The QEESI©

The Quick Environmental Exposure and Sensitivity Inventory (QEESI©) was developed as a screening questionnaire for multiple chemical intolerances (MCI). The instrument has four scales: Symptom Severity, Chemical Intolerances, Other Intolerances, and Life Impact. Each scale contains 10 items, scored from 0 = "not a problem" to 10 = "severe or disabling problem." A 10-item Masking Index gauges ongoing exposures that may affect individuals' awareness of their intolerances as well as the intensity of their responses to environmental exposures. Potential uses for the QEESI© include:

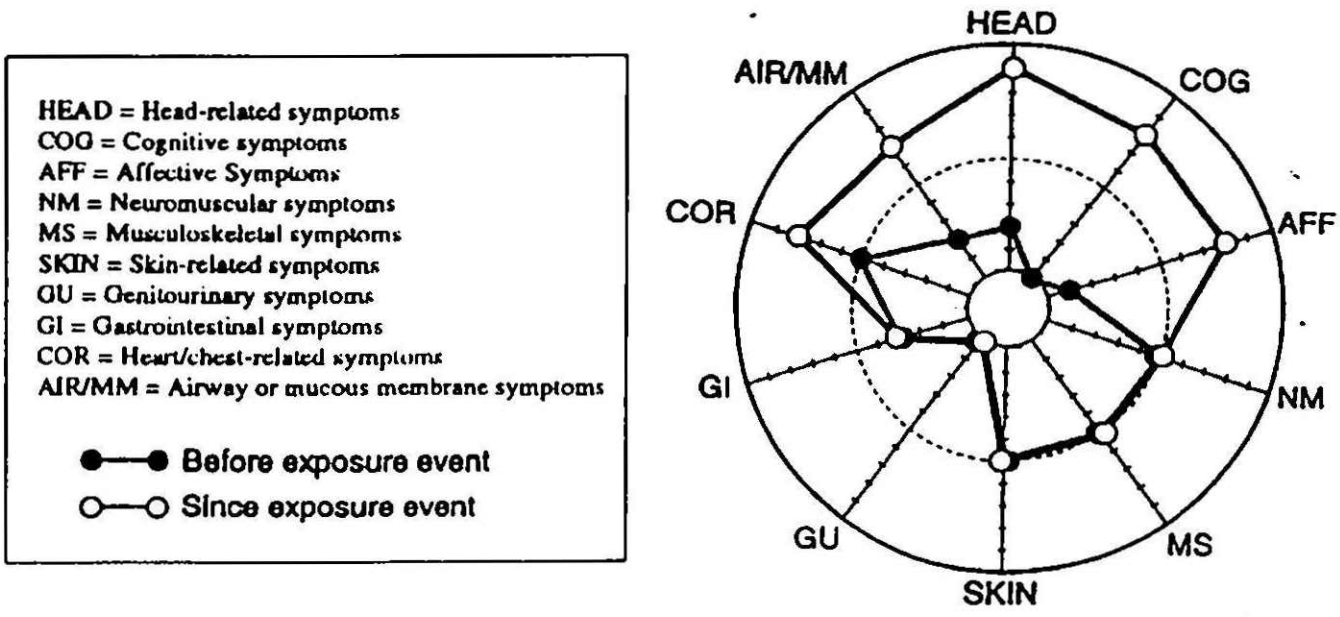
(1) Research—to characterize and compare study populations, and to select subjects and controls.

(2) Clinical evaluations—to obtain a profile of patients' self-reported symptoms and intolerances. The QEESI© can be administered at intervals to follow symptoms over time or to document responses to treatment or exposure avoidance.

(3) Workplace or community investigations—to identify and assist those who may be more chemically susceptible or who report new intolerances. Affected individuals should have the option of discussing results with investigators or their personal physicians.

Individuals whose symptoms began or intensified following a particular exposure event can fill out the QEESI© using two different ink colors, one showing how they were before the event, and the second how they have been since the event. On the cover of the QEESI© is a "Symptom Star" (Figure 1) which provides a graphical representation of patients' responses on the Symptom Severity Scale.

Figure 1. QEESI Symptom Star illustrating symptom severity in an individual before and after an exposure event (e.g., pesticide application, indoor air contaminants, chemical spill)



For additional copies of the QEESI©, contact Claudia S. Miller, M.D., M.S., University of Texas Health Science Center at San Antonio, Department of Family Practice BCT 150, 7703 Floyd Curl Drive, San Antonio, Texas 78229-3900. Phone: (210) 567-7760; fax: (210) 567-7764; email: millercs@uthscsa.edu. For further information see Chemical Exposures: Low Levels and High Stakes by Nicholas A. Ashford and Claudia S. Miller, John Wiley & Sons, 1998 (1-800-225-5945).

Interpreting the QEESI©

In a study of 421 individuals, including four exposure groups and a control group, the QEESI© provided sensitivity of 92% and specificity of 95% in differentiating between persons with multiple chemical intolerances (MCI) and the general population (Miller and Prihoda 1999a,b).

Cronbach's alpha reliability coefficients for the QEESI©'s four scales—Symptom Severity, Chemical Intolerances, Other Intolerances and Life Impact—were high (0.76-0.97) for each of the groups, as well as over all subjects, indicating that the questions on the QEESI© form scales showing good internal consistency. Pearson correlations for each of the four scales with validity items of interest, i.e., life quality, health status, energy level, body pain, ability to work and employment status, were all significant and in the expected direction, thus supporting good construct validity.

Information on the development of this instrument, its interpretation, and results for several populations have been published (Miller and Prihoda 1999a,b). Proposed ranges for the QEESI©'s scales and guidelines for their interpretation appear in Tables 1 and 2 below:

Table 1. Criteria for low, medium, and high scale scores

Scale/Index	Score Low	Medium	High
Symptom Severity	0-19	20-39	40-100
Chemical Intolerance	0-19	20-39	40-100
Other Intolerance	0-11	12-24	25-100
Life Impact	0-11	12-23	24-100
Masking Index	0-3	4-5	6-10

Table 2. Distribution of subjects by group using "high" cutoff points for symptom severity (≥ 40) and chemical intolerances (≥ 40), with masking low or not low (< 4 or ≥ 4)

Risk Criteria[1]				Percentage of Each Group Meeting Risk Criteria				
Degree to Which MCI is Suggested[2]	Symptom Severity Score	Chemical Intolerance Score	Masking Score	Controls n=76	MCS - No Event n=90	MCS – Event n=96	Implant n=87	Gulf War Veterans n=72
Very suggestive	≥ 40	≥ 40	≥ 4	7	16	23	39	45
Very suggestive	≥ 40	≥ 40	< 4	0	65	66	36	4
Somewhat suggestive	≥ 40	< 40	≥ 4	3	1	2	16	26
Not suggestive	≥ 40	< 40	< 4	0	0	2	3	6
Problematic	< 40	≥ 40	≥ 4	7	3	1	1	0
Problematic	< 40	≥ 40	< 4	3	13	4	2	0
Not suggestive	< 40	< 40	≥ 4	68	1	0	2	18
Not Suggestive	< 40	< 40	< 4	12	1	2	1	1
				100	100	100	100	100

[1] Subjects must meet all three criteria, i.e., Symptom Severity, Chemical Intolerance, and Masking scores, as indicated in each row of thisable.

[2] "Very suggestive" = high symptom and chemical intolerance scores.

"Somewhat suggestive" = high symptom score but possibly masked chemical intolerance.

"Not suggestive" = either (1) high symptom score but low chemical intolerance score with low masking, or (2) low symptom and chemical intolerance scores.

"Problematic" = low symptom score but high chemical intolerance score. Persons in this category with low masking (<4) may be sensitive individuals who have been avoiding chemical exposures for an extended period (months or years).

References:

Miller CS, Prihoda TJ: The Environmental Exposure and Sensitivity Inventory (EESI): a standardized approach for measuring chemical intolerances for research and clinical applications. *Toxicology and Industrial Health* 15:370-385, 1999a.

Miller CS, Prihoda TJ: A controlled comparison of symptoms and chemical intolerances reported by Gulf War veterans, implant recipients and persons with multiple chemical sensitivity. *Toxicology and Industrial Health* 15:386-397, 1999b.