# American Academy of Environmental Medicine

# Practice Guidelines

# Clinical Indicators

## History

Patients may present with many types of disorders that result at least in part from adverse reactions to any combination of a multitude of environmental substances (for example, biologic inhalants, venoms, foods, and chemicals).

The manifestations of these disorders may be quite diverse. They are individually specific from patient to patient and are modified by individual susceptibility, genetics, functional nutritional status, and specific adaptation. The patient may often be able to identify environmental and/or dietary factors that contribute to the symptoms, but this is not always the case. Symptoms may variably involve one or more organs or systems over time. Symptoms may be acute, chronic, or recurrent, with or without fluctuations, and may sometimes have seasonal variations.

An appropriately detailed chronological history should be developed for each organ or system that seems to be involved with each patient's illness. This history should attempt to identify known presenting patterns that are seen when adverse reactions to environmental substances are occurring over time.

Other aspects of each patient's history should also be obtained as indicated. Examples would include reviews of one or more of the following: the patient's home, occupational, and recreational environments; a dietary history; the medical, dental, surgical, educational, psycho-social, and occupational history; and family history.

## Physical Examination

An appropriate physical examination is indicated for every patient. Each organ or system should be examined as indicated by the history.

## Diagnostic Techniques

After an appropriate history has been obtained and a physical examination performed, if a provisional diagnosis has been made that may involve adverse reactions of the above type to environmental substances, various diagnostic techniques are appropriate to corroborate and clarify this possibility.

An appropriate work-up to evaluate for other possible medical, surgical, and/or psychological conditions that may not involve the type of adverse reactions noted above to environmental substances is also appropriate if indicated by the history or physical examination. This work-up may also involve various laboratory tests, medical imaging studies, and/or surgical procedures.

# *Biologic Inhalant and Venom Hypersensitivity* -

# DIAGNOSTIC TECHNIQUES

Examples of biologic inhalant groups might include: tree, grass and weed pollens, various dust components, airborne molds, and animal danders. Other biologic substances might include Hymenoptera venoms.

## Skin Testing

Intradermal Serial Dilution Endpoint Titration and Provocation/Neutralization Testing (Subcutaneous, Intradermal or Sublingual) are the preferred techniques to aid in the evaluation of biologic inhalants suspected to be contributing to this type of illness.

Screening for up to twenty of the most common biologic inhalants in the patient's geographic area is appropriate, as indicated by the history. If significant sensitivity to any of the above groups is found, then testing for additional members of the incriminated group(s) in the patient's geographic area may be appropriate. Total additional testing should rarely exceed thirty more substances except in highly complicated patients.

Serial Dilution Endpoint Titration is also appropriate as part of the evaluation for Hymenoptera venom allergy.

## In-Vitro Blood Testing

When evaluating for IgE-mediated reactions, initial screening of biologic inhalants may also be accomplished by using serum measurements of antigen-specific IgE antibodies. Further testing based on positive screen results may also be appropriate. Various techniques are available that offer quantitative levels of IgE for each antigen tested. The appropriate number of antigens tested would be the same as for the skin testing techniques above.

This technique is also appropriate in the evaluation of IgE-mediated Hymenoptera venom allergy. In the case of severe Hymenoptera venom allergy, it may by appropriate to perform both skin tests and in-vitro tests.

Duplicating both skin testing and in-vitro testing for the **same** antigens is not indicated in the routine case. Using one or the other technique for **different** antigens where the IgE mechanism is suspected may be appropriate. However, some highly complicated cases may require both skin testing and in-vitro techniques for the same antigens. These cases may be dealt with on an individual basis.

Finally, before starting immunotherapy with extracts based solely upon in-vitro testing, it is appropriate to use the treatment extracts to perform skin tests to assess the extracts' safety. This is not to be considered duplicate testing.

# TREATMENT

## Patient Education

Proper education about how to identify and avoid environmental sources of incriminated **biologic** inhalants and venoms is the treatment of choice where possible and practical.

## Immunotherapy

Immunotherapy based on Serial Dilution Endpoint Titration, Provocation/Neutralization Testing, or appropriate In-Vitro testing is efficacious and appropriate where strict avoidance of incriminated biologic inhalants is either not possible or is impractical. Treatment doses may be administered either subcutaneously or sublingually and may be given by the physician/staff or patient as deemed appropriate.

Immunotherapy based on Serial Dilution Endpoint Titration and In-Vitro Testing is appropriate in the long term treatment of severe Hymenoptera venom allergy. Treatment doses should be administered subcutaneously.

The dose sizes and the intervals between doses must be individualized in each patient to achieve optimal results.

## Nutritional Supplements

Micronutrients (vitamins, minerals, amino acids, and essential fatty acids) and other nutritional supplements administered orally or parenterally may be indicated in cases where deficiencies of these substances have been found by laboratory assessments or suspected on appropriate clinical grounds.

## Drug Therapy

Symptom-relieving medications found to be safe and efficacious for the patient's particular symptoms may be an appropriate adjunct to therapy where indicated.

# *Food Hypersensitivity* -

# DIAGNOSTIC TECHNIQUES

## Dietary History

An appropriate dietary history should be obtained on each patient.

## Oral Elimination/Challenge Feeding Tests

Various elimination/challenge feeding tests are an appropriate modality to use in the assessment for food susceptibilities. After **completely** avoiding the food(s) for four to seven days, the oral challenge part of the test may be performed in the physician's office or in the patient's home, as deemed appropriate by the patient's history.

Any number of suspected foods may be evaluated by these procedures. Some of the common variations of this technique would include the single food elimination/challenge diet, the rare food (obilgoantigenic or "cave man") elimination diet, and the total elimination/challenge diet (diagnostic fasting).

## Provocation/Neutralization Testing

Subcutaneous, Intradermal or Sublingual forms of this procedure are appropriate to aid in the evaluation of food susceptibilities. An initial evaluation for the average patient may include testing for the commonly eaten hidden foods such as baker's and brewer's yeast, milk, egg, corn, wheat, soy, coconut, cane sugar, and beet sugar. Other frequently eaten foods may also be tested as indicated by the patient's diet diary and history.

The average adult patient can usually be adequately worked up by testing twenty or less foods, while all but the most severe cases may usually be adequately evaluated with thirty or less foods. Infants and young children who have more limited diets may need fewer foods tested.

## In-Vitro Blood Testing

Testing large numbers of foods by any in-vitro technique has not been proven to be consistently clinically efficacious in diagnosing food susceptibilities in the routine patient.

However, IgE in-vitro techniques may be useful in assisting to evaluate for severe IgE-mediated reactions to specific foods suspected from the history. Also, in children,

screening up to ten commonly eaten foods for antigen-specific IgE may be useful in evaluating for significant IgE-related reactions.

The clinical significance of any elevated in-vitro IgE screening test should be confirmed by appropriate elimination diet trials, oral elimination/challenge feeding tests, and/or provocation/neutralization tests, as deemed appropriate from the patient's history.

At this time, in routine cases, measurements for other types of antigen-specific antibodies of other classes of immunoglobulins, immune complexes, other mediators of immunity, and live cell analysis may be considered on an individual basis.

# TREATMENT

## Patient Education

Proper education about how to correctly identify and avoid sources of incriminated foods is the treatment of choice where avoidance is possible and practical. Dietary information about alternative food sources and recipes should be provided as needed.

The Rotary Diversified Elimination Diet technique should be taught to all patients, who may use it as indicated. Use of the techniques may be therapeutic, diagnostic, and preventative.

All diet regimens should accommodate general guidelines required to satisfy overall good nutrition.

## Immunotherapy

Immunotherapy based on Provocation/Neutralization Testing is efficacious and appropriate where strict avoidance of incriminated foods is either not possible or is impractical. Treatment doses may be administered either subcutaneously or sublingually and may be given by the physician/staff or patient as deemed appropriate. The dose intervals and dietary intake of treated foods must be individualized in each patient to achieve optimal results.

## Nutritional Supplements

Micronutrients (vitamins, minerals, amino acids, and essential fatty acids) and other nutritional supplements administered orally or parenterally may be indicated in cases where functional deficiencies of these substances have been found by laboratory assessments or suspected on appropriate clinical grounds.

## Drug Therapy

Symptom-relieving medications found to be safe and efficacious for the patient's particular symptoms may be an appropriate adjunct to therapy where indicated.

## *Chemical Hypersensitivity* -

## DIAGNOSTIC TECHNIQUES

## Inhalant Elimination/Challenge Testing

Susceptibility to various volatile chemicals may be evaluated through use of appropriate inhalant elimination/challenge techniques.

In-vivo chemical testing should be done in a setting as free as possible from exposures to potential environmental excitants, under appropriate supervision, and the patient should be in a non-adapted state to the test substance, if possible. This non-adapted state may be achieved by careful avoidance of the test substance for four to seven days before the challenge test.

## Provocation/Neutralization Testing

Subcutaneous, Intradermal or Sublingual forms of this technique are appropriate to assist in the evaluation for susceptibility to various inorganic, organic, and petrochemical compounds, as well as other chemical substances such as various mediators, neurotransmitters, hormones, and infectious organisms.

## Epidermal Patch Testing

This technique is often helpful as an aid in diagnosing contact chemical sensitivities.

## Contamination Profiles

Quantitative and qualitative measurements of pesticides, hydrocarbons, and other externally derived chemical substances in blood, various body fluids, bone, exhaled breath, hair, and fat may prove useful when evaluating for chemical susceptibilities.

# TREATMENT

## Patient Education

Proper education about how to identify and avoid incriminated environmental chemicals is the treatment choice where possible and practical. This may be achieved indoors by environmental control of home and occupational indoor air pollution by improving ventilation, various air cleaning systems, various protective devices, and by use of less toxic substitutes via changes in lifestyle and manufacturing techniques. Outdoor ambient air may be improved through the use of appropriate technology to clean the air. A pure as possible water supply should be used whenever possible.

## Immunotherapy

Immunotherapy based on Provocation/Neutralization Testing is efficacious and appropriate where strict avoidance of incriminated chemicals is either not possible or is impractical. Treatment doses may be administered either subcutaneously or sublingually, depending on the toxicity of the chemical, and may be administered by the physician/staff or patient, as deemed appropriate. The dose intervals must be individualized in each patient to achieve optimal results.

## Nutritional Supplements

Micronutrients (vitamins, minerals, amino acids, and essential fatty acids) and other nutritional supplements administered orally or parenterally may be indicated in cases where deficiencies of these substances have been found by laboratory assessments or suspected on appropriate clinical grounds.

## Drug Therapy

Symptom-relieving medications found to be safe and efficacious for the patient's particular symptoms may be an appropriate adjunct to therapy where indicated.

## Detoxification

Appropriately supervised chemical detoxification by physical therapy consisting of exercise and heat, including sauna, may be indicated in certain cases of significant chemical contamination.

# *Additional Diagnostic Techniques*

In each case, other diagnostic techniques may also be appropriate if indicated by the history or physical examination. These techniques may include (but are not necessarily limited to) the following:

**Metabolic Assessments**: In-vitro and in-vivo analysis of digestion, xenobiotic detoxification systems, and other metabolic functions.

**Immune System Assessments:** In-vitro and in-vivo analysis of various immune system functions.

**Endocrine System Assessments**: Measurement of auto-antibodies to different components of various endocrine glands, as well as in-vitro and in-vivo hormone analysis.

**Nutritional Assessments:** In-vitro and in-vivo analysis of various nutrients (for example, vitamins, minerals, proteins, carbohydrates, and fats) are appropriate in the overall evaluation where nutritional deficiencies or excesses are suspected to be contributing to the patient's illness.

**Environmental Assessments:** Qualitative and quantitative measurements of environmental contaminants in ambient, domiciliary, and occupational air; in food and water, and in the other environments where the patients known to be symptomatic.

**Comprehensive Environmentally Controlled Inpatient Hospital Care:** The great majority of cases where illnesses are contributed by these types of adverse reactions to environmental substances may be safely and effectively worked up in an outpatient setting. However, there may be certain complex and/or severe cases where evaluation and treatment may need to be initiated in a specialized in-patient Environmentally Controlled Unit (ECU) where all environmental and dietary exposures are carefully controlled.

# Treatment Outcome Criteria

1. Significant reduction or elimination of acute and/or chronic symptoms in any organ or system.

2. Improvement of measured functions in any organ or system.

3. Improvement in the ability to carry out the tasks of daily living.

4. Improvement in psychological well-being.

5. Improvement in the ability to sustain gainful employment.

6. Improvement or correction of incriminated environmental exposures.

7. Improved tolerance to environmental stressors that previously caused symptoms.

8. Through appropriate patient education, improvement in the ability to follow treatment protocols and to prevent the development of new illnesses.