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Leadership in the Science,
Policy and Practice of Preventive Medicine

ACPM's Time Tools provide an executive summary of the most up to date information on delivering preventive services to patients in the context of a clinical visit. Information presented is based on evidence published in peer-reviewed journals. Please refer to the Indoor Mold Clinical Reference for more information.

A New Time Tool from the American College of Preventive Medicine

INDOOR MOLD

From Recognition to Remediation

Fungi, or more commonly molds, are ubiquitous in the natural world, recycling dead organic material back into the environment. Everyone is exposed to some mold spores every day as microscopic spores are released into the air and carried into homes, schools, offices and other buildings.

What causes mold problems in indoor environments?

In a word, dampness. Dampness is a widespread problem in homes around the country. It may be due to moisture incursion in older homes or lack of ventilation in tight new homes. In some areas, especially with more humid climates, half of homes, both old and new, have moisture problems.

If spores carried indoors settle in an area of dampness, they can grow and release more spores, as well as volatile organic compounds that cause the musty smell. They may contribute to a variety of symptoms, especially in sensitized people. Some molds can release toxins under certain conditions.

The Health Effects of Mold

Establishing cause and effect relationships with mold or dampness is challenging because environments and sensitivities vary widely, and valid quantitative methods for assessing exposures are lacking. According to the latest summary of evidence compiled by the World Health Organization (May, 2009), however, the case against mold is getting stronger.

Overall, evidence shows that house dampness and mold are consistently associated with a wide range of respiratory problems, especially asthma, wheeze, cough, respiratory infections and upper respiratory tract symptoms.

- Several recent studies have added to the evidence of an association between dampness and asthma exacerbation. About 4 out of 5 asthmatics are sensitive to mold.
- According to the WHO, the evidence is nearly sufficient to establish dampness and mold as a *cause* of exacerbations.

- Exposure to mold can be particularly serious for those who are immunocompromised or have serious lung disease, due to the increased risk for lung infections.
- Associations between mold and non-respiratory effects, such as headache, fever, fatigue, and neuropsychological changes have been reported, but a causal association has not yet been established.
- Inhalation of mold toxins has also been associated with symptoms in some people, but further study is needed to establish a causal association. People should be aware that the lack of evidence is because these associations have not yet been adequately studied, not because a causal association has been disproven..

The Challenge for Healthcare Providers

Clinicians face several challenges when patients present with symptoms or concerns about mold.

1. Evaluating the symptoms – what are the symptoms, when and where do they occur, what makes them better, what makes them worse, , existing sensitivities, need for a referral to a specialist, what additional evaluation before a referral
2. Addressing patient's worries and providing information about what is known and not known about the underlying reason for the symptoms.

3. If mold is suspected as a possible cause– providing advice on identifying exposures to mold and sources of moisture, determining if professional help is needed.
4. If mold is not suspected, consider whether it should be evaluated.

Delineating a single source of exposure is difficult. Testing the air is not recommended.

The simplest strategy – if mold is seen or smelled, there is a moisture problem that needs to be addressed.

- The key to confirming mold sensitivity is *when and where* symptoms are experienced AND if the symptoms improve when the patient is away from the environment.

SAMPLE GUIDE FOR ADDRESSING A PATIENT WITH POTENTIAL MOLD-RELATED SYMPTOMS

Medical Assistant

Assist with symptom survey (waiting area or examination room):

- Symptoms, exacerbations, exposures, characteristics of home, child care environment, school, office (wherever symptoms occur) [Table D Current Symptoms - Resource Guide Page 24; Table C Environmental Questionnaire - Resource Guide Page 22]

Nurse

Check vital signs, with particular attention to respiratory rate, temperature.

Clinician

1. Assess -- Patient

a. Review completed checklist of mold-related symptoms [Table D Current Symptoms]
b. Symptom assessment – Detailed questions for existing symptoms
c. Ask about symptoms in others who share the environment where symptoms occur
d. Medical history related to respiratory, allergic, immunologic, neurologic, hematologic conditions
    i. New onset or exacerbated asthma, recurrent rhinitis/sinusitis, recurrent hoarseness
    ii. History of anemia
    iii. Recurrent pneumonia
    iv. Interstitial lung disease, hypersensitivity pneumonitis
    v. Otitis, skin rashes
    vi. Recurrent nosebleeds
e. Physical exam – careful evaluation of mucous membranes, respiratory and cardiovascular, ENT, dermatologic, neurologic exam

2. **Assess –** Environment
    a. Review completed environmental questionnaire to assess environmental exposures (home, child care environment, school, work) [Table C Environmental Questionnaire]
    b. Provide questionnaire to assess symptoms in relation to environment [Table B Questions for Patients with Common Symptoms - Resource Guide Page 22]
    c. Diagnosis of environmentally related conditions

3. **Address --** Knowns and Unknowns
    a. Ubiquitous nature of fungi – present in nearly all settings
    b. Mold grows *only* in damp environments; moisture is the underlying problem
    c. Sensitivity varies – asthmatics, other allergics, infants, children, immunocompromised may be at greater risk
    d. Allergic response most well-known; respiratory symptoms are common
    e. Little study of other health problems – further study is needed
    f. Key is finding and controlling moisture and water damage – need a plan
    g. Testing the air is usually not needed or recommended

4. **Advise –** Next Steps
    a. Diagnosis – likelihood of mold involvement
    b. Monitoring symptoms to observe changes in relation to environment
    c. Assessing home for mold – self or referral to home inspector
    d. Referral to specialist for further work-up

5. **Assist --** Plan of Action

    a. Monitoring symptoms -- Provide symptom diary [http://www.epa.gov/iaq/largebldgs/pdf_files/occdiary.pdf]
    b. Home assessment – Provide checklist [Table C Environmental Questionnaire]
        i. Visible mold (describe, show pictures) [http://www.epa.gov/mold/moldcourse/imagegallery6.html]
        ii. Problem areas (condensation, leaks, etc)

c. Consideration of need for home inspection (professional) – contact public health department
d. Plan to remediate environment
    i. How to clean up [A Brief Guide to Mold, Moisture and Your Home http://www.epa.gov/mold/pdfs/moldguide.pdf]
    ii. Do it yourself (not patient) or hire a professional
    iii. Cautions if doing it yourself

6. Arrange -- Follow-up
a. Next visit
b. Phone call to monitor progress
c. Consideration of referral if persisting symptoms

Final Thoughts

The key message is that, if mold is present, it cannot be ignored. It will get worse; it will grow, smell, and release more spores and volatile organic compounds into the air. And, it will become more difficult and more costly to remove. Many people will react to it, depending on their sensitivities.

Family practitioners play a key role in identifying potential mold problems, educating patients on the effects of mold, and advising them on how to assess their home and control moisture problems. The take home message is that active mold growth can be controlled only by correcting the source of moisture that it depends on, *then* cleaning up the mold and disposing of contaminated materials.

Not a simple task, but there are many resources to help – from EPA assessment and clean-up guides to public health departments to abatement professionals to allergists or immunologists for the most complex cases.

For supporting references, and additional resources for education and assessment, see the Mold Time Tool Resource,

For other information and useful links, visit the American College of Preventive Medicine website: www.acpm.org.