I Epidemiology
   a Prevalence
      i Regional
      ii Change over time
   b Populations at risk
      i Genetic associations
      ii Environmental associations
   c Socioeconomic impact of disease
      i Direct cost
      ii Indirect cost
      iii Quality of life

II Science of the Sites of Allergic Inflammation
   a Anatomy, Histology, physiology, pathophysiology of:
      i Nose and paranasal sinuses
      ii Pharynx
      iii Ear/Eustachian Tubes
      iv Larynx/Trachea
      v Lungs
      vi Eye
      vii Skin
      vili Gastrointestinal tract
   b Basic physiology, pathophysiology, and principles of:
      i Mucociliary function
      ii Smell and taste
      iii Auditory/vestibular function
      iv Voice
      v Respiratory function
      vi Deglutition
      vii Ocular protection mechanisms
      1 Naso–lacrimal function
      2 Conjunctival function
      vili GI function

III Basic Science
   a Basic components, concepts and applications pertinent to Allergy
      i Immunology
         1 Function
            a General aspects
               i Recognition
               ii Surveillance
               iii Amplification
            b Triggers of the immune response
               i Allergens, haptens, epitopes, parasites, macromolecules
            c Categories of response
               i Innate
               ii Adaptive
         2 Components
            a Inflammatory cells
   i Macrophages (APC)
   ii Lymphoid
      1 T–cells
      2 B–Cells
      3 Null cells
   iii Granulocytes
      1 Mast Cells/basophils
      2 Eosinophils
      3 Neutrophils
      4 Platelets
   b Immunoglobulins
      i G
      ii A
      iii M
      iv D
      v E
   c Inflammatory mediators
      i Cytokines
      ii Chemokines
      iii Vasoactive amines
      iv Leukotrienes
      v Prostaglandins
      vi Complement
   ii Endocrinology
   iii Neurology
   iv Molecular cell biology
   v Genetics
   b Physiology and pathophysiology
      i Immunology
         1 Cellular communication
            a Direct contact
               i Antigen specific
            b Cytokine/Chemokine mediated
               i Non-antigen specific
         2 Inflammatory pathways
            a Cellular
               i Macrophage
               ii Granulocyte
                  1 Mast Cell/Basophil
                  2 Eosinophil
            b Non-cellular
               i Complement
               ii Arachadonic Acid cascade
               iii Other
      3 Immune sensitization
         a Memory
      4 Hypersensitivity (Gel and Coombs)
         a I
         b II
         c III
         d IV
         e V
         f VI
ii Allergic response (Type I)
   1 Allergy sensitization
      a Antigen processing
      b T-cell
      c B-cell
      d IgE
      e Mast cell
   2 Subsequent exposure—trigger
      a Mast Cell
         i Antigen crosslinking
         ii Degranulation
            1 Preformed mediators
            2 Newly synthesized mediators
            3 Cytokines
      b Early phase response
      c Late phase response
         i Cellular Components
      d Priming
   iii Microbiology
      1 Parasitology
      2 Bacteriology
      3 Virology
      4 Mycology
   iv Endocrinology
   v Neurology
   vi Molecular cell biology
   vii Genetics
   viii Nutrition

IV Diseases, Disorders, and Conditions
a Differential diagnosis of inflammatory disease
   i Nose/paranasal sinus
   ii Otologic
   iii Laryngopharyngeal
   iv Tracheobronchial
   v Thoracic/Pulmonary
   vi Gastrointestinal
   vii Ocular
   viii Cutaneous
b Immunologic disorders
   i Allergic diseases
      1 Allergic rhinitis
      2 Allergic conjunctivitis
      3 Otologic disease
         a Otitis media
         b Meniere’s
         c Otitis externa
         d Eustachian tube dysfunction
      4 Asthma
      5 Dermatitis
         a Eczema
         b Contact
         c Urticaria/Angioedema
   6 Allergic laryngitis
   7 Gastrointestinal
      a Eosinophilic esophagitis
   ii Co-morbid conditions impacted by allergy
      1 Rhinosinusitis
      2 Otitis media
      3 Eustachian tube dysfunction
      4 Disordered sleep
      5 Laryngeal/pharyngeal/esophageal disorders
         a GERD
      6 Asthma
   iii Immunodeficiency
   iv Autoimmune diseases

V Diagnostics and Assessment Procedures
a History
   i Symptoms
      1 Onset, duration, severity
      2 Triggers
      3 Exacerbating or ameliorating factors
   ii Exposures
      1 Temporal relationships
         a Intermittent
         b Persistent
      2 Identifiable antigen
         a Aeroantigens (Inhalants)
         b Ingestants
         c Contactants
         d Injectants
   iii Co-morbid conditions
      1 Rhinosinusitis
      2 Otitis media
      3 Eustachian tube dysfunction
      4 Disordered sleep
      5 Laryngeal/pharyngeal/esophageal disorders
         a GERD
      6 Asthma
      7 Ocular
   iv Family/childhood history
b Physical examination
   i Face
   ii Ears
   iii Nose/Paranasal sinuses
   iv Oro/Nasopharynx
   v Laryngotracheal
   vi Pulmonary
   vii Skin
   c Adjunctive testing: Indications, limitations, and normal and pathologic findings:
      i Ears
         1 Audiovestibular testing
ii Nose
   1 Acoustic rhinometry/rhinomanometry
   2 Nasal cytology/biopsy
   3 Nasal/paranasal sinus culture
   4 Nasal endoscopy
   5 Olfactory testing
   6 Radiologic testing

iii Larynx
   1 Laryngoscopy

iv Pulmonary
   1 Pulmonary function testing
   2 Radiologic testing

v Sleep
   1 Polysomnography

d Allergy testing:
   i Antigen selection
      1 Antigen characteristics
         a Aeroallergen physical characteristics
         b Biologic activity/potency
         c Antigen cross reactivity
         d Antigen extraction/standardization
      2 Aeroallergen distribution
         a Principles of distribution
         b Local and Regional differences
   ii Aeroallergen tests
      1 Expanded specific allergen testing
         a In vivo
            i Principles of in vivo testing
               1 Pathophysiology of the skin whealing response
                  a Immediate response
                  b Delayed response
            2 Factors that affect the skin whealing response
            ii Specific methodologies
               1 Percutaneous (Prick) testing
                  a Single–percutaneous (prick) testing
                  b Multi–percutaneous (prick) testing
               2 Intradermal testing
                  a Single intradermal testing
                  b Intradermal dilutional testing
            3 Blended techniques of in vivo testing
            4 Scratch testing
               (mentioned only for historical purposes)
            5 Provocation
   b In vitro
      i Principles of in vitro testing
         ii Methodologies
      2 Principles of the allergen screen
         iii Ingestants (Food allergy)
            1 History
               a Food diary
               b Anaphylaxis
            2 Testing
               iv Injectants
               v Contactants
                  1 Contact tests (patch)
   e Immunologic Evaluation (including rheumatologic)
      i Humoral
      ii Cellular

VI Allergy Treatment
a Environmental control
b Pharmacotherapy/pharmacology
   i Antihistamines
   ii Decongestants
   iii Mast cell stabilizers
   iv Mucolytics
   v Leukotriene modifiers
   vi Corticosteroids
c Dietary control

d Immunotherapy
   i Desensitization
      1 Route of delivery
         a Subcutaneous
         b Mucosal (e.g., sublingual)
      2 Mechanism of action
      3 Indications/contraindications
      4 Antigen dosing
         a Starting dose
         b Escalation
         c Maintenance
         d Withdrawal
      5 Mixing of treatment vial
      6 Duration of therapy
      7 Outcomes of immunotherapy
       ii Monoclonal antibody

VII Allergy Emergencies
a Epidemiology
   i Risk factors
   ii Recognition
   iii Differential diagnosis
b Management
   i High-risk population recognition
   ii Preparation
   iii Prevention
   iv Intervention