

## Tools to Treat

### *Chronic fatigue syndrome, fibromyalgia, and multiple chemical sensitivity*

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The chronicity and complexity of chronic fatigue syndrome (CFS), fibromyalgia (FM), and multiple chemical sensitivity (MCS) can often seem overwhelming to patients and clinicians. To assist with diagnosis, both “ruling out” and “ruling in” strategies are needed. These strategies start with thorough clinical and exposure histories and physical examination.

Table 1, offers a useful mnemonic tool.<sup>1</sup> Exposure history forms may be downloaded from the Ontario College of Family Physicians Web site.<sup>2</sup> A summary of Jane’s exposure history is outlined in Column 2 of Table 1. An obvious change was her repeated daily airborne exposure, over two school weeks, to potentially toxic volatile organic compounds in turpentine and oil-based paint in her poorly ventilated classroom. The day her headaches started was the day her students began painting their holiday art pro-

#### Jane’s pain and fatigue

You have seen Jane, 46, almost weekly over the last 7 months for multiple complaints. The most commonly recurring complaints are:

- severe fatigue;
- migrating muscle and joint pains; and
- trouble sleeping, concentrating, and remembering.

Happily married, she has been your patient for 25 years.

Past history includes:

- annual checkups,
- prenatal care,
- deliveries of her two daughters (now grown and out of the home), and
- visits during ragweed season for allergic rhinitis and conjunctivitis (non-sedating antihistamines worked).

Jane consulted you in early December regarding daily headaches, fatigue, difficulty concentrating, and a dull and spacey feeling. She was a very enthusiastic elementary school teacher, and December was usually her favourite month of the year. However, she was suddenly having difficulty getting through the school day. She felt better on weekends. She had puffy dark circles under her eyes; otherwise, physical and neurologic examinations were negative.

In the second visit, she reported she was rear-ended in a car accident, suffering a mild whiplash, which initially responded to local heat and ultrasound. She then began complaining of muscle pains that waxed and waned in her arms, legs, and lower back making it difficult for her to sleep at night. The pains worsened, and headaches recurred, along with a stuffy nose and red, watery eyes whenever she encountered anyone who had smoked or was wearing perfume. These substances had never bothered her before.

On the third visit, Jane had caught “the flu,” along with several of her students and fellow teachers. While they were merely inconvenienced, and recovered within days, Jane was “flattened” by it, and stayed in bed for three weeks. She struggled to return to teaching at the end of January, even though not fully recovered. She would go to bed right after school and get up the next morning feeling like she had not slept at all. She spent her weekends in bed, and after three weeks of struggle, had to stop going to work. She is still exhausted, awakens unrefreshed, has a recurring sore throat and swollen neck glands, as well as the other symptoms.

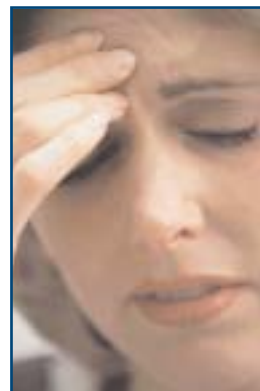


Table 1

**Tool 1: Taking an exposure history**

CH <sup>2</sup> OPD <sup>2</sup>	Jane's CH <sup>2</sup> OPD <sup>2</sup>
<b>Community</b>	Lives in a quiet suburb with no nearby industries
<b>Home</b>	Moved into a newly built house 10 years ago; no renovations or pesticide use
<b>Hobbies</b>	Knitting, reading
<b>Occupation</b>	Elementary school teacher in building constructed in the '70s (non-operable windows, stagnant air, either too hot or too cold). For the first 2 weeks in December, 7 months ago, her students were painting holiday art projects, and cleaning their brushes with turpentine in the classroom
<b>Personal</b>	Had stopped using scented personal, cleaning or laundry products 6 months ago
<b>Diet</b>	Well-balanced, fairly regular meals. Drinks coffee (2 cups in the morning) and cola (1 can in the afternoon) as "pick me ups" since she became ill
<b>Drugs</b>	Taking only occasional acetaminophen for pain. Noticing she tolerates much lower doses of medications than previously.

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Table 2

**Tool 2: "Ruling in" clinical case criteria**

**Chronic Fatigue Syndrome<sup>3</sup>**

- New onset, unexplained, persistent physical and mental fatigue that substantially reduces activity
- Post-exertional malaise or fatigue with pathologic slow recovery
- Sleep dysfunction
- Pain in muscles and joints
- Neurologic/cognitive manifestations
- At least 1 symptom in 2 categories:
  - autonomic
  - neuroendocrine
  - immune manifestations
- Illness persisting at least 6 months (3 months in children); onset usually distinct, but can be gradual

**Fibromyalgia<sup>4</sup>**

- More than 3 months of widespread pain (bilateral, upper and lower body, axial)
- Report of pain by patient in 11 or more of 18 tender points, palpated at 4 kg pressure (nail blanches)

**Multiple Chemical Sensitivity<sup>5,6</sup>**

- Symptoms are reproducible with exposure
- Chronic
- Lower levels of exposure than previously or commonly tolerated result in manifestations
- Symptoms improve or resolve when incitants are removed
- Responses occur to multiple, chemically unrelated substances
- Symptoms involve multiple organ systems
- Symptoms commonly include having a stronger sense of smell than others, having difficulty concentrating, feeling dull or groggy, and feeling spacey

jects. You asked her if anyone else in her classroom felt unwell. Interestingly, two students had asthma attacks that day and did not return to class for the rest of the

week, nor did a boy known to have multiple allergies. Several students also complained of headaches.

There are international consensus case criteria for CFS, FM, and MCS<sup>3-6</sup> (Table 2). Checklists for these criteria may also be downloaded.<sup>2</sup> The checklists are practical for the general practitioner, and they offer validation for patients and insurers.

There are no consistently positive physical findings in CFS or MCS, but Jane had 14 out of 18 positive tender points,<sup>2</sup> which satisfied the objective physical criterion for FM.

Because there are no consistently abnormal laboratory tests in CFS, FM, or MCS, it is important to screen and perform additional tests to rule out other conditions (Tables 3 and 4). With Jane, you had already checked for most of these conditions, but decided to refer her for a sleep study. While she did not have sleep apnea or leg movement disorder, she did have multiple alpha wave intrusions and markedly reduced Stage IV deep sleep.

After using the consensus criteria checklist for Jane, you made the diagnoses of CFS, FM, and MCS.

## *How do I help my patient?*

There are no known curative therapies for these conditions, which can adversely affect every aspect of patients' lives. Their etiologic contributors and mechanisms are as yet unclear, although theories are beginning to converge.<sup>7-9</sup> Overlap between these three conditions has been reported repeatedly.<sup>10-12</sup>

In spite of uncertainty and complexity, it seems practical and easy for patients to grasp Hans Selye's concept of humans and animals having a general capacity to adapt to stress, no matter what the type of stressor (physical, chemical, traumatic, biologic, or psychological). Patients also grasp that this capacity can be exhausted, with illness resulting.<sup>13</sup> Figure 1 introduces this concept via a teeter-totter model. Patients often recognize their main stressors, and what they could do to unburden themselves and their adaptive mechanisms. Jane admitted that she tended to push herself to get things done on "good days," and would

Table 3

### Tool 3: Screening tests for "ruling out" other conditions

#### Basic laboratory tests and conditions being considered

<b>Complete blood count:</b>	Anemias, leukemias, hemoglobinopathies, infections
<b>Erythrocyte sedimentation rate:</b>	Inflammatory conditions, connective tissue disorders
<b>Electrolytes:</b>	Pituitary or metabolic disturbances
<b>Total protein/ Immunoelectrophoresis:</b>	Immunodeficiencies, multiple myeloma, macroglobulinemia
<b>Antinuclear antibody:</b>	Autoimmune diseases
<b>Alkaline phosphatase:</b>	Cancers, liver disease, bone pathology
<b>Aspartate aminotransferase and alanine aminotransferase:</b>	Hepatitis, cirrhosis, alcohol abuse, liver metastases, pyridoxine (B6) deficiency
<b>Thyroid stimulating hormone:</b>	Hypo or hyperthyroidism
<b>Glucose:</b>	Diabetes, impaired glucose tolerance
<b>Creatinine:</b>	Renal disease
<b>Calcium:</b>	Parathyroid dysfunction, malignancy with bone metastases, inadequate intake or absorption problems, renal tubular disease
<b>Phosphorus:</b>	Parathyroid dysfunction
<b>Vitamin B<sub>12</sub> and red blood cell folate:</b>	Malnutrition, vegans, malabsorption
<b>Ferritin:</b>	Iron deficiency, hemochromatosis
<b>Urinalysis:</b>	Diabetes, nephropathies, chronic urinary tract infections

Adapted from: Fukuda K et al, the International Chronic Fatigue Syndrome Study Group: The Chronic Fatigue Syndrome: A comprehensive approach to its definition and study. *Ann Int Med* 15 December 1994; 121(12):953-59.

then “crash,” and spend the next several days recuperating in bed.

Figure 2 shows the overall objective of treatment, and introduces a gardening metaphor to suggest how the patient may gradually “grow” health by planting and nurturing the necessary SEEDS (Support, Environment, Exercise, Diet, Sleep).<sup>14</sup> Often, when presented with this

model, patients can immediately identify what seeds they have already planted, and what they could do further. The physician’s acknowledgment of the patient’s efforts and capabilities assists her to regain a sense of control and mastery, further promoting recovery. For example, Jane said she recognized that her symptoms were being triggered or exacerbated every time she used scented products at home (cleaning, laundry, and personal). She had instinctively removed them and replaced them with unscented, less toxic products recommended by her public health unit. Her symptoms then improved.

You noted that, in the medical literature, avoidance of triggering substances had been observed to help.<sup>15</sup> You complimented Jane on her competence in acting on her observations to help her own health. However, Jane admitted she would still have relapses whenever she had visitors. She was not sure her husband understood her health problems. You suggested she invite her husband to come to her next appointment, at which point you explained her diagnoses, their known implications, and your and Jane’s collaborative efforts to develop a treatment plan. You asked if he had any concerns. He said he liked to have friends and family visit, but afterwards Jane seemed “wiped out” for the next few days. You asked if he would be willing to request that guests not wear scented products or smoky clothes when they came to visit. He readily agreed, which incorporated him into Jane’s treatment plan, and demonstrated his support for her.

After several visits, when you discussed Jane’s SEEDS of health, she and her husband started to see the effects of such measures as:

**Table 4**  
**Tool 4: Additional tests for ruling out other conditions**

**Additional laboratory tests and conditions being considered<sup>3</sup>**

<b>Sleep study:</b>	Sleep apnea, leg movement disorder, diminished Stage IV sleep
<b>Folstein mini-mental status:</b>	Crude measure of cognitive dysfunction
<b>Symbol-digit, digit-symbol and trail-making neurocognitive testing:</b>	Subtle neurocognitive defects
<b>Sinus X-rays:</b>	Chronic sinusitis
<b>Dental X-rays:</b>	Cavitation necrosis
<b>Magnetic resonance imaging of nervous system:</b>	Multiple sclerosis, spinal stenosis
<b>Beck depression inventory:</b>	Major depressive episode
<b>Blood and 24-hour urine arsenic, cadmium, lead, mercury:</b>	Heavy metal poisoning
<b>Skin prick or intradermal tests for dust, mites, animal dander, pollens, moulds:</b>	IgE-mediated allergies
<b>Epstein Barr virus titres:</b>	Acute or recurrent infectious mononucleosis
<b>Hepatitis B and C antibodies:</b>	Acute or chronic hepatitis
<b>Stools for ova, parasites, fungi:</b>	Chronic parasitic or fungal gastrointestinal infections
<b>Urine culture for ureoplasma:</b>	Opportunistic bladder infection
<b>IgG/IgM antibodies to borrelia burgdorferi or polymerase chain reaction for borrelia (U.S.):</b>	Lyme disease

Adapted from: The Merck Manual, 17th Edition, Common laboratory tests and their associations, Table 2964, p.2547-2550, 1999.

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- **Support:** regular health-care visits for symptom relief, monitoring, and encouragement; positive self-talk; spiritual beliefs; family/social connections.
- **Environment:** Cleaner air and water, more organic food.
- **Exercise:** pacing, starting with tolerated activities, increasing by 10% weekly, or as tolerated.
- **Diet (and Drugs):** Regular nutritious meals, adding a daily multivitamin and mineral preparation, and nutritional supplements and symptom-relieving medications as required; gradual reduction and elimination of caffeine to improve sleep.
- **Sleep:** Sleep hygiene (dark, quiet room for sleep and sex only, same daily bedtime); relaxation techniques, such as deep breathing, progressive muscle relaxation, and visualization; hypnotics as needed.

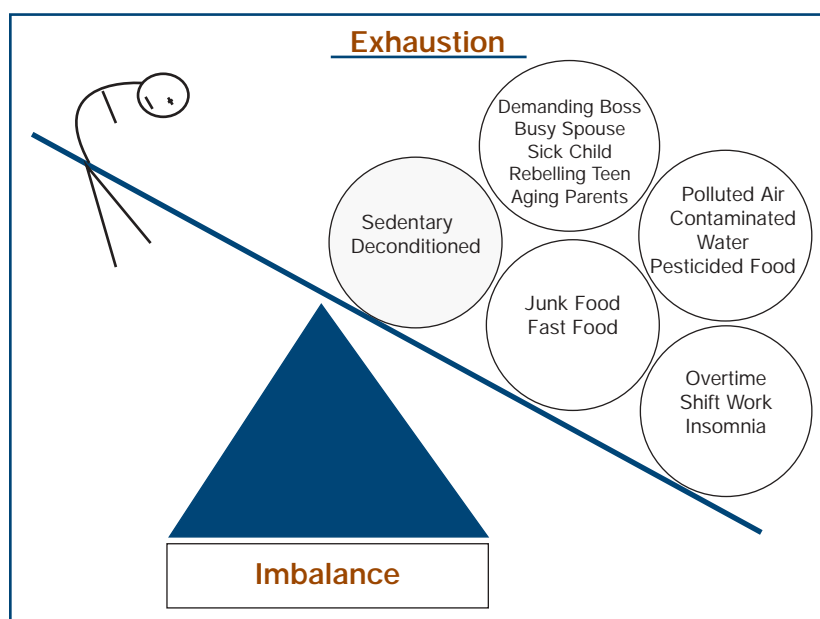


Figure 1. Tool 5: Chronic Illness

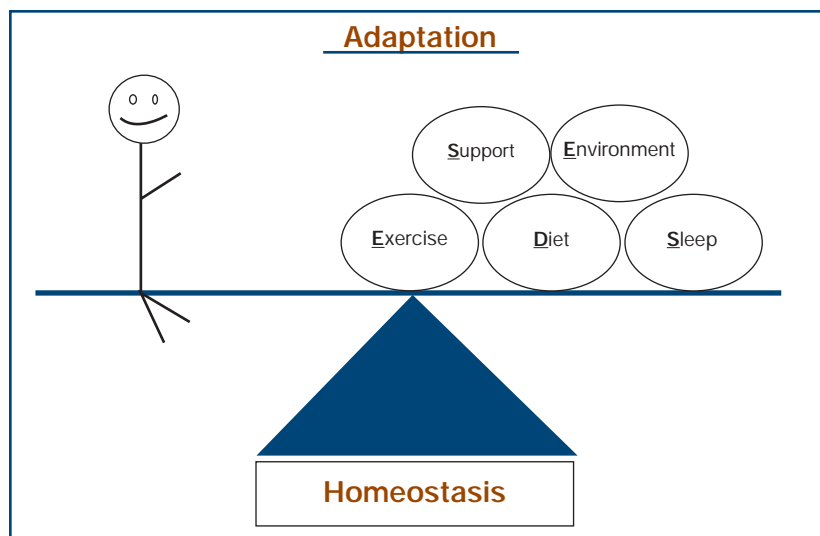


Figure 2. Tool 6: Wellness

## How can progress be measured?

Tool 7, an “activity log,” may be downloaded<sup>2</sup> and given to patients to complete between appointments. This tool helps patients gauge what times of the day they can safely undertake various activities, depending on the energy demand of each activity, and their own energy resources.

After completing an activity log for one week, Jane was able to see how she might be able to pace herself better and conserve energy to protect against “crashes.” She continued to keep the log to monitor her symptom frequency and severity in relation to activities, as well as changes in sleep and exercise.

The “functional capacity scale,” accompanies the activity log<sup>2</sup> and incorporates energy rating, symptom severity, and activity level on a scale of 0 to 10. The scale helps patients and physicians to rate clinical progress.

CME

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14. Marshall LM, Basted AC, Bray RI: Poorly understood conditions of the 21st century: A look at chronic fatigue syndrome, fibromyalgia, and multiple chemical sensitivity. *Can J Diag* 2003; 20(7):65-71.
15. Lax MB, Henneberger PK: Patients with multiple chemical sensitivities in an occupational health clinic: Presentation and follow-up. *Archives of Environmental Health* 1995; 50(6):425-31.

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**For a good move  
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## St Readings

1. Women's Health Matters (search environmental health): [www.womenshealthmatters.ca](http://www.womenshealthmatters.ca)
2. The Myalgic Encephalomyelitis Association of Ontario: [www.meao-cfs.on.ca](http://www.meao-cfs.on.ca)
3. National ME/FM Action Network: [www.mefmaction.net](http://www.mefmaction.net)
4. Dalhousie University: We Share the Air: <http://is.dal.ca/~scentfre/faq.shtml>

## Take-home message



### When working with patients whom you suspect have CFS, FM, or MCS:

- To assist diagnosis, use "ruling out" and "ruling in" strategies with practice tools:
  - Tool 1: Taking an exposure history
  - Tool 2: "Ruling in" clinical case criteria
  - Tool 3: Screening tests for ruling out other conditions
  - Tool 4: Additional tests for ruling out other conditions
- To assist treatment and measure progress, collaborate with the patient on a plan using practice tools:
  - Tool 5: Chronic Illness: exhaustion
  - Tool 6: Wellness: adaptation, planting SEEDS of health
  - Tool 7: Activity log and functional capacity scale