GUIDELINES FOR COMPETENCY BASED POSTGRADUATE TRAINING PROGRAMME FOR DIPLOMA IN ALLERGY AND CLINICAL IMMUNOLOGY

Preamble

Allergic disorders are a common problem which affects almost 20-25% of the population. They can involve various systems like respiratory system, gastrointestinal system and the skin. In addition, drug allergy is a major problem. Industrialization as well as control of infectious disease has also increased the burden of allergic disorders on our society. With advances in Immunology the treatment of these disorders is also undergoing a major change but there is lack of trained manpower in this area in our country. Most developed nations like USA, UK, and Australia have fellowship in Clinical Immunology and Allergy. The present course will provide increased manpower so that expert medical care can be provided to patients with allergy.

SUBJECT SPECIFIC OBJECTIVES

At the end of the course, the student should develop the ability to:

a) Clinically diagnose, investigate and manage a whole spectrum of allergic diseases
b) Provide consultation to allied medical specialties
c) Perform and interpret the common immunological tests used in allergic disorders
d) Plan and undertake research in allergic diseases in the clinic, laboratory and community
e) Critically analyze literature in the field of Clinical Immunology and allergy

Details are given in Appendix.

SUBJECT SPECIFIC COMPETENCIES

By the end of the course, the student should have acquired knowledge (cognitive domain), professionalism (affective domain) and skills (psychomotor domain) as per details given below:

A. Cognitive domain

At the end of the course, the student should have acquired knowledge in the following theoretical competencies:

1. **Clinical Skills**:

   1.1 Assessment and management of :

   Asthma and related conditions

   Allergic Rhinitis and related conditions

   Allergic fungal disorders

   Allergic conjunctivitis and related conditions

   Atopy and eczema and related conditions

   Urticaria and related conditions

   Anaphylaxis and related conditions

   Drug allergy

   Food allergy

   Insect bite and allergy

   Contact dermatitis

   Mast cell disorders

   1.2. Primary prevention of allergic disorders

   1.3. Immunotherapy of various allergic disorders

   1.4 Allergy testing

   1.5 Pulmonary function tests

2. **Teaching skills**:

   The Diploma student should acquire skills which will enable him to teach undergraduates the basics and clinical aspects of allergic disorders and Immunology

3. **Research Methodology:**

   The Diploma student should acquire skills which will enable him to undertake:

   - clinical or lab research related to allergic disorders
   - Prepare protocols for studies
   - Undertake critical appraisal of a scientific paper

4. **Group Approach**: able to interact with other specialties like dermatology, pediatrics, internist and pulmonologists

B. Affective domain

The DM student

1. Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.

2. Always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.

3. Develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

C. Psychomotor domain

At the end of the course, the student should have acquired skills in following practical competencies and should be able to:

1. Clinically diagnose, investigate and manage a whole spectrum of allergic diseases
2. To provide consultation to allied medical specialties
3. Practically perform and interpret the common immunological tests used in allergic disorders
4. Plan and undertake research in allergic diseases in the clinic, laboratory and community
5. Competent to understand and critically analyze literature in the field of Clinical Immunology and allergy
6. Teach the subject to undergraduates
7. Conduct Pulmonary function tests
8. Perform Immunotherapy of various allergic disorders
9. Perform Allergy testing

Syllabus

Course contents:

Allergy will encompass the following headings:

1. Asthma-diagnosis, pathophysiology and treatment
2. Status asthmatics-diagnosis and treatment
3. Rhinitis-classification, diagnosis and treatment
4. Care of patients with asthma and/or allergic rhinitis during pregnancy
5. Drug reactions-diagnosis and treatment
6. Food reactions-diagnosis and treatment
7. Contact dermatitis-diagnosis and treatment
8. Atopic dermatitis-diagnosis and treatment
9. Stinging insect reactions-diagnosis and treatment
10. Anaphylaxis-diagnosis and treatment
11. Urticaria-diagnosis and treatment
12. Procedures

    a) Pulmonary function tests
    b) Allergy skin testing immediate and delayed
    c) Immunotherapy
    d) In vitro serum IgE allergen specific assays

13. Clinical immunology-components of the immune system, immunological reactions, and the more common immunodeficiency states.

B. Affective domain

The post graduate student:

1. Should be able to function as a part of a team, develop an attitude of cooperation with colleagues, and interact with the patient and the clinician or other colleagues to provide the best possible diagnosis or opinion.
2. should always adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.
3. should develop communication skills to word reports and professional opinion as well as to interact with patients, relatives, peers and paramedical staff, and for effective teaching.

TEACHING AND LEARNING METHODS

Formal Teaching

1. **Journal Club:** 1 hour duration - Paper presentation/discussion - once per week.
2. **Seminar:** One seminar every week of one hour duration
3. **Lecture/discussion:** Lectures on newer topics by faculty, in place of seminar as per need.
4. **Case presentation** in the ward. Post graduate students will present a clinical case for discussion before a faculty and discussion made pertaining to its management and decision to be recorded in case files.
5. **Case review:** Post graduate students are expected to work up one long case and present the same to a faculty member and discuss the management.
6. **X-ray Classes**: Once weekly in which the radiological features of various problems are discussed.
7. **Combined Round/Grand Round:** These exercises are to be done for the hospital once a week or twice a month involving presentation of unusual or difficult cases. Presentation of cases in clinical combined / grand rounds and clinical series/research data for the benefit of all clinicians and other related disciplines once in week or fortnightly.
8. **Emergency situation**: Casualty duty to be arranged by rotation among the PGs with a faculty cover daily by rotation.
9. Bedside clinical training for patient care management. Daily for ½ to one hour during ward round with faculty and 1-2 hours in the evening by post graduate student/faculty on emergency duty, bed side patient care discussions are to be made.
10. Clinical teaching: In OPD, ward rounds, emergency, ICU.
11. **Should have attended one conferences/CMEs/Workshops during his tenure.**

    Post graduate students and Faculty on duty in respective places - make discussion on clinical diagnosis/treatment modalities, including preparation of discharge slip.

Clinical postings: Recommended schedule for two years training (modify as per your requirement):

The Post graduate student is required to work full time and participate in the patient care and academic and research activities as described below.

Clinical posting

Allergy and Immunology	12 months
Pulmonary Medicine	03 months
Dermatology	02 months
Rheumatology	01 month
Internal Medicine	01 month
Pediatrics	01 month
Lab posting (allergy & immunology tests)	04 months

During the training programme, patient safety is of paramount importance; therefore, skills are to be learnt initially on the models, later to be performed under supervision followed by performing independently; for this purpose, provision of skills laboratories in medical colleges is mandatory.

ASSESSMENT

FORMATIVE ASSESSMENT, during the training programme

Formative assessment should be continual and should assess medical knowledge, patient care, procedural & academic skills, interpersonal skills, professionalism, self directed learning and ability to practice in the system.

General Principles

Internal Assessment should be frequent, cover all domains of learning and used to provide feedback to improve learning; it should also cover professionalism and communication skills. The Internal Assessment should be conducted in theory and clinical examination.

Quarterly assessment during the Diploma training should be based on:

1. **Journal based / recent advances learning**
2. **Patient based /Laboratory or Skill based learning**
3. **Self directed learning and teaching**
4. **Departmental and interdepartmental learning activity**
5. **External and Outreach Activities / CMEs**

The student to be assessed periodically as per categories listed in postgraduate student appraisal form (Annexure I).

SUMMATIVE ASSESSMENT ie., assessment at the end of training

The summative examination would be carried out as per the Rules given in POSTGRADUATE MEDICAL EDUCATION **REGULATIONS, 2000.**

Post graduate Examination

The post graduate examination consists of three parts:

1. **Theory**: There shall be four theory papers as follows:

   Paper I: Basic Sciences including genetics & molecular biology
   Paper II: Systemic & applied aspects of the subject specific
   Paper III: Recent advances in the specialty

2. **Practical**: The practical examination should consist of the following and should be spread over two days, if the number of candidates appearing is more than five.

   1. One long case: History taking, physical examination, interpretation of clinical findings, differential diagnosis, investigations, prognosis and management.

   2. Two Short cases from various sections of the specialty

3. **Viva-voce Examination**

Recommended Reading
Books (latest edition)

1. Kuby Immunology.
2. Janeway CA Jr (Ed) Immunobiology. The immune system in health and disease.
3. Rich RR. Clinical Immunology principles and practice.
4. Middleton's allergy.
5. Manual of molecular and clinical Immunology.
6. Leung DYM Pediatric allergy: Principles and practice.
7. Steihm: Immunological diseases of infancy and childhood.

Journals:

Three international and 02 national (all indexed) journals.

Annexure I

Postgraduate Student Appraisal Form

Clinical Disciplines

Name of the Department/Unit :

Name of the PG Student :

Period of Training : FROM……TO……

Sr. No.	PARTICULARS	Not Satisfactory	Satisfactory	More Than Satisfactory	Remarks
		1 2 3	4 5 6	7 8 9	
1.	Journal based / recent advances learning				
2.	Patient based /Laboratory or Skill based learning				
3.	Self directed learning and teaching				
4.	Departmental and interdepartmental learning activity				
5.	External and Outreach Activities / CMEs				
6.	Thesis / Research work				
7.	Log Book Maintenance				

Publications Yes/ No

Remarks*_____

_____

_____

_____

***REMARKS: Any significant positive or negative attributes of a postgraduate student to be mentioned. For score less than 4 in any category, remediation must be suggested. Individual feedback to postgraduate student is strongly recommended.**

SIGNATURE OF ASSESSEE SIGNATURE OF CONSULTANT SIGNATURE OF HOD

Appendix-II

Asthma Care
Objectives

Upon completion of this course, the physician should be able to:

1. Define asthma
2. Define the meaning of the terms:

   a) Wheezing
   b) Rhonchi
   c) Crackles (rales)
   d) Stridor

3. List the three major pathologic factors responsible for airway obstruction in asthma and to differentiate from chronic bronchitis/emphysema

3b. Explain the pathophysiology of asthma regarding the:

   a) IgE mechanism
   b) Adrenergic mechanism
   c) Cholinergic mechanism

4. Discuss precipitating factors including:

   a) Infection
   b) Irritants
   c) Exercise
   d) Allergens
   e) Medications
   f) Intrinsic factors including gastro esophageal reflux disease

5. Describe the clinical findings typical of asthma

6. Create a differential diagnosis of asthma

7. Describe the different spirometric tests of lung function and the changes produced in these tests by asthma

8. Discuss etiologic evaluation

   a) History
   b) Skin testing

9. Explain environmental control measures.

10. Discuss classifying asthma severity in patients based on day and night time symptoms & lung function- and severity of asthma.

11. Discuss the different classes of drugs used in the medical management of asthma and their side effects and their use in step therapy based on asthma severity:

    a) Epinephrine
    b) beta2 agonists
    c) Theophylline (methylxanthines)
    d) Cromolyn and nedocromil
    e) Steroids, inhaled and systemic
    f) Atropine, ipratropium bromide
    g) Leukotriene modifiers

12. Demonstrate proficiency in the proper use of the meter-dosed inhaler, spacer device, dry power inhaler, nebulizers and how to instruct patients in their use.

13. Explain goals and precautions of immunotherapy in patients with asthma

14. Discuss use of peak flow meters in the clinical management of asthma and develop an asthma action plan based on levels of peak flow measurements

15. Describe a basic program of outpatient management of:

    a) asthma with a febrile viral respiratory tract infection
    b) seasonal asthma
    c) exercise induced bronchospasm
    d) asthma develops after exposure to an industrial chemical

16. Define and explain the management of status asthmaticus

17. Discuss quality of life issues regarding patients with chronic asthma patients based on day and night time symptoms & lung function etc.

18. Recognize emotional/behavioral aspects of caring for patients with asthma

Rhinitis Care
Objectives

Upon completion of this physician should be able to:

1. Classify rhinitis in the categories of seasonal allergic rhinitis, perennial allergic rhinitis, perennial nonallergic rhinitis and vasomotor/chronic rhinitis

2. Describe the signs and symptoms of allergic rhinitis and contrast them with those of vasomotor/chronic rhinitis

3. Summarize the natural history of allergic rhinitis and contrast it with that of vasomotor/chronic rhinitis

4. Explain the pathophysiology of allergic rhinitis and contrast it with that of vasomotor/chronic rhinitis

5. Identify precipitating factors for rhinitis in:

   a) Outdoor allergens (with knowledge of seasons, trees, grasses, weeds and molds)
   b) Indoor allergens (dust mites, animal dander, cockroach feces, etc.
   c) Irritants
   d) Physical factors
   e) Endocrine factors

6. Explain the roles of nasal smears and skin testing in the diagnosis of rhinitis

7. Describe methods to manage allergic rhinitis

   a) Environmental control: home, school, work
   b)Antihistamines (oral, topical) including descriptions of different classes of antihistamines; relative contraindications, (benign prostatic hypertrophy,airplane pilot); and use in patients with concomitant asthma
   c) Decongestants
   d) Sympathomimetic (oral, topical)
   e) Cromolyn sodium
   f) Topical steroids
   g) Immunotherapy

8. List the complications of untreated allergic rhinitis (including sinusitis, orthodontic problems, and otitis media)

9. Describe quality of life issues in patients with allergic rhinitis

10. Discuss allergic/non-allergic conjunctivitis

Pregnant Patients with Asthma and/or Allergic Rhinitis

Objectives

Upon completion of this physician should be able to:

1. Describe the changes in pulmonary physiology with pregnancy

2. Discuss the effects of anti-asthma drugs on development of the fetus and the course of the pregnancy
3. List the drugs of choice for the treatment of asthma according to the severity of asthma in pregnancy

4. Describe the treatment of acute asthma in pregnancy

5. Describe the treatment of allergic rhinitis in pregnancy

6. Discuss the treatment of respiratory infections in pregnancy

7. Discuss allergy management in pregnancy, including environmental control and immunotherapy

Adverse Drug Reaction
Objectives

Upon completion of this topic, the physician should be able to:

1. Classify adverse drug reactions and give examples, including:
   a) Toxicity
   b) Intolerance
   c) Side effects
   d) Idiosyncrasy
   e) Drug allergy
   f) Drug interaction

2. Explain the pathophysiology of drug allergy

   a) Type I, mast cell mediated immediate hypersensitivity (IgE-mediated) drug reaction with several example
   b) Type II, cytotoxic-type drug reactions with examples
   c) Type III, serum sickness: Arthus-type drug reaction with examples
   d) Type IV, cellular hypersensitivity-type drug reaction with examples

3) Using penicillin as a model,

   a) Define hapten
   b) List several different penicillin reactions, both immunologic and nonimmunologic

4. Explain the roles of clinical history, physical examination of adverse drug reactions

5. Discuss skin testing for penicillin allergy

6. Describe reactions to local anesthetics and use of graduated dose therapeutic trial

7. Identify several drugs that have been implicated in anaphylactic reactions,,,,

Adverse Reactions to Foods
Objectives

Upon completion of this topic, the physician should be able to:

1. Classify adverse reactions to foods and give examples of:

    a) Physiologic reactions
    b) Genetic enzymatic reactions
    c) Reactions of intolerance
    d) Toxic reactions
    e) Idiosyncratic reactions
    f) Reactions to food additives, bisulfites, tartrazine

2. Describe the pathophysiology to Type I, IgE-mediated food allergy reactions

3. List foods commonly implicated in Type I, IgE-mediated, hypersensitivity anaphylactic reactions

4. Explain methods to diagnose IgE-mediated hypersensitivity food reaction

Allergic Contact Dermatitis
Objectives

Upon completion of this topic the physician should be able to:

1. Describe the etiology of this Type IV, cellular immunity type reaction

2. Describe typical distribution of contact dermatitis caused by different common contactants

3. Describe patch tests and their role in the diagnosis of contact dermatitis

4. Outline a program of management for a patient with contact dermatitis including:

    a) Avoidance
    b) Oral steroids
    c) Topical steroids
    d) Soothing skin soaks
    e) antipruritic drugs

Atopic Dermatitis
Objectives

Upon completion of this topic, the physician should be able to:

1. Define the terms atopic dermatitis and eczema

2. Identify the characteristic age at onset of atopic dermatitis and the typical distribution of skin involvement by age of the patient.

3. Discuss the triggers of atopic dermatitis including:
   a) Allergens including foods & airborne allergens
   b) Infections including staphylococcal
   c) Irritants such as soaps

4. Discuss the natural history of atopic dermatitis

5. List the complications of atopic dermatitis

6. List the differential diagnosis of atopic dermatitis

7. Describe typical laboratory findings in patients with atopic dermatitis

8. Outline a management for a patient with atopic dermatitis including:

   a) Environmental control
   b) Topical humidification & lubrication
   c) Topical steroids
   d) Dietary factors
   e) Treatment of complications

Stinging Insect Reactions
Objectives

Upon completion of this topic, the physician should be able to:

1. List the insects that are members of the order Hymenoptera

2. Identify where in the natural habitat one could typically find a honey bee, wasp, yellow jacket, hornet, and fire ant

3. List common insects that may be responsible for untoward reactions, but are not of he order Hymenoptera, for example: kissing bug, mosquito, deerfly, and spider

4. Differentiate the reactions that can occur after insect stings including:
    a) Normal reactions
    b) Exaggerated local reactions
    c) Systemic reactions
    d) Delayed reactions

5. Describe the pathophysiology of a systemic reaction to a stinging insect

6. Explain the role of venom skin testing and in vitro serum IgE allergen specific assays in the diagnosis of stinging insect hypersensitivity

7. Outline an emergency treatment for a patient with:

    a) Local reaction to insect sting
    b) Exaggerated local reactions to insect sting
    c) Systemic reactions to insect sting

8. Explain long-term management of patient with insect sting reactions
9. List indications for venom immunotherapy in the prophylaxis of sting insect hypersensitivity.

Anaphylaxis

Objectives

Upon completion of this topic rotation, the physician should be able to:

1. Define anaphylaxis
2. List several causes of anaphylaxis including foods and medication
3. List the common causes of death from anaphylaxis
4. Explain the long term prophylactic management of anaphylaxis including:
    a) Prevention of occurrence through avoidance
    b) Medic-alert identification

5. Create an emergency management plan for a patient with anaphylaxis including:
    a) Subcutaneously and intravenously administered epinephrine
    b) IV fluids
    c) Endotracheal intubation
    d) Vasopressors
    e) Corticosteroids
    f) Antihistamines

Urticaria/Angioedema

Objectives

Upon completion of this topic, the physician should be able to:

1. Define urticaria

2. Discuss the pathophysiology of the urticarial lesions (the wheal) including triple response of Lewis

3. Describe the natural history of:
   a) Acute urticaria/angioedema
   b) recurrent acute urticaria/angioedema
   c) chronic urticaria/angioedema

4. Describe the pathophysiology of urticaria/angioedema, including Types I, II and III hypersensitivity mechanisms; nonimmune mechanisms, including direct histamine release; and modifying factors including hormonal agents and medications such as aspirin.

5. List the categories of etiologic factors for urticaria/angioedema including:
   a) Ingestants
   b) Injectants
   c) Inhalants
   d) Disease states
   e) Emotional stress
   f) Hereditary factors

6. Outline logical attempts to identify etiologic factors contributing to urticaria/angioedema including:
   a) History
   b) Physical exam
   c) Appropriate laboratory investigation

7. Outline a management program for a patient with urticaria/angioedema including:
   a) Environmental control
   b) Dietary manipulation
   c) Antihistamine therapy
   d) Sympathomimetic therapy
   e) Oral corticosteroid therapy
   f) Management-acquired versus congenital form

Pulmonary Function Tests
Objectives

Upon completion of this exercise the physician should be able to:

1. Label the lung capacities and lung volumes in a line drawing
2. Describe methods by which standard pulmonary function values have been obtained

3. List the most common pulmonary function values that are obtain in an office setting (peak flow measurement, spirometry, and flow volume loop)
4. Discuss the role of spirometry in the diagnosis and management of asthma
5. Describe the typical spirometric and flow volume loop findings in patients with asthma, COPD, and laryngeal obstruction
6. Discuss functional versus non-functional causes of upper airway obstruction (vocal cord dysfunction)
7. Explain the measurement of non-specific bronchial hyperactivity by methacholine or histamine inhalation challenge
8. Explain exercise challenge testing including methods and interpretation of results
9. Explain antigen inhalation challenge test and pulmonary function test method to assess the results
10. Explain the aspirin challenge test including:
    a) Method
    b) Interpretation of results
    c) Risks associated with this procedure

Allergy Skin Testing
Objectives
Upon completion of this exercise the physician should be able to:
1. Describe the techniques of allergy skin testing
    a) Puncture (prick)
    b) Intradermal

2. List the advantages and disadvantages of each method
3. Explain the significance of a delayed skin reaction
4. List medications that interfere with allergy skin testing
5. Explain methods of antigen standardization
6. List 10 common antigens available for allergy skin testing
7. Describe clinical indications for performing allergy skin testing:
    a) To make a diagnosis
    b) To assist in environmental control
    c) To predict the time
    d) To determine the composition of extracts used for immunotherapy

Immunotherapy (allergy shots)
Objectives

Upon completion of this exercise the physician should be able to:
1. List the indications for allergen immunotherapy including:
    a) The presence of IgE-mediated allergy
    b) Clinical symptoms on exposure to the relevant allergens
    c) Unavoidable exposure to allergens to which the patient is sensitive
    d) Inadequate response to medical treatment and environmental control

2. List the contraindications for allergen immunotherapy including:
   a) Concomitant treatment with beta adrenergic blockers or ACE inhibitors
   b) Cardiovascular insufficiency making it unlikely that the patient would survive anaphylaxis
   c) Pregnancy is a relative contraindication

3. List equipment that should be available in any location where immunotherapy is given including:
   a) Epinephrine
   b) Inhaled beta agonist
   c) IV fluid
   d) Oxygen
   e) Cardiac resuscitation

4. List safety precautions to take when giving immunotherapy including:
   a) Measure peak flow before giving shots
   b) Patients should wait 20-30 minute
   c) Shots should be given in a medical facility

5. Describe the treatment of systemic reaction to an allergy shot.

Total and Allergen-Specific IgE
Objectives

Upon completion the exercise the physician should be able to:
1. Identify the levels and relevance for obtaining serum IgE and Allergen specific IgE (RAST) in:
   a) Child
   d) Adult

2. Discuss sensitivity and specificity of total serum IgE level as a screening test for patients with allergic disease
3. Describe how the results of in vitro techniques available to assay allergen specific IgE
4. Describe how the results of in vitro allergen-specific IgE assays are reported in clinical practice
5. List conditions in which levels of total serum IgE are elevated; include examples of atopic and non-atopic diseases

Clinical Immunology
Objectives

Upon completion of this exercise the physician should be able to:

1. Discuss the laboratory methodology for designating T-lymphocytes, B-

lymphocytes, and NK cells

2. Explain the basic CD classification
3. List functions of Th 1, Th2 and B cells
4. Describe briefly the interaction between T cells, B cells and macrophages
5. Describe the various classes of immunoglobulins and their functions
6. Rank IgE, IgA, IgG, IgM and IgD in order of most concentrated in the serum
7. Discuss functions of IgG subclasses and their use in diagnosis of immunodeficiency
8. Discuss the use of functional antibody assays in the diagnosis of humoral immune deficiency
9. List the component of the complement system
10. Discuss the complement cascade including:
    a) Classical pathway
    b) Alternative pathway
11. Explain the immunobiologic role of each complement component
12. Explain the steps of phagocytosis
13. List two diseases with phagocytic dysfunction
14. Describe the known cytokines, interferons, and the growth factor including their role in inflammatory reactions
15. Classify hypersensitivity reactions
16. Explain anti-receptor reactions
17. Explain anti-idiotype reactions
18. Classify immunodeficiency disease
    a) B cell immunodeficiency diseases
    b) T cell immunodeficiency diseases
    c) combined B cell and T cell immunodeficiency diseases
    d) phagocyte dysfunction diseases
    e) complement abnormalities
    f) interleukin defects

19. For the immunodeficiency states above describe:

    a) Common presenting signs and symptoms
    b) Common physical findings
    c) Types of organisms typically causing infection

20. Basic immunological lab techniques: Measurement of total Igs, complement levels zand autoantibodies like ANA and ANCA