CURRICULUM UPDATE FOR SPECIALITY – DM GASTROENTEROLOGY

Program Objective

The training program should produce consultants with the following attributes:

i) Broad knowledge base – ability to generate a relevant differential diagnosis based on an accurate history and physical examination as well as understanding of indications and contraindications for diagnostic and therapeutic procedures.

ii) Ability to think critically

iii) Skill at performing procedures

iv) Ability to communicate effectively with patients and referring physicians

v) Appreciation of humanistic (compassionate, cost conscious, service oriented) and ethical aspects (accountability integrity) of medicine.

vi) Ability to work as part of a team as gastrointestinal disease involves multidisciplinary management.

CURRICULUM

I ACID PEPTIC DISEASE

Must know

1. Anatomy, physiology of esophagus, stomach, duodenum.
2. Gastric secretion and measurement of acid secretion
3. Gastritis and gastropathies
4. Pathophysiology, epidemiology, diagnosis, complications and therapy of peptic ulcer
5. Role of H.pylori and NSAIDs in acid peptic diseases
6. Gastro-esophageal reflux disease – Epidemiology, Pathogenesis, Clinical features, diagnosis, complications and treatment.

Training Methodology

1. Out patient management of patients with peptic ulcer, GERD, gastritis (supervised)
2. Training in upper GI endoscopy – Elective and emergency. Treatment of upper GI bleed.
3. Interpretation of radiological studies.
4. Interpretation of mucosal biopsies of esophagus, stomach and duodenum.
5. Study of textbooks, journals, seminars: Endoscopy videolibrary and articles.

Assessment:

As part of overall evaluation of trainees in gastroenterology

II Motility, Diverticular disease and Functional illness

Must Know

1. Esophageal, gastric, small intestinal and colonic sensory and motor physiology
2. Pathogenesis, clinical assessment and treatment of motor disorders of esophagus, stomach, small intestine and colon.
3. Recognise manometric features of major motor disorders of esophagus and anal sphincter
4. Able to perform and assess significance of results of pH test.
5. Pathophysiology, diagnosis and management of Functional bowel disease –
    a) Physiology of brain-gut axis, visceral sensation
    b) Role of neurotransmitters in sensory and motor functions
    c) Use of psychopharmaceuticals in treatment of Functional bowel disorders
6. Etiopathogenesis, clinical features, diagnosis and management of diverticular disease.
7. Acute and chronic pseudo-obstruction

Desirable to know

1. Able to conduct and interpret motility studies of esophagus and ano-rectum.

Training methodology

1. See and manage patients with motility disorders – interpreting tests results, decision making after appropriate tests, and planning treatment (under supervision).
2. Hands on experience on 24 hr pH studies and motility studies – spend 3 months in a motility lab.

3. Study of textbooks, journal articles, seminars and motility tracings.

Assessment Strategy (as part of general evaluation)

III GASTROINTESTINAL INFLAMMATION, ENTERIC AND INFECTIOUS DISEASES

Must know

1. Mucosal immunology and mechanisms of gastrointestinal inflammation.
2. Composition and function of normal enteric flora
3. Prevalence, clinical presentation and virulence factors of gastrointestinal pathogens (viral, bacterial, fungal, protozoal)
4. Pathophysiology of diarrhoeal disorders – Intestinal water and electrolyte transport
5. Infectious enteritis, proctocolitis and bacterial food poisoning.
6. Antibiotic associated diarrhea, pseudomembranous entero-colitis and Cl.difficile associated diarrhea and colitis.
7. Intestinal protozoa
8. Intestinal worms – Nemetodes, cestodes, trematodes.
9. Etiopathogenesis, pathology, clinical features, diagnosis, complication and therapy of gastrointestinal tuberculosis.
10. Epidemiology, etiopathogenesis, pathology, clinical features, diagnosis, complications and treatment (medical / surgical) of ulcerative colitis and Crohns disease, cancer surveillance. New biological therapies.

11. IBD and pregnancy – therapy and genetic counseling. Psycho-social influences of IBD on individual and family.
12. Infections in immunocompromised hosts (HIV, transplant patients).
13. Hepatic inflammation (e.g. liver abscess, cholangitis).
14. Prevention of infection – Vaccines, hygiene practices etc.
15. Gastrointestinal, hepato-biliary and pancreatic disorders in patients with AIDS.
16. Collagenous colitis, Microscopic colitis.

Training Methodology

1. Management of patients on ambulatory care (OP) and hospitalized patients (IP) –
    - Follow up patients with long term disease (e.g IBD)
    - Counseling of families

    (made a DD, interpret diagnostic studies, implement a therapeutic plan and manage on long term follow up)
2. Training in upper / lower GI endoscopy
3. Interpret radiological studies and mucosal biopsies.
4. Study textbooks, journals, seminars, workshops and conferences, Endoscopy videos and atlases.

May know:

1. Interpret stool exams – ova, parasites
2. Know how to perform stool culture, fluid culture
3. Antigen detection in stool and fluid (Enzyme immuno assay fluorescent antibody)
4. Rapid diagnostic tests (DNA probe / PCR)

5. Single and double balloon enteroscopy

Assessment: As part of overall evaluation of trainees in gastroenterology

IV MALDIGESTION & MALABSORPTION

Must know

1. Digestion and absorption of nutrients and vitamins
2. Maldigestion and malabsorption
    - Etiopathogenesis, approach to evaluation and approach to management
3. Tropical malabsorption
    - Tropical enteropathy; Tropical sprue
    - Parasites
4. Epidemiology, pathology, pathogenesis, diagnosis, complications and management of celiac sprue
    - Refractory sprue
5. Whipples disease
6. Short bowel syndrome – Etiology, pathophysiology, complications & management (medical / surgical)
7. Protein loosing enteropathy

Training:

1. Management under supervision of OP / IP patients including follow up of these patients.
2. Interpret radiological studies and mucosal biopsy
3. Study textbooks, journals, seminars, workshops and conferences

Assessment:

As part of overall evaluation of trainees in gastroenterology

V. GASTROINTESTINAL MALIGNANCY

Must know

1. Cellular growth and neoplasia (Tumour biology)
2. Gastrointestinal lymphomas
3. GI stromal tumours
4. GI carcinoid tumours and carcinoid syndrome
5. Endocrine tumours of pancreas and GI tract
6. Epidemiology, biology, genetics, clinical features, diagnosis, pathology, staging, screening and surveillance and therapy (surgery / RT / chemo / targeted therapies – neoadjuvant / adjuvant / palliative / endoscopic) and prognosis for esophageal, gastric, small bowel, colonic, hepatic, gall bladder, bile duct and pancreatic tumours.
7. Colonic polyps and polyposis syndrome
8. Prevention of malignant tumours
   a) Surveillance & screening
   b) Endoscopic resection of premalignant lesions – polyps, Barretts esophagus (ablation).
   c) Chemoprevention
   d) Diet / genetic counseling
9. Radiation injury to gastrointestinal tract

May know:

1. Genetic studies in diagnosis, therapy and prognostication
2. Endoscopic management of Barretts esophagus (Photodynamic therapy)
3. Endoscopic treatment techniques for early gastric cancer (e.g) EMR
4. Endotherapy for palliation of esophageal, gastric, pancreatic, biliary tumours
5. EUS – Diagnosis (FNAC), staging, therapy (celiac block in carcinoma pancreas)
6. Principles of chemotherapy and radiation for early and advanced tumours.

Training

1. Management under supervision of OP / IP including follow up these patients.
2. Training upper GI and lower GI endoscopy including polypectomy and palliative stenting of obstructed lesions.
3. Interpret radiological studies and mucosal biopsies
4. Study textbooks, journals, seminars, workshops, conferences
5. Lectures from oncology surgeon, medical oncologist, radiation oncologist, medical geneticist and interventional endoscopist.

Assessment

Part of overall evaluation of trainees

VI BILIARY TRACT AND PANCREATIC DISEASES

Must know

A. Biliary tract disease:

1. Anatomy and developmental anomalies
2. Bile secretion, factors regulating secretion and enterohepatic circulation.

3. Biliary tract – Motor function and dysfunction (sphincter of Oddi Dysfunction).
4. Epidemiology, pathophysiology, etiology, clinical fetures, diagnosis, predictors of severity, complications and therapy of acute pancreatitis.
5. Epidemiology, etiology, pathophysiology, clinical factors, diagnosis, complication and therapy of chronic pancreatitis; Tropical calcific pancreatitis
6. Pancreatic cancer, cystic tumours of pancreas and Neuro endocrine / Non endocrine pancreatic tumours
7. Heriditary, familial and genetic disorder and pancreatic disorder of childhood

May know

1. Therapeutic ERCP – for biliary and pancreatic diseases
2. EUS – performance and interpretation
3. Evaluate bile for microlithiasis

Training methodology

1. Management under supervision of IP / OP patients including follow up of these patients.
2. Training in ERCP / EUS – diagnostic and therapeutic under supervision
3. Interpret radiological studies and mucosal biopsies and FNAC
4. Study textbooks, journals, presentations and attendance at seminars, workshops, conferences
5. Lectures by interventional endoscopist, interventional radiologist, surgeons.
6. Exposure to microbiology, molecular biology, infectious disease and nutrition

Assessment:

Part of over all evaluation of trainees

VII HEPATOLOGY

Must know

1. Anatomy, Embryology and developmental abnormalities of liver
2. Biology and pathobiology – Genetic markers, immunology, virology
3. Liver chemistry and function tests
4. Diagnosis and management of patients with

a) Acute hepatitis – viral, drug, toxic

b) Fulminant hepatic failure – cerebral edema, coagulopathy and other complications

c) Chronic hepatitis and cirrhosis

d) Complications of liver disease – ascites, encephalopathy, SBP, hepatorenal syndrome, bleeding varices and gastropathy

e) Hepatocellular carcinoma

f) Non viral causes of liver disease – Alcohol, NAFLD, Wilsons disease, PBC, Autoimmune hepatitis, hemochromotosis, α-1 antitrypsin deficiency

g) Bacterial, parasitic and fungal infections including liver abscess

h) Vascular diseases – Budd chiari syndrome, veno-occlusion disease

i) Drug induced liver disease

5. Use of anti-viral and immunosuppressive agents in treatment of liver disease

6. Selection and care of patients awaiting and following liver transplantation – understanding of immunosuppressive agents, diagnosis and management of rejection, management of infections and biliary tract and vascular complications.

7. Management of nutritional problems in patients with liver disease

8. Interpretation of liver imaging modalities and limitations of each modality

9. Interpretation of liver histopathology

10. Basic knowledge of pediatric and congenital hepatobiliary disorders

11. Skills in performing liver biopsy, therapeutic paracentesis (minimum number 20 each), understanding indication, contraindications, limitations, complications, interpretation of results.

Training process:

1. At least one faculty should possess advanced expertise in liver diseases

2. 30% of time of training should be in Hepatology (OP/IP)

3. 2 months posting in liver transplant set up.

4. Textbooks, lectures, journals, seminars, conferences

5. Weekly conferences with radiology, pathology and hepato-biliary surgeons.

Desirable to know:

1. Management of post-liver transplant patients

2. Transjugular liver biopsy

Assessment: Part of overall evaluation of trainees in gastroenterology

VIII GASTROINTESTINAL ENDOSCOPY

Must know

Skills:

1. Esophago-gastro-duodenoscopy – biopsy
2. Therapy of variceal and non variceal upper GI bleed
3. Colonoscopy and polypectomy
4. Esophageal dilatation – wire guided / non wire guided Savary Gillard / CRE / pneumatic dilatation for Achalasia cardia.
5. Diagnostic ERCP – placement of stent / NBD

Cognitive

1. Understanding of indications, contraindications and complications.
2. Ability to interpret results of endoscopy
3. Ability to recommend an endoscopic procedure based on clinical, lab and imaging data.
4. Ability to integrate endoscopy findings and therapy into patient management plan
5. Ability to recognize personal limits while performing procedures and know when to request help.
6. Knowledge of side effects of sedation and how to treat them.
7. Knowledge of antibiotic prophylaxis for endoscopy
8. Knowledge of infections and bleeding complications and how to manage them.

Endoscopy Training:

1) Threshold number of procedures to be performed before competence is assessed (minimum number of procedures)

1. Esophago-gastroduodenoscopy	130
2. a) Therapy of non variceal haemorrhage (active bleed 10)	25
b) Variceal haemorrhage (active bleed 5)	20
3. Esophageal dilatation	20
4. Flexible sigmoidoscopy	30
5. Colonoscopy	140
6. Snare polypectomy / homeostasis	20
7. ERCP	20

2) Maintain a log book of all procedures performed

3) Chronological Exposure:

- Skills to be achieved under supervised training

Ist year
- Upper GI endoscopy / biopsy
- Flexible sigmoidoscopy
- Cognitive understanding as described above
- Know how about the cleaning/Disinfection and drying of the scopes.
- Liver biopsy, large volume paracentesis

IInd year
- Therapy of variceal and non variceal upper GI bleed
- Colonoscopy, polypectomy
- Dilatation of esophageal strictures, pneumatic dilatation for achalasia cardia

IIIrd year - ERCP

- Esophgeal and anorectal motility
- 24 hour pH
- Interpretation of capsule endoscopy study

IX NUTRITION

Must know:

1. Basic nutritional concepts
2. Assessment of nutritional status including specific nutritional deficiencies and excesses.
3. Metabolic response to starvation and patho-physiological effects of under nutrition.
4. Re-feeding syndrome
5. Metabolic response to illness and injury and nutritional requirements during stress.
6. Implementation and management of nutritional therapy including modified diets, external tube feeding and parenteral nutrition.
7. Patho-physiology and clinical management of obesity
8. Ethical and legal issues involved in providing and withdrawing nutritional support for terminally ill patients.
9. Placement of naso-jejunal tubes and PEG/PEJ.

Desirable to know:

1. Nutrition management of non-gastrointestinal disease
2. Managing patients with home parenteral nutrition

Assessment: As part of overall evaluation.

X GASTROINTESITNAL AND HEPATIC PATHOLOGY

Must know:

1. Appreciate and recognize spectrum of normal histology
2. Recognize histo-pathological changes in gastrointestinal and hepatic disorders.

May know (Desirable to know)

1. Over view of special techniques and special status

(eg) a. Immuno histochemistry – viral infections, pre malignant and malignant lesions

b. Flow cytometry

c. tests based on molecular biology – PCR, insitu hybridisation

Training:

1. 1 month rotation in GI pathology
2. Regular weekly GE-pathology sessions

Assessment:

1. Feedback after rotation in pathology
2. Part of overall evaluation

XI GASTROINTESTINAL RADIOLOGY

Must know:

1. a. Knowledge of appropriate choice of imaging techniques for specific problem in GI and Hepatic disease after evaluating
    - cost-effectiveness and

- risk-benefit

b. Understand logical sequence of using these techniques

2. Recognise normal anatomy of alimentary tract and related organs.
3. Ability to evaluate and interpret plain film, radiographs, barium studies of GI tract, CT, ultrasound, MRI, scintigraphy, PET, vascular studies.
4. Ability to perform ultrasound abdomen
5. Familiar with radiation safety practices.

Training process:

1. Discussion during ward rounds
2. Exposure at weekly GE-Radiology conferences
3. 1 month rotation in radiology
4. Lectures/self instruction programs – videotapes, video discs.

Assessment: - Part of overall evaluation

- Film quiz

XII SURGERY

Must know:

1. a. Whether surgery is necessary; if indicated what kind of operation; when it should be performed, common complications and long term consequences of the following surgical procedures:

   - Antireflux procedures, peptic ulcer surgery, caustic injury to upper GI tract, hernias and gastric volvulus, abscess and fistulas, hepatobiliary operations, portosystemic

shunts, hepatic resections and liver transplantation, surgery for IBD, surgery for pancreatic and biliary diseases, surgery for malignant disease of GI tract

2. a) Surgery vs Endoscopy vs Interventional radiology – which procedure, where?
   b) Laproscopy vs open surgery

Training:

1. Medical – surgical conferences
2. Lecture series
3. ? Rotation in GI Surgery

Assessment: Part of overall evaluation

XIII PAEDIATRIC GASTROENTEROLOGY

Must know:

1) Congenital disorders of gastrointestinal system, liver, biliary tract and pancreas
2) Age related physiological and psychological variables of children
3) Unique aspects of disease in paediatric age group as compared to adult

Training process:

1. Discuss pediatric cases with faculty (paediatric gastroenterologist)
2. Lectures, seminars, journal club

Assessment of competence:

Part of overall evaluation of trainees in gastroenterology

XIV GERIATRIC GASTROENTEROLOGY

Must know:

General Issues:

1. a) Impact of age on presentation, diagnosis and treatment of important gastrointestinal conditions.

b) Impact of depression and dementia on presentation and treatment.

c) Pathophysiology of aging

d) Social and ethical issues

Geriatric gastroenterology

1. Changes of G.I. function with aging, (e.g.) slowing of colonic motility and rectal dysfunction
2. Changes in drug metabolism
3. Effect of aging on nutrition
4. GI problems in institutionalized and bedridden patients (e.g) fecal impaction as risk factor for urine incontinence.

Training:

1. Discussions with a faculty of geriatric medicine when treating geriatric patients with gastrointestinal and Hepatology disorders / bedside teaching.
2. Lectures, seminars

Assessment: Part of overall evaluation of trainees in gastroenterology

XV WOMENS HEALTH ISSUES IN DIGESTIVE DISEASES

1. General women health issues

a) Doctor-patient relationships

b) Cultural and religious issues

c) Psycho-social issues

d) Lab values and diagnostic tests

- Gender differences as well as changes during pregnancy in normal lab values

2. Specific women health issues

a) Health and disease states – gender difference in demographics, epidemiology, pathophysiology, clinical presentation.

b) Effect of menstrual cycle and menopause on digestive disease

c) Pharmakokinetics of medications – differences in absorption, metabolism and therapeutic response.

3. Pregnancy and child bearing

a) GI and liver changes / disorders in normal pregnancy

b) Effect of pre-existing GI and liver disorders on pregnancy and fertility.

c) Impact of pregnancy on gastrointestinal & liver disease

d) GI and liver disorders unique to pregnancy

e) Maternal-fetal transmission of infections and appropriate management of mother and infant

f) Pharmacokinetics and interactions of medications during pregnancy and breast feeding - potential harm to featus.

g) Nutritional requirements

Post-partum issues

Rectal prolapse, haemorrhoids, urinary / fecal incontinence

Training:

(i) Discussion with appropriate faculty (e.g) gynaecologist when treating women with specific problems related to their gender

(ii) Lectures, seminars

Assessment: Part of overall assessment

XVI RESEARCH

1. Basic knowledge of clinical research methods, biostatistics, epidemiology and ethics.
2. Basic knowledge of cell biology, molecular biology, molecular genetics and immunology
3. Critical analysis of current literature, ability to formulate research questions, make a study design, calculate sample size, data management, ways to avoid bias etc.
4. Preparation of proposals for funding and evaluation by institutional review boards
5. Presentation of work in written/oral form at Conferences
6. Help mentors in peer review of articles submitted for publication.

Training: A prospective study towards thesis

XVII CELLULAR AND MOLECULAR PHYSIOLOGY

Knowledge of fundamental concepts in

1. Cell biology
2. Molecular biology
3. Genetics
4. Immunology including basic transplant biology
5. Pharmacology and cellular signalling
6. Host-enviornment interactions
7. Understanding basics of techniques - PCR, Genetic screening, Recombinant technology /Micro-array, flowcytometry.
8. Gastrointestinal hormones and neurotransmitters

Training Process:

1. Lectures by external/internal faculty
2. Seminars
3. Conferences
4. Textbook/monograph- self reading

XVIII MISCELLANEOUS

1) Gastrointestinal and hepatic complication of solid organ and hemopoetic cell transplantation

2) Gastrointestinal and hepatic manifestation of systemic disease.

3) Vascular lesions of gastrointestinal tract

Miscellaneous Training :

1.Candidates are expected to attend regularly the following meetings

Annual conference and mid term conferences of ISG, INASL, SGEI.

Annual , Mid term and monthly meetings of ISG Tamil nadu chapter.

Guest Lecture Meetings by national and international visiting faculties.

CME's , CPC's and other lecture programmes organized by MMC, SMC, KMC (DDHD), and other institutions and make clinical presentations at City Gastro Meet/ Physicians conference etc.

2.Take clinical classes for MD internal Medicine Post Graduates and theory classes for MBBS students, Nursing students and BSc Nutrition students.

POSTINGS FOR 3 YEAR COURSE:

First Year:

Gastroenterology : 7 months

Paediatric Gastroenterology: 1 month

Gastro Radiology : 15 days

Gastro Pathology : 15 days

Intensive Medical Care : 15 days

Surgical Gastroenterology : 15 days

Endoscopy : 2month

Note : MD Paediatric Candidates should attend General medical wards for one month.

Second Year:

Gastroenterology : 7months

Paediatric Gastroenterology: 1 month

Endoscopy : 3months

Research Labs : 15 days

Post Liver Transplant Care : 15 days

Third Year:

Gastroenterology : 6 months

Endoscopy : 5 months

Posting in Centre doing more advanced GE work: 1 month

ASSESSMENT STRATEGY

1. Elements to be evaluated:

a) Knowledge of gastrointestinal and hepatic physiology, pathophysiology and clinical pharmacology in each area of specialty

b) Clinical competence – ability to make a differential diagnosis from a good history and physical examination; formulate an investigation and management plan taking into consideration cost effectiveness and risk benefit.

- ability to present results of a consultations (oral / written)

c) Procedural skills

d) Research work

2. Methods of evaluation:

a) Observation during rounds, procedures, presentation at journal club, seminars and bedside clinics.

b) Formal evaluation by all faculty members who superwise trainees with feed back to trainees.

c) Formal periodic inservice examination (Internal Assessment) – to test knowledge base, clinical competence and procedural skills as well as interpretation of endoscopic, radiological and pathological findings. A written theory paper of three hours duration can be conducted once in a fortnight or a month.

d) Theory examination at completion of course – to test knowledge of Basic Sciences, Clinical Gastroenterology and recent advances.

e) Clinical examination at completion of course to test competency at parent and other centres.

f) Evaluation of thesis and log book

SUGGESTED READINGS:

Books

1. Sleisenger Z. Gastrointestinal & Liver Disease (2 Vol) – Saunders
2. Sleisenger Z. Gastrointestinal & Liver Disease (2 Vol) – Saunders
3. Yamada. Textbook of Gastroenterology (2 Vol)
4. Walker. Paediatric Gastrointestinal Disease (2 Vol) – B.C. Docker
5. A.K. Rustgi – Gastrointestinal Cancer. – Elsevier, Saunders
6. Kelsen. Principles and practice of gastrointestinal oncology – LWW
7. Castell D.O. The esophagus – LWW
8. Schiff. Disease of Liver (2 Vol) – LWW
9. Jaron Rodes. Textbook of Hepatology – Blackwell
10. Sherlock S. Diseases of Liver & Biliary system – Blackwell
11. Suchy. Liver diseases in children – LWW
12. Blumgart. Surgery of liver & biliary tract – Saunders
13. Busutil R.W. Transplantation of Liver (2 Vol) – Elseiver Saunders
14. Gore text book of Gastrointestinal Radiology.

Journals

GUT

Gastroenterology

Digestive Diseases & Sciences

J Gastroenterology & Hepatology

Hepatology

NEJM

Int. J Gastroenterology

Am. J. Gastroenterology

J. Paed. Gastro & Nutrition

Pancreas

Tropical Gastroenterology

Seminars in Liver Disease

Indian journal of Gastroenterology

Digestive endoscopy

North American clinics in Gastroenterology , Liver and Endoscopy.