is not known if these cases later on had a conventional sphincterotomy during another session.

**Table 5.4.1** : Type of therapeutic procedure performed

Thepapeutic procedure	No.
Sphincterotomy	404
Pre-cut	201
Conventional	181
Unknown	22
Stone Extraction	365
Stenting	334
Balloon sphincteroplasty	23
Biliary Dilatation	11
Naso-biliary drain	1
Others	53
<b>Total</b>	<b>1191</b>

*Note: Each case may have more than one type of therapeutic procedure.*

Of the stents inserted, majority were for the biliary system (*Table 5.4.2*). Plastic stents remain the most common type of stent used with self expanding metal biliary stents reserved for malignant strictures. Pancreatic duct stents form only 6.1% of the number of stents inserted during ERCP. Details of the reasons pancreatic duct stents were inserted for was not looked into.

**Table 5.4.2** : Site and type of stent used

Type of Stenting	No.	%
Biliary	323	93.9
Plastic	276	80.2
Metal	40	11.6
Not Available	7	2.1
Pancreatic	21	6.1
<b>Total</b>	<b>344</b>	<b>100</b>

## 5.5 ERCP COMPLICATIONS

ERCP, like any procedure, is not without its problems. Overall, the complication rate was 3.6 %. (Table 5.5.1).

**Table 5.5.1 :** Immediate complications

Immediate Complications	No.	%
Yes	37	3.6
No	835	82.0
Missing	147	14.4
<b>Total</b>	<b>1019</b>	<b>100</b>

The commonest complication was due to bleeding following sphincterotomy. (Table 5.5.2) Out of 1160 cases there were four mortalities (0.34%) reported. Three of the mortalities were in patients with malignancies and one was choledocholithiasis. There is a possibility of under-reporting of complications if they were to occur later in the wards.

**Table 5.5.2 :** Type of immediate complications

Type of Immediate Complications	No.	%
Bleeding	26	70.3
Perforation	2	5.4
Pancreatitis	3	8.1
Death	4	10.8
Others	2	5.4
<b>Total</b>	<b>37</b>	<b>100</b>

## 5.6 CONCLUSIONS

ERCP form less than 10% of the volume load in endoscopy. Majority of the indications were for obstructive jaundice or bile duct stones. A significant number of cases were for repeat cases. More than half of the procedures were for therapeutic purposes and were mainly used for management of bile duct stones or stenting of malignant lesions. The procedure carries a morbidity but overall the mortality was low.

In the future, a closer look into quality assurance markers related to the proper indications, effectiveness and safety in performing the procedure is warranted.



**CHAPTER 6: EUS****A SURVEY OF THE NOTIFICATION OF ENDOSCOPY FROM THE NATIONAL ENDOSCOPY REGISTRY - (NER-NOTIFICATION)*****Data from September 2008 to May 2009***

Endoscopic Ultrasound (EUS) is a relatively new procedure combining standard endoscopy with ultrasound. The EUS system comprises of a standard endoscopy system combined with a high quality ultrasound system. 2 different types of scopes are utilised :

1. Radial echoendoscope which has a 360 degree field of view
2. Linear echoendoscope – 100 – 120 degree field of view. This scope has a large working channel of 3.7 – 3.8mm which facilitates the use of a Fine Needle Aspiration (FNA) needle through the working channel. This allows for tissue sampling outside the GI tract and allows the endosonographer to perform therapeutic procedures

The main indications for EUS are :

- a. Staging of Oesophageal, Gastric, Rectal & Pancreato-biliary malignancy
- b. Evaluation of abnormalities of the GI wall & adjacent structures (subepithelial masses, extrinsic compression etc)
- c. Evaluation of pancreatic abnormalities (masses, cystic lesions, chronic pancreatitis)
- d. Evaluation of obstructive jaundice when the cause is unknown
- e. For FNA of masses which are not accessible by conventional routes (mediastinum, pancreas, coeliac trunk, intra-abdominal, pelvis)
- f. Therapeutic EUS – Coeliac plexus neurolysis, Pseudocyst drainage, pancreato-biliary drainage procedures (rendezvous procedures, choledocho-duodenostomy, pancreato-gastrostomy, hepatico-gastrostomy)

**Table 6.1** : EUS Cases by Reporting Centre

<b>Reporting Centre</b>	<b>No.</b>	<b>%</b>
Hospital Sultanah Bahiyah	0	0
Hospital Kuala Lumpur	34	5.89
Hospital Queen Elizabeth	110	19.06
Hospital Raja Perempuan Zainab II	9	1.56
Hospital Selayang	198	34.32
Hospital Sultanah Aminah	226	39.17
<b>Total</b>	<b>577</b>	<b>100</b>

In total, 577 procedures were performed in 6 centres during the reporting period from September 2008 to May 2009. 73.4% of the procedures were performed in 2 centres, that is Hospital Sultanah Aminah & Hospital Selayang.

Table 6.2 : EUS Cases by indication and age group

Age Group	Indication														
	Diagnostic	Evaluating abnormalities of GIT wall / adjacent structures	Assessment of obstructive jaundice	Evaluating abnormalities of the pancreas	Evaluation of adenopathy / mass	Fine needle aspiration	Others	Not Available	Total	No.	%	No.	%		
0-<10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
10-<20	1	0.69	2	1.2	0	0	0	0	0	0	0	1	2.17	4	2.7
20-<30	15	10.42	13	7.83	3	4.17	4	9.76	1	7.14	8	17.39	7	4.73	40
30-<40	11	7.64	23	13.86	8	11.11	3	7.32	1	7.14	10	21.74	19	12.84	69
40-<50	26	18.06	33	19.88	14	19.44	3	7.32	1	7.14	5	10.87	33	22.3	100
50-<60	37	25.69	41	24.7	29	40.28	8	19.51	3	21.43	16	34.78	32	21.62	156
60-<70	39	27.08	26	15.66	15	20.83	18	43.9	7	50	5	10.87	33	22.3	127
70-<80	13	9.03	24	14.46	1	1.39	4	9.76	1	7.14	1	2.17	19	12.84	61
>=80	2	1.39	4	2.41	2	2.78	1	2.44	0	0	0	0	1	0.68	12
<b>Total</b>	144	100	166	100	72	100	41	100	41	100	46	100	148	100	577

The majority of EUS procedures (49.05%) were performed in patients who are between the ages of 50 – 70. This reflects the utilisation of EUS for staging malignancy and obtaining tissue diagnosis of malignant lesions. The main indication for EUS was for the assessment of obstructive jaundice (28.7%).

**Table 6.3** : EUS Cases by site and Fine Needle Aspiration (FNA)

Site	Fine Needle Aspiration									
	19G		22G		25G		Tru Cut		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Coeliac Nodes	2	11.11	14	77.78	0	0	2	11.11	18	20.93
Head of Pancreas	1	4.35	17	73.91	5	21.74	0	0	23	26.74
Mediastinal Nodes	1	6.25	12	75	1	6.25	1	6.25	16	18.6
Pancreatic Tail	1	50	1	50	0	0	0	0	2	2.33
Others	5	18.52	22	81.48	0	0	0	0	27	31.4
<b>Total</b>	10	11.63	66	76.74	6	6.98	3	3.49	86	100

EUS is often employed to obtain tissue. This is often to confirm a malignant lesion, guide palliative therapy & rule out other possible diagnosis such as lymphoma/ tuberculosis.

In total, 86 cases of FNA were performed. The 2 main sites of FNA were the head of pancreas (26.74%) and coeliac nodes (20.93%). The main needle employed is the 22G needle (76.74%)

There are 4 types of needles available for FNA – the 19G, 22G, 25G & Tru-cut needle. The tru-cut needle is hardly employed due to the design of the needle which requires the scope to be in a 'straight' position before it will deploy.

### Summary

EUS is a relatively new procedure in Malaysia. It was initially introduced in Hospital Selayang in 2001. The scope of EUS has widened over the years with more therapeutic indications being added. Clinicians (physicians/surgeons) have come to understand and accept its utility in complementing conventional radiological tests (Ultrasound/ CT Scan/MRI) in patient management and decision making.

The spread of EUS is limited by the small number of trained endosonographers. This seems to be the limiting factor in developing and setting up of a EUS service. However, formal training in EUS is crucial before embarking on setting up a service. As more gastroenterologists become trained in this procedure, we hope that EUS will become more widespread and readily available in the country.