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Multiple Chemical Sensitivities: Idiopathic Environmental Intolerance

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Acoem Position Statement

Article Outline Outline

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Since the publication of earlier position statements by the American College of Occupational and Environmental Medicine (ACOEM),[1,2] the diagnosis, treatment and etiologic assessment of multiple chemical sensitivities (MCS) has remained a troublesome medical and social concern for individuals, physicians, government, and organizations. First described in 1952,[3] the syndrome has engendered over 20 names, including "environmental illness, total allergy syndrome, 20th century disease, and chemical AIDS."[4] These terms refer to complaints of patients who report recurrent nonspecific symptoms referable to multiple organ systems that the sufferers believe are provoked by exposure to low levels of chemical, biologic, or physical agents.[5] No consistent physical findings or laboratory abnormalities have yet been found to differentiate MCS patients from the remainder of the population[6-13].

Although by convention the scientific community has used the term MCS, this designation incorrectly implies that the condition affects the immune system and that chemical exposure is its sine qua non. In fact, immunologic dysfunction in these patients has not been identified, and the role of the environment in precipitating complaints continues to be controversial[6,14-19]. The pathophysiologic and psychologic mechanisms that may contribute to the development and maintenance of this disorder have still not been definitively elucidated. ACOEM concurs with many prominent medical organizations in maintaining that evidence does not exist to define MCS as a distinct entity.[15,20,21] Because of uncertainties about the cause and pathophysiology of this condition, ACOEM believes that the term idiopathic environmental intolerance more accurately reflects the current state of knowledge.[10,15] Nonetheless, improved understanding warrants an update of ACOEM's previous position statements.

No consensus has yet been reached for a case definition of MCS.[22] All proposed definitions differ by some key criteria. This lack of a clear case definition continues to hamper the epidemiologic and clinical research necessary to obtain the data to clarify the prevalence, natural history, cause, diagnosis, and management of MCS.

Besides the lack of a single case definition, several methodologic problems limit the interpretation of published MCS research.[23] These problems include over-reliance on surveys and self-reported symptoms, selection bias, lack of blinding, and inconsistent quality assurance of laboratory determinations. Many proposed outcome measures also require validation.

Mindful of these limitations of published research, ACOEM recognizes that data have accumulated that support some tentative conclusions about MCS. Evidence points strongly against an immunologic basis for MCS.[6,16-18] Research has noted overlap between MCS, chronic fati0gue syndrome, fibromyalgia, and other historic nonspecific conditions.[24] Survey data suggest that odor-related symptoms are common in the general population.[25-27] Less clear from these studies, however, is the extent and prevalence of disability associated with these symptoms. The prevalence of preexisting and concurrent psychiatric disease remains highly controversial.[28] Research suggests an excess of symptoms of psychologic distress consistent with anxiety and depression in many but not all MCS patients.[17,29-31] One of the best designed studies points to an excess of premorbid somatic complaints in some MCS patients.[17] Evidence also supports an etiologic role for conditioned response.[32-34] MCS research, however, will not finally dissect psychologic and physiologic effects.[23,35] Indeed, modern medicine no longer supports a mind-body dichotomy.[36]

No specific treatment methods have yet been scientifically proved to be effective for MCS.[22,23] Given these findings and the limitations of existing research, ACOEM endorses the following statements about diagnosis and treatment:

- Irrespective of the scientific uncertainties regarding the diagnosis, cause, and management of MCS, the impact of these symptoms on the well-being, productivity, and lifestyle of those affected can be dramatic. It is neither helpful nor appropriate to address the problem solely by hypotheses that emphasize malingering or a desire for compensation.
- Controversies about specific theories of MCS, diagnostic approaches, or treatment modalities should not preclude the compassionate care of patients presenting with complaints consistent with MCS.
- Although specific diagnostic tests and treatments have not yet been demonstrated to be helpful, a general clinical approach useful in the management of other nonspecific medical syndromes can be adopted pending further scientific findings.[37,38] This approach emphasizes: (1) establishing a therapeutic alliance with a goal toward functional restoration; (2) performing a medical evaluation appropriate to the presenting complaints and physical findings; (3) avoiding ineffective, costly, and potentially hazardous, unproven diagnostic tests or remedies that may increase a patient's distress or disease; (4) treating all diagnosable medical and psychologic problems; (5) individualizing medical and behavioral coping strategies useful in managing symptoms; and (6) educating the patient about the current state of knowledge about MCS.
- Polemic and social activism of groups representing the spectrum of opinion about MCS must not constrain opportunities for open scientific debate, compassionate treatment, fair adjudication of social benefits, and rational policy making.[23,39]

The College supports scientific research into the phenomenon of MCS to help explain and better describe its pathophysiologic features and define appropriate clinical interventions. This research should adhere to established principles of scientific inquiry, and the results should be submitted for publication in recognized peer-reviewed journals.

ACOEM recommends the following research agenda:

- Limited research dollars and similarities between the nonspecific syndromes of chronic fatigue, fibromyalgia, and MCS point to a need for a cooperative research agenda. No assumptions should be made, however, that these conditions represent the same phenomenon. Research into societal factors that influence the prevalence and natural course of MCS should be high on this agenda.
- As with research on any medical condition, consensus must be reached on a clear case definition that establishes diagnostic criteria and specifies which individuals may be included in a study. Pending consensus on the case definition, researchers must describe the definition they have used in sufficient detail to be reproducible by other investigators seeking to confirm the published findings.
- Descriptive epidemiologic investigation should be initiated to determine who is affected, their demographic characteristics, associated risk factors, and the patterns of their symptoms.
- Pathologic mechanisms leading to the development of this condition should be investigated. A primary interest is further study of the influence of the central nervous system on an organism's response to low-level chemical exposure.
- Perhaps most importantly, research must focus on the efficacy and side effects of treatment modalities. Long-term outcomes of those treated by various modalities and those untreated must be examined.

Current benefit structures, the legal system, and social policy rely heavily on medicine's ability to clearly identify whether a medical condition arises from exogenous or endogenous factors and whether the condition is psychologic or physiologic.[23] Modern investigative techniques and sophisticated epidemiology, however, support a biopsychosocial model of disease that endorses close relationships between thought, mood, social interactions, and physiology.[23,25,40] Scientific research is unlikely to conclude with neat distinctions between physiologic and psychologic disease.[41]

ACOEM continues to support the position that the relationship of MCS to environmental contaminants remains unproven. No scientific basis currently exists for investigating, regulating, or managing the environment with the goal of minimizing the incidence or severity of MCS. On the other hand, ACOEM recognizes that measurable indoor air quality problems can exist that cause human illness and discomfort.[42] ACOEM ardently supports the effort of regulatory agencies to provide national indoor air and environmental regulations to minimize the risk of harm to public health.

Submitted by the ACOEM Environmental Medicine Committee, January 1999 Approved by the ACOEM Board of Directors, April 26, 1999. At the time of the preparation of this statement, Environmental Medicine Committee Members were:

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References

1. American College of Occupational and Environmental Medicine. Multiple Chemical Hypersensitivity Syndrome; May 2, 1991.
2. American College of Occupational and Environmental Medicine. Multiple Chemical Sensitivities; April 27, 1993.
3. Randolph TG. Sensitivity to petroleum including its derivatives and antecedents. *J Lab Clin Med.* 1952;40:931-932.
4. Brodsky CM. 'Allergic to everything': a medical subculture. *Psychosomatics.* 1983;24:731-742.
5. Cullen MR. The worker with multiple chemical sensitivities: an overview. *Occup Med.* 1987;2:655-661.
6. Graveling RA, Pilkington A, George JPK, Butler MP, Tannahill SN. A review of multiple chemical sensitivity. *Occup Environ Med.* 1999;56:73-85.
7. Conclusions and recommendations of AOEC workshop on multiple chemical sensitivities (MCS). *Reg Toxicol Pharmacol.* 1996;24:S188-S189.
8. Association of Occupational and Environmental Clinics. *Advancing the Understanding of Multiple Chemical Sensitivity*. Proceedings of the AOEC Workshop on Multiple Chemical Sensitivity, Washington, DC; Sept. 1991:20-21. *Toxicol Ind Health.* 1992; 8.
9. Cullen MR, Pace PE, Redlich CA. The experience of the Yale occupational and environmental medicine clinics with multiple chemical sensitivities. 1986-1991. *Toxicol Ind Health.* 1992;8:15-19.
10. *International Programme on Chemical Safety (IPCS).* Report of Multiple Chemical Sensitivities (MCS) Workshop, Berlin; Feb. 1996:21-23.
11. National Research Council. *Multiple Chemical Sensitivities: A Workshop.* Washington, DC: National Academy Press; 1992.
12. *Agency for Toxic Substances and Disease Registry*. Proceedings of the Conference on Low-Level Exposure to Chemicals Neurobiologic Sensitivity. Baltimore, MD; April 1994:6-7. *Toxicol Ind Health.* 1994;10.
13. Ontario Ministry of Health. *Report of the Ad Hoc Committee on Environmental Hypersensitivity Disorders.* Toronto; 1985.
14. Heuser G, Wodjani A, Heuser S. Diagnostic markers of multiple chemical sensitivity. In: *Multiple Chemical Sensitivities: Addendum to Biological Markers in Immunotoxicology*. Washington, DC: National Academy Press; 1992.
15. American Academy of Allergy and Immunology. Idiopathic environmental intolerances. Physician reference materials: position statement 35. Available at: http://www.aaaai.org/professional/physicianreference/position statements/ps35.html. Accessed March 15, 1999.

16. Salvaggio JE. Understanding clinical immunological testing in alleged chemically induced environmental illnesses. *Regul Toxicol Pharmacol.* 1996;24: S16-S27.
17. Simon GE, Daniell W, Stockbridge H, Claypoole K, Rosenstock L. Immunologic, psychological, neuropsychological factors in multiple chemical sensitivity: a controlled study. *Ann Intern Med.* 1993;19:97-103.
18. Terr AI. "Multiple chemical sensitivities": immunologic critique of clinical ecology theories and practice. *Occup Med.* 1987;2:683-694.
19. Kipen HM, Fiedler N, Maccia C, Yurkow E, Todaro J, Laskin D. Immunologic evaluation of chemically sensitive patients. *Toxicol Ind Health.* 1992;8:125-135.
20. American Medical Association. Clinical ecology. *JAMA.* 1992;268:3465-3467.
21. American College of Physicians. Clinical ecology. *Ann Intern Med.* 1989;111:168-178.
22. *The Interagency Workgroup and Multiple Chemical Sensitivity*. A Report on Multiple Chemical Sensitivity (MCS) (predecisional draft); August 24, 1998.
23. Ducatman AM. Multiple chemical sensitivities. In: Rom WR, ed. *Environmental & Occupational Medicine, Third Edition.* Philadelphia: Lippincott-Raven; 1998:891-904.
24. Buchwald D, Garrity D. Comparison of patients with chronic fatigue syndrome, fibromyalgia, and multiple chemical sensitivities. *Arch Intern Med.* 1994;154:2049-2053.
25. Bell IR, Schwartz GE, Amend D, Peterson JM, Stini WA. Sensitization to early life stress and response to chemical odors in older adults. *Biol Psychiatry*. 1994;35:857-863.
26. Bell IR, Miller CS, Schwartz GE, Peterson JM, Amend D. Neuropsychiatric and somatic characteristics of young adults with and without self-reported chemical odor intolerance and chemical sensitivity. *Arch Environ Health.* 1996;51:9-21.
27. Meggs W J, Dunn KA, Bloch RM, Goodman PE, Davidoff A. Prevalence and nature of allergy and chemical sensitivity in a general population. *Arch Environ Health.* 1996;51:275-282.
28. Davidoff LL, Fogarty L. Psychogenic origins of multiple chemical sensitivities syndrome: a critical review of the research literature. *Arch Environ Health.* 1994;49:316-325.
29. Stewart DE, Raskin J. Psychiatric assessment of patients with 20th-century disease (total allergy syndrome). *Can Med Assoc J.* 1985;133:1001-1006.
30. Black DW, Rathe A, Goldstein RB. Environmental illness: a controlled study of 26 subjects with "20th century disease". *JAMA.* 1990:264:3166-3170.
31. Sparks PJ, Simon GE, Katon WJ, Altman LC, Ayars G H, Johnson RL. An out-break of illness among aerospace workers. *West J Med.* 1990;15:28-33.
32. Shusterman D, Balmes J, Cone J. Behavioral sensitization to irritants/odorants after acute exposures. *J Occup Environ Med.* 1989;30:565-567.
33. Leznoff A. Provocative challenges in patients with multiple chemical sensitivity. *J Allergy Clin Immunol.* 1997;99:438-442.
34. Bolla-Wilson KB, Wilson RJ, Bleeker ML. Conditioning physical symptoms after neurotoxic exposure. *J Occup Environ Med.* 1988;30:684-685.
35. Bell IR. Environmental illness and health: the controversy and challenge of clinical ecology for mind-body health. *Advances.* 1987;4:45-55.
36. Engel GL. Clinical application of the biopsychosocial model. *Am J Psychiatry*. 1980;137:535-544.
37. Sparks PJ, Daniell W, Black DW, et al. Multiple chemical sensitivities syndrome: a clinical perspective. II. Evaluation, diagnostic testing, treatment, and social considerations. *J Occup Environ Med.* 1994; 36:731-737.

38. McLellan RK. Provoking reactions in patients with multiple chemical sensitivities: what can we learn? *OEM Report*. 1997;11:85-91.
39. McLellan RK. Clinical ecology. *JAMA*. 1993;269:1634-1635.
40. Bell IR, Miller CS, Schwartz GE. An olfactory-limbic model of multiple chemical sensitivities syndrome: possible relationships to kindling and affective spectrum disorders. *Biol Psychiatry*. 1992;32:218-242.
41. Simon G. Psychiatric symptoms in multiple chemical sensitivity. *Toxicol Ind Health*. 1994;10:487-511.
42. McLellan RK, McCunney R. Indoor air pollution. In: McCunney R, ed. *A Practical Approach to Occupational and Environmental Medicine*. Boston: Little, Brown; 1994:633-650.

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