PG CURRICULUM

OBJECTIVES:

At the end of 3 years of training the candidate should be able to acquire adequate knowledge of the discipline.

Knowledge:

Theoretical, Clinical and practical knowledge of all oral mucosal lesions, skeletal involvement of maxillofacial region, diagnostic procedures pertaining to them and latest information of imaging modules.

Skills:

Three important skills need to be imparted in maxillofacial diseases:

1. Diagnostic skill in recognition of oral diseases with radiographic diagnosis and their management
2. Research skills in handling scientific problems pertaining to oral treatment
3. Clinical and Didactic skills in encouraging younger doctors to attain learning objectives

Attitudes:

The positive mental attitude and the persistence of continued learning need to be inculcated

COURSE CONTENTS:

A) Applied Basic Sciences:

Applied Anatomy:

1. Gross anatomy of the face:
    a. Muscles of Facial Expression and Muscles of Mastication
    b. Facial nerve
    c. Facial artery
    d. Facial vein
    e. Parotid gland and its relations
    f. Sub mandibular salivary gland and its relations
2. Neck region:
    a. Triangles of the neck with special reference to Carotid, Digastric triangles and midline structures
    b. Facial spaces
    c. Carotid system of arteries, Vertebral Artery, and Subclavian arteries
    d. Jugular system

Internal jugular

External jugular

e. Lymphatic drainage

f. Cervical plane

g. Muscles derived from Pharyngeal arches

h. Infratemporal fossa in detail and temporomandibular joint

i. Endocrine glands

• Pituitary

• Thyroid

• Parathyroid

j. Exocrine glands

• Parotid

• Thyroid

• Parathyroid

k. Sympathetic chain

l. Cranial nerves- V, VII, IX, XI, & XII

3. Oral Cavity:

a. Vestibule and oral cavity proper

b. Tongue and teeth

c. Palate – soft and hard

4. Nasal Cavity

a. Nasal septum

b. Lateral wall of nasal cavity

c. Paranasal air sinuses

5. Pharynx:

6. Gross salient features of brain and spinal cord with references to attachment of cranial nerves to the brainstem

Detailed study of the cranial nerve nuclei of V, VII, IX, X, XI, XII

7. Osteology:

a) Comparative study of fetal and adult skull

b) Mandible: Development, ossification, age changes and evaluation of mandible in detail

Embryology:

1. Development of face, palate, nasal septum and nasal cavity, paranasal air sinuses

2. Pharyngeal apparatus in detail including the floor of the primitive pharynx

3. Development of tooth in detail and the age changes

4. Development of salivary glands

5. Congenital anomalies of face must be dealt in detail.

Histology:

1. Study of epithelium of oral cavity and the respiratory tract

2. Connective tissue

3. Muscular tissue

4. Nervous tissue

5. Blood vessels

6. Cartilage

7. Bone and tooth

8. Tongue

9. Salivary glands

10. Tonsil, thymus, lymph nodes

Physiology:

1. General Physiology:

    a. Cell

    b. Body Fluid Compartments

    c. Classification

    d. Composition

    e. Cellular transport

    f. RMP and action potential

2. Muscle Nerve Physiology:

    a. Structure of a neuron and properties of nerve fibers

    b. Structure of muscle fibers and properties of muscle fibers

    c. Neuromuscular transmission

    d. Mechanism of muscle contraction

3. Blood:

    a. RBC and Hb

    b. WBC – Structure and functions

    c. Platelets – functions and applied aspects

    d. Plasma proteins

    e. Blood Coagulation with applied aspects

f. Blood groups

g. Lymph and applied aspects

4. Respiratory System:

a. Air passages, composition of air, dead space, mechanics of respiration with pressure and volume changes

b. Lung volumes and capacities and applied aspects

c. Oxygen and carbon dioxide transport

d. Neural regulation of respiration

e. Chemical regulation of respiration

f. Hypoxia, effects of increased barometric pressure and decreased barometric pressure

5. Cardio-Vascular System:

a. Cardiac Cycle

b. Regulation of heart rate/ Stroke volume / cardiac output / blood flow

c. Regulation of blood pressure

d. Shock, hypertension, cardiac failure

6. Excretory System:

a. Renal function tests

7. Gastro – intestinal tract:

a. Composition, functions and regulation of:

- Saliva
- Gastric juice
- Pancreatic juice
- Bile and intestinal juice
- Mastication and deglutition

8. Endocrine System:

a. Hormones – classification and mechanism of action

b. Hypothalamic and pituitary hormones

c. Thyroid hormones

d. Parathyroid hormones and calcium homeostasis

e. Pancreatic hormones

f. Adrenal hormones

9. Central Nervous System:

a. Ascending tract with special references to pain pathway

10. Special Senses:

    a. Gustation and Olfaction

Biochemistry:

1. Carbohydrates – Disaccharides specifically maltose, lactose, sucrose

    a. Digestion of starch/absorption of glucose

    b. Metabolism of glucose, specifically glycolysis, TCA cycle, gluconeogenesis

    c. Blood sugar regulation

    d. Glycogen storage regulation

    e. Glycogen storage diseases

    f. Galactosemia and fructosemia

2. Lipids

    a. Fatty acids- Essential/non essential

    b. Metabolism of fatty acids- oxidation, ketone body formation, utilization ketosis

    c. Outline of cholesterol metabolism- synthesis and products formed from cholesterol

3. Protein

    a. Amino acids- essential/non essential, complete/ incomplete proteins

    b. Transamination/ Deamination (Definition with examples)

    c. Urea cycle

    d. Tyrosine-Hormones synthesized from tyrosine

    e. In born errors of amino acid metabolism

    f. Methionine and transmethylation

4. Nucleic Acids

    a. Purines/Pyrimidines

    b. Purine analogs in medicine

    c. DNA/RNA – Outline of structure

    d. Transcription/translation

    e. Steps of protein synthesis

    f. Inhibitors of protein synthesis

    g. Regulation of gene function

5. Minerals

    a. Calcium/Phosphorus metabolism specifically regulation of serum calcium levels

    b. Iron metabolism

    c. Iodine metabolism

    d. Trace elements in nutrition

6. Energy Metabolism

a. Basal metabolic rate

b. Specific dynamic action (SDA) of foods

7. Vitamins

a. Mainly these vitamins and their metabolic role- specifically vitamin A, Vitamin C, Vitamin D, Thiamin, Riboflavin, Niacin, Pyridoxine

Pathology:

1. Inflammation:

a. Repair and regeneration, necrosis and gangrene

b. Role of complement system in acute inflammation

c. Role of arachidonic acid and its metabolites in acute inflammation

d. Growth factors in acute inflammation

e. Role of molecular events in cell growth and intercellular signaling cell surface receptors

f. Role of NSAIDS in inflammation

g. Cellular changes in radiation injury and its manifestations

2. Homeostasis:

a. Role of Endothelium in thrombo genesis

b. Arterial and venous thrombi

c. Disseminated Intravascular Coagulation

d. Shock:Pathogenesis of hemorrhagic, neurogenic, septic, cardiogenic shock, circulatory disturbances, ischemic hyperemia, venous congestion, edema, infarction

3. Chromosomal Abnormalities:

a. Marfan's syndrome

b. Ehler's Danlos Syndrome

c. Fragile X Syndrome

4. Hypersensitivity:

a. Anaphylaxis

b. Type II Hypersensitivity

c. Type III Hypersensitivity

d. Cell mediated Reaction and its clinical importance

e. Systemic Lupus Erythmatosus

f. Infection and infective granulomas

5. Neoplasia:

a. Classification of Tumors

b. Carcinogenesis & Carcinogens – Chemical, Viral and Microbial

c. Grading and Staging of Cancer, tumor Angiogenesis, Paraneoplastic Syndrome

d. Spread of tumors

e. Characteristics of benign and malignant tumors

6. Others:

a. Sex linked agamaglobulinemia

b. AIDS

c. Management of Immune deficiency patients requiring surgical procedures

d. De George's Syndrome

e. Ghons complex, post primary pulmonary tuberculosis – pathology and pathogenesis

Pharmacology:

1. Definition of terminologies used
2. Dosage and mode of administration of drugs
3. Action and fate of drugs in the body
4. Drugs acting on CNS
5. Drug addiction, tolerance and hypersensitive reactions
6. General and local anesthetics, hypnotics, antiepileptics and tranquilizers
7. Chemotherapeutics and antibiotics
8. Analgesics and anti – pyretics
9. Anti – tubercular and anti – syphilitic drugs
10. Antiseptics, sialogogues, and anti – sialogogues
11. Haematinics
12. Anti – diabetics
13. Vitamins – A, B Complex, C, D, E & K
14. Steroids

B) Oral and Maxillofacial Radiology:

Study includes Seminars / lectures / Demonstrations

1. History of radiology, structure of x – ray tube, production of x – ray, property of x – rays
2. Biological effects of radiation
3. Films and recording media

4. Processing of image in radiology

5. Design of x –ray department, dark room and use of automatic processing units

6. Localization by radiographic techniques

7. Faults of dental radiographs and concept of ideal radiograph

8. Quality assurance and audit in dental radiology

9. Extra – oral-imaging techniques

10. OPG and other radiologic techniques

11. Advanced imaging techniques like CBCT,CT Scan, MRI, Ultrasound

12. Basic Anatomy of sectional imaging with case interpretations of CT / CBCT / MRI

13. Radio nucleotide techniques

14. Contrast radiography in salivary gland, TMJ, and other radiolucent pathologies

15. Radiation protection and ICRP guidelines

16. Art of radiographic report, writing and descriptors preferred in reports

17. Radiograph differential diagnosis of radiolucent, radio opaque and mixed lesions

18. Digital radiology and its various types of advantages

C) Oral Medicine, therapeutics and laboratory investigations:

Study includes seminars / lectures / discussion

1. Methods of clinical diagnosis of oral and systemic diseases as applicable to oral tissues including modern diagnostic techniques

2. Laboratory investigations including special investigations of oral and oro – facial diseases

3. Teeth in local and systemic diseases, congenital, and hereditary disorders

4. Oral manifestations of systemic diseases

5. Oro – facial pain

6. Psychosomatic aspects of oral diseases

7. Management of medically compromised patients including medical emergencies in the dental chair

8. Congenital and Hereditary disorders involving tissues of oro facial region

9. Systemic diseases due to oral foci of infection

10. Hematological, Dermatological, Metabolic, Nutritional, & Endocrinal conditions with oral manifestations

11. Neuromuscular diseases affecting oro –facial region

12. Salivary gland disorders

13. Tongue in oral and systemic diseases

14. TMJ dysfunction and diseases

15. Concept of immunity as related to oro – facial lesions, including AIDS

16. Cysts, Neoplasms, Odontomes, and fibro – osseous lesions

17. Oral changes in Osteo – dystrophies and chondro – dystrophies

18. Pre malignant and malignant lesions of oro facial region

19. Allergy and other miscellaneous conditions

20. Therapeutics in oral medicine –clinical pharmacology

21. Forensic odontology

22. Computers in oral diagnosis and imaging

23. Evidence based oral care in treatment planning

24. Molecular Biology

Essential Knowledge:

Basic medical subjects, Oral Medicine, Clinical Dentistry, Management of Medical Emergencies, Oral Radiology techniques and Interpretation, Diagnosis of Oro – facial disorders

Procedural and Operative Skills:

1st Year:

1. Examination of Patient - Case history recordings – 100
   - FNAC – 50
   - Biopsy – 50
   - Observe, Assist, & Perform under supervision
2. Intra – oral radiographs:
   - Perform and interpretation – 500
3. Full mouth intra oral radiograph tracings –
4. 3
5. Age estimation using radiographs – 10

2nd Year:

1. Dental treatment to medically compromised patients – 2

- Observe, assist, and perform under supervision

2. Extra oral radiographs, digital radiography – 20

- Observe, assist and perform under supervision, Interpretation

3. Extra Oral radiographs tracings – 3

4. CBCT Interpretations – 5

Operative skills:

1. Giving intra muscular and intravenous injections

2. Administration of oxygen and life saving drugs to the patients

3. Performing basic CPR and certification by Red Cross or similar authorized organization

3rd Year

All the above

- Performed independently – Case history: Routine cases – 100
- Interesting Cases – 25
- OPG – 50
- Periapical view – 100
- Bitewing view – 50
- Occlusal view – 50
- Extra – oral radiographs of different views – 25
- CBCT Interpretations – 10
- Treatment of mucosal lesions with LASER – 3

Monitoring Learning Progress:

It is essential to monitor the learning progress of each candidate through continuous appraisal and regular assessment. It not only helps teachers to evaluate students, but also students to evaluate themselves. The monitoring is to be done by the staff of the department based on participation of students in various teaching / learning activities. It may be structured and assessment be done using checklists that assess various aspects. Checklists are given in Section IV

Schemes of Examination:

A. Theory: Part-I: Basic Sciences Paper - 100 Marks

Part-II: Paper-I, Paper-II & Paper-III - 300 Marks

(100 Marks for each Paper)

Written examination shall consist of Basic Sciences Paper (Part-I) of three hours duration and should be conducted at the end of First year of MDS course. Part-II Examination will be conducted at the end of Third year of MDS course. Part-II Examination will consist of Paper-I, Paper-II & Paper-III, each of three hours duration. Paper-I & Paper-II shall consist of two long answer questions carrying 25 marks each and five questions carrying 10 marks each. Paper-III will be on Essays. In Paper-III three Questions will be given and student has to answer any two questions. Each question carries 50 marks. Questions on recent advances may be asked in any or all the papers. Distribution of topics for each paper will be as follows: *

PART-I : Applied Basic Sciences:Applied Basic Sciences:Applied Anatomy,

Physiology, & Biochemistry, Pathology, Microbiology, Pharmacology, Research Methodology and Biostatistics

PART-II :

Paper-I : Oral and Maxillofacial Radiology

Paper-II : Oral Medicine, therapeutics and laboratory investigations

Paper-III : Essays (descriptive and analyzing type questions)

* The topics assigned to the different papers are generally evaluated under those sections. However a strict division of the subject may not be possible and some overlapping of topics is inevitable. Students should be prepared to answer overlapping topics.

B. Practical / Clinical Examination : 200 Marks

1st Day

Clinical Case Presentation

2 Spotters 2 x 10 = 20 Marks

2 Short Cases 2 x 15 = 30 Marks

1 Long Case 1 x 50 = 50 Marks

Total = 100 Marks

Radiology Exercise

I. A) One Intra Oral Radiograph : 10 Marks

B) One Occlusal Radiograph :30 Marks

II. A) Two Extra Oral Radiograph :2 x 30 = 60 Marks

Including technique and interpretation

2nd Day

C. Viva Voce : 100 Marks

i. Viva-Voce examination : 80 marks

All examiners will conduct viva-voce conjointly on candidate's comprehension, analytical approach, expression, interpretation of data and communication skills. It includes all components of course contents. It includes presentation and discussion on dissertation also.

ii. Pedagogy Exercise : 20 marks

A topic be given to each candidate in the beginning of clinical examination. He/she is asked to make a presentation on the topic for 8-10 minutes