EAACI
EUROPEAN ACADEMY OF ALLERGY AND CLINICAL IMMUNOLOGY

*EAACI-Committee * for EAACI-UEMS Examination*

Catalogue of topics to be examined in the EAACI-UEMS examination in Allergology/clinical Immunology

Sixth version 2/2013

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Foreword:

The EAACI-UEMS exam is offered for the 7th time and will cover all areas of allergology and some important areas of clinical immunology. Ca 70% of the questions will refer to Allergology, while about 30% of the questions will be devoted to basic and clinical immunology. Some areas important for differential diagnosis (e.g. lactose intolerance, mastocytosis, etc.) and often seen by allergologists will also be examined.

The examination is based on multiple choice questions and will mainly address knowledge and a limited number of questions based on the Script Concordance Test principle.
It is intended to identify experts in the field of allergology and clinical immunology, who can take care of patients with such diseases in an optimal way and are able to respond to questions by colleagues not specifically trained in allergology/clinical immunology. Therefore, the clinical aspects are strongly emphasized. We expect that an allergologist/clinical immunologist has once read an immunology text book and is more familiar with basic immunology than his colleagues devoted to other areas. Therefore, some basic immunology will be part of the examination as well (however, far less than in the board examination in the USA).

We are aware that allergology and in particular clinical immunology is taught and practiced quite differently in different areas of Europe. Therefore it is impossible to make a European exam which is taking into account all the subtle and not so subtle differences in the different countries. Nevertheless, we hope to define with these examination areas which all European Allergologists/clinical Immunologists agree on.

It is imperative for us to try to achieve a high standard of allergology and clinical immunology knowledge throughout Europe among our specialty. This EAACI-UEMS exam is based on the UEMS recommendations for teaching allergology and clinical immunology *(Allergy. 2004; 59:579-88*). To facilitate the preparation for the exam we put together a list of topics of the exam, which are basically based on the UEMS recommended training program. A list of recommended books and articles will be placed on the EAACI-homepage as well.

We hope you appreciate this initiative of the EAACI and are thankful for suggestions

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BASICS / EPIDEMIOLOGY ALLERGOLOGY/IMMUNOLOGY (ca. 25-30%)

1.1 Basic principles of immune response (ca. 10%)

- Innate and adaptive immunity
- Lymphoid organs, cell trafficking
- HLA-System/immunogenetics
- Antigen presenting cells
- T lymphocytes, function and subsets
- T-regulatory cells
- B lymphocytes, immunglobulins
- Mastcell biology
- Inflammatory mediators (histamine, tryptase, leukotriens, PAF, bradykinin etc.)
- Cytokines
- NK-cells and NK-T cells
- Adhesion molecules (ICAMs, VCAM, selectins,…. etc.)
- Biologicals (cytokines, modified cytokines, solubilized receptors, fusion proteins…)
- Therapeutic antibodies to cytokines, adhesion molecules, receptors
- Complement system
- Tolerance mechanism
- Gel l& Coombs classification of hypersensitivity reactions(updated)
- Immediate type reactions
- late type reactions with eosinophilic or neutrophilic inflammations
- cytotoxic mechanism
- granulomatous reactions
- peculiarities of cutaneous, bronchial, oral/gastrointestinal immune response
- anaphylaxis, classifications
- Immunity against different classes of infectious agents (viral, bacterial, fungal, protozoan)
- Autoimmune mechanism, organ specific and systemic
- So called "intolerance" reactions

1.2 Epidemiology/genetics (5-10%)

- prevalence and development, age dependency
  - pollen allergy (hay fever)
  - perennial allergy
  - asthma
  - atopic dermatitis
- mortality of atopic, IgE mediated diseases
- mortality of non-IgE mediated allergic diseases or intolerance reactions
- epidemiology of drug allergy
- hygiene hypothesis
- costs, public health aspects of IgE mediated allergic diseases
- genetics of atopy, IgE-formation
- genetics of asthma and atopic dermatitis
- immuno-genetics of drug allergy and race dependence

1.3 Allergens [1] (5-10%)

- allergens, haptens
- Indoor and outdoor exposure, aerobiology
- nomenclature
- (recombinant) allergens of plant origin
- fungal and animal allergens

- pan-allergens, families, characteristics
- hymenoptera allergens
- relationship of chemical characteristics of individual allergens to symptoms
- standardization of allergen extracts
- cross-reactivity of protein allergens

2. CLINIC, DIAGNOSIS AND THERAPY OF ALLERGIC DISEASES

2.1. Allergology (30-40%)

2.1.1. Allergic respiratory diseases
- seasonal allergic rhino conjunctivitis / bronchial asthma [3)]
- perennial allergic rhinopathy / bronchial asthma [4)]
- professional inhalative allergies [5)]

2.1.2. Allergic skin diseases
- urticaria (allergic and not allergic)
- angioedema (allergic and not allergic)
- atopic dermatitis
- protein contact dermatitis
- contact dermatitis (European standard)
- photo contact allergy

2.1.3. Anaphylaxis
- all forms of anaphylaxis
- exercise induced anaphylaxis
- food, drug, hymenoptera, immunotherapy induced anaphylaxis

2.1.4. Food hypersensitivity[6, 7,8)]
Oral allergy vs. angio edema and anaphylaxis
Relevance of food allergy in eczema, asthma, age dependency, etc
Effect of preparation (heat lability etc.)
- intolerances (e.g. lactose,6GPD)
- Food aversion (non somatic disease)
- Risk of alimentary deficiency
- eosinophilic esophagitis

2.1.5. Drug hypersensitivity [9)]
- hapten recognition; p-i concept
- mechanism of drug induced diseases (Gell & Coombs, updated)
- pseudo allergy and intolerance reactions (NSAID's, etc)[10)]
- beta-lactam allergies (anaphylaxis, exanthems, cross-reactivity, testing)
- drug exanthemas (maculopapular, pustular, bullous, vesicular) plus clinical picture
- systemic reactions (MPE, DRESS/DHS, SJS/TEN, AGEP)
- interstitial nephritis, pneumonitis
- drug induced cytopenias
- drug induced hepatitis

2.1.6. Insect venom allergies
- hymenoptera
- others
- venom immunotherapy

2.1.7. Other diseases
- hereditary / acquired angioedema
- mastocytosis, urticara pimentosa
- celiac disease
- extrinsic allergic alveolitis
  - protein or hapten induced

2.1.8. Diseases with hyper eosinophilia
- allergic bronchopulmonary aspergillosis/mycosis
- allergic fungal sinusitis
- acute and chronic eosinophilic lung diseases
- Churg-Strauss syndrome
- hypereosinophilic syndromes

2.1.9. Controversial symptoms
- multiple chemical sensitivity syndrome
- sick building syndrome
- chronic fatigue syndrome

2.2. Diagnosis of allergic diseases (5-10%)

2.2.1. specific
- in vivo tests
  - indication
  - contra indication
- skin tests
  - prick, scratch
  - intradermal
  - epicutaneous
  - atopy patch test
- provocation tests
  - cutaneous
  - conjunctival
  - nasal
  - inhalative-bronchial
  - oral; blinding ,interpretation
- in vitro tests
  - specific IgE determinations
  - ELISA
  - basophil activation tests (flow cytometry)
  - lymphocyte activation (transformation) tests (proliferation, flow cytometry)
  - Western blots

2.2.2. non specific

- in vivo tests
  - metacholine bronchial provocation test
  - ergometry
  - physical tests: pressure, cold, dermographism,
  - autologous serum test

2.3. Therapy (10%)

2.3.1. prophylactic/preventive

- primary and secondary prevention

2.3.2. symptomatic therapy (effect and side effect)

- anti histamines (1. and 2./3. generation) H2 antihistamines
  - topical
  - systemic
- corticosteroids
  - topic
  - systemic
- mast cell stabilizing agents

Alpha and beta mimetics epinephrine, long and short acting beta2-antagonists

- - topic
  - systemic
- theophylline
- parasympatholytics
- leukotriene antagonists
-

- therapeutics for atopic dermatitis
  - tacrolimus, pimecrolimus
  - topical corticosteroids, classes of topical CS
  - emollients

2.3.3. allergen-specific therapy (effect and side effect)

- allergy vaccination (allergens vs. allergoids, mixtures, updosing etc.)
  - sub cutaneous
  - long time – short time
  - sublingual
- experimental therapies
- Desensitisation (short-term prophylaxis); anti cancer drugs, antibiotics etc.

2.3.4. allergen-unspecific therapy (effect and side effect)

- anti-IgE-antibodies
- immunomodulatory therapy

2.3.5. therapy during pregnancy (evaluation of risk)

- allergic rhinitis
- asthma
- atopic dermatitis, urticaria

2.3.6. emergency therapy (effect and side effect)

- anaphylaxis
- asthma
- urticaria and angio edema
- epinephrine preparations, dosing, route of administration
- H1 and H2 antihistamines, corticosteroids and other medication
- emergency sets for patients, instruction
- emergency card

3. IMMUNOLOGY (10%)

3.1. Immune deficiencies (primary and secondary)

- primary immune deficiency like APS-1, IPEX, Wiskott-Aldrich, IgA deficiency,
- **CVID, diagnosis, clinic, treatment**
- **immundeficiencies with high IgE**
- not-HIV-associated secondary immune deficiency
- main symptoms of HIV induced diseases (AIDS)

3.2. Collagenosis and vasculitis

- systemic lupus erythematodes
- overlap syndrome
- Sjörgen syndrome
- progressive systemic sclerosis
- polymyositis, dermatomyositis, inclusion body myositis
- antiphospholipid antibodies syndrome
- primary vasculitis
- secondary vasculitis
- **Churg-Strauss syndrome: symptoms, diagnosis, treatments, DD (see 2.1.8)**
- **Association of autoantibodies and disease**

3.3. Granulomatosis

- Sarcoidosis
- Wegener`s disease
- Behçet syndrome

3. 4. Autoimmunity: basic knowledge of symptoms and therapy (3.4., 3.5.) (ca. 5%)

3. 4.1 Autoimmune cytopenias

- autoimmune haemolytic anaemia
- autoimmune thrombocytopenia
- autoimmune neutropenia

3. 4.2. Organ-specific auto immune diseases

- autoimmune endocrinopathies
- primary biliary cirrhosis
- inflammatory bowel diseases
- glomerulonephritis and Goodpasture syndrome
- autoimmune skin diseases (pemphigus and pemphigoid)

3. 4.3. Neuro-immunological syndrome

- immunological induced disturbance of neuromuscular transference (myasthenia gravis, Lambert-Eaton syndrome)
- Guillain-Barré syndrome, chronic polyneuritis and other immunological induced polyneuropathies
- multiple sclerosis

3.4.4. Recurrent fever syndromes (mediterranean fever etc.)

3. 5. Therapy (effect and side effect)

- corticosteroids (systemic and local treatments)
- immunosuppression (antimetabolites, alkylating agents, vinca-alkaloids, methotrexat, anti-malaria drugs, d-penicillamine, ciclosporine A, leflunomide, dapsone, thalidomide, androgen steroids, splenectomy)
  - indication
  - control
  - interaction
  - combination with pharmacological immunosuppression
- immunoglobulin substitution
- cytokine therapy (IFN☐ in hepatitis),
- anti-cytokine therapy (TNF☐ blocking in RA, in Crohn's disease, in psoriasis,…), anti IL-5, etc., experimental therapies
- anti-integrin etc. therapy
- specific vaccinations

Appendix

1) Characterization and occurrence, of individual allergens:
   Pollens, house dust mites, cat, dog, latex, egg, milk, fish, shrimp, hymenoptera, apple, celery, …
2) Risk factors:
   family history, allergen exposure, nutrition, infections, pollution, genetics, ….
3) Seasonal inhalative allergens:
   pollen, fungus (Alternaria alternata, Cladosporium herbarum, aspergillus fumigatus),…
4) Perennial inhalative allergens:
   house dust mites, storage mites, cockroach, animal epithelia, silk, fish food, plants (ficus benjamina),…
5) Professional inhalative allergens:
   flour, latex, mites, animal epithelia, wood, enzymes (e.g. α-amylases),
   isocyanate, platinum, cobalt, formaldehyde, Colophonium, polyvinylchloride, phthalacidhydride,
6) Allergenic food (children):
   especially milk, egg, fish, sea food, peanuts, soya, grains
7) Allergenic food (adults): oral allergy syndrome; celery-mug weed-spice syndrome, birch pollen syndrome (pomaceous fruit-nuts syndrome), bird-egg syndrome, latex-fruit syndrome, mites-snail syndrome, milk, fish, sea food, peanuts, sesame, …
8) Lipid transfer protein-, profilin-, bet v1-families etc. and cross-reactivity
9) Drug hypersensitivity:
   β-lactam antibiotics, quinolones, local anesthetics, prophyphenazone, acetylsalicylic acid, NSAID, diclofenac, insulin, muscle relaxants, ACE inhibitors, radio contrast media, anti-epileptics, topical corticosteroids, etc.: principles of testing in vivo and in vitro
10) Pseudo allergies:
    volume replacements, NSAID, local anaesthetics…