Assessing Disability from Occupational Asthma*

A Perspective on the AMA Guides

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AMA = American Medical Association; FEF = forced expiratory flow; FEV_1 = forced expiratory volume in 1 s; FVC = forced vital capacity; SAD = small airways dysfunction

Assessing disability resulting from occupational asthma is a particularly complex, emerging problem. This article will briefly review the problem from the perspective of the AMA Guides, but this does not represent the formal position of the AMA, nor does it necessarily represent the consensus view of the committee writing the respiratory section of the Guides.

The document commonly called the AMA Guides actually is entitled Guides to the Evaluation of Permanent Impairment, Third Edition, published by the AMA.[1] Each of these words provides insight into the nature, purpose, and extent of the AMA Guides. "AMA" indicates that the statements in the Guides are not official federal or other policy. Furthermore, the Guides are prepared and published under the auspices of the AMA, which is not an organ system–specific specialty organization (either occupational medicine or pulmonology). One may surmise, therefore, that the Guides are intended to be of general use. "Guide" also implies the advisory nature of the Guides. It indicates that these serve simply as guides, rather than providing a definitive approach to evaluating such disability. Hence, it is understood that the individual physician will make appropriate adjustments in the individual case. "Evaluation" is used rather than "rating," since the latter term implies a more specific, quantitative meaning, suggesting that the result of the assessment can be directly translated into a dollar value; the Guides do not appear to be a rating scheme such as those used by specific insurers. "Permanent" indicates that transient impairment is not considered; as discussed below, the effect of asthma, particularly occupational asthma, is transient in some of its manifestations. This leads to particular difficulty in developing clear assessment guides. "Impairment" in the title of the AMA Guides must be distinguished from "disability" in the title of this conference. By the traditional differentiation, impairment refers to the loss of physiologic function or antatomic loss, whereas disability refers to the overall impact of the physiologic loss. The distinction between impairment and disability is particularly unclear for occupational asthma. Finally, as indicated by "third edition" the Guides are evolutionary, so that over time, the proper objective method may be developed.

Difficulty of Assessment of Asthma

Assessment of disability for occupational asthma is considerably more difficult than for the pneumoconioses. The unique aspects of disability assessment for occupational asthma are several. First, asthma is by definition characterized by variability. Hence, results found on the day of examination may not necessarily reflect the patient's true condition, whereas for the pneumoconioses, subjects show little day-to-day variation. Second, the presence or absence of pneumoconiosis but not for occupational asthma may be detected by generally available, relatively simple methods (chest radiology, spirometry, diffusing capacity determination).

Third, it is generally accepted that there is a good relationship between certain measures of exercise physiology and consequent impairment for the pneumoconioses, and even simple tests such as radiography and spirometry show good relationships with the level of functional impairment for the pneumoconioses (at least in advanced stages). Such a test has not yet reached consensus for asthma. Fourth, the relationship between exposure and causation is less clear for occupational asthma than for the pneumoconioses. Once sensitization to an occupational allergen occurs, very low doses can elicit severe reactions. Furthermore, the relationship between level and frequency of exposure and the disease is less clear, since only a small minority of exposed individuals typically develop occupational asthma. Fifth, asthma, unlike pneumoconiosis, is often amenable to therapy; it is therefore necessary in assessing the level of disability and impairment to determine whether the patient has received optimal therapy. Sixth, there is a clear (but generally not obtained) pathologic correlate for the pneumoconioses (*ie*, histology coupled with mineralogic analysis); no such correlation exists for occupational asthma. Seventh, worksite-specific disability may exist if an individual is sensitized to a specific chemical. Eighth, asthma is very common, making assessment of work causation difficult. For all of these reasons, disability assessment schemes, such as the AMA Guides, are likely to be less precise and specific for occupational asthma than for other lung disorders.

The AMA Guides approach impairment assessment on a primarily physiologic, rather than etiologic basis. Thus, the exact cause of air flow obstruction is less important than the physiologic effect thereof. Hence, the AMA Guides are specific for occupational asthma only insofar as this affects the impact on life activities. This orientation is significant because it implies that questions of causality need not be considered in directly applying the AMA Guides in most instances. Thus, many of the legally imposed considerations, such as apportionment of the illness to occupational vs nonoccupational causes, and apportioning the disability among multiple employers, are not addressed in the AMA Guides.

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In general, the AMA Guides emphasize the objective evaluation of lung function as the basis for disability assessment. "Severe" impairment is established largely on the basis of a severe reduction in FEV_1 or the FEV_1/FVC ratio documented on 3 separate occasions. Despite the use of tables and criteria values, however, the AMA recommendation concludes, "The final impairment rating should be left to the physician's judgment."

The framework for this is suggested in the introductory section (5.0B) of the Guides. Five specific areas are addressed in the Analysis of Findings. The first, impact on daily activities, may generally be inferred from the level of physiologic impairment. The second, evaluation of whether the condition is static or well stabilized, requires an assessment of adequacy of treatment. The third area, likeliness of the individual to suffer sudden incapacitation, may be particularly relevant in assessing asthma. Two aspects should be considered: is the patient's asthma highly variable and unpredictable, and will an exposure trigger a severe attack. Fourth, the physician should address whether "attempting to meet . . . occupational demands" will lead to further impairment. Fifth, the need for accommodations or restrictions should be clearly explained. Restrictions imply chemicals that the worker must avoid. The Guides also mention "accommodation." The evaluation must consider whether changes in the work site can permit an individual to return to work. This is particularly relevant to occupational asthma, as elimination of a single exposure variable may eliminate or limit disability. Within the application of the Guides to occupational asthma, there is a clear need for judgment, but the Guides mandate an explanation for any conclusion.

Is Asthma Present?

The first step in applying the Guides is determining if indeed asthma is present. The Guides are significant in that purely subjective factors (*eg*, a patient's report of wheezing) and poorly documented clinical findings (*eg*, a physician's report of hearing wheezes) appear to carry less weight than objectively documentable physiologic abnormalities. This therefore implies that for a variable illness such as asthma, a component of chance is related to "finding" the abnormality at the time of examination. The Guides emphasize the importance of spirometry in establishing the presence of asthma. Specifically, the FEV_1 and the FEV_1/FVC ratio are used in establishing the presence of airflow obstruction. The Guides explicitly do not include measures of so-called small airways dysfunction, such as the forced expiratory flow over the mid-vital capacity range (FEF 25-75%). Furthermore, methacholine challenge testing is not explicity stated or required, although the Guides would permit considering it. The Guides specify that the spirometry should be repeated on 3 occasions, distributed in time, in order to assess whether "severe" impairment is present, but do not specify how many tests are necessary for simply documenting the presence of asthma. Thus, it may be necessary for the patient to make multiple physician visits in order to document that asthma is present.

The dependence on objective documentation is in keeping with the general plan throughout the Guides. This does, however, present logistic problems for a variable disorder such as asthma.

The method utilized for documenting the presence of asthma has several implications and raises several questions. First, it sets a clear standard that the diagnosis must be based on objective documentation, not simply on symptoms. This is particularly important for symptom such as wheezing, which is often misinterpreted by many patients and even physicians. There is a very high population prevalence of this symptom in a community-based study[2,3] there is rather inconsistent use of the term by physicians,[4] and there is poor correlation of symptoms with objective tests.[5] Second, the method of documentation may well require multiple patient visits, something that is perhaps inevitable with a variable disorder. At the same time, the testing to be performed is quite practical; unlike methacholine challenge testing, which still is not universally available, high quality spirometry is within the reach of every clinician. Furthermore, the methods are well standardized and are subject to external validation of the results by examination of the hard copy spirometry tracings. Such external validation is not feasible for methacholine challenge testing. Third, the Guides do not utilize the so-called tests of small airways dysfunction, such as the forced expiratory flow over the mid-vital capacity (FEF 25-75%). This also appears to be reasonable, for several reasons: the SAD tests are not specific, they are not truly effort independent, and they show a wide range of normal variability. Furthermore, there is evidence that in the absence of abnormalities of FEV_1, the FEF 25-75% does not in itself predict symptoms or exercise limitation as documented by exercise testing.[6] Fourth, because spirometry is objectively documentable and subject to external review, it permits information from the patient's treating physician to be easily considered, so that it may not be necessary for the evaluating physician to examine the patient in the course of an attack.

How Severe Is the Asthma?

After the presence of asthma has been documented, the next step is to determine its direct functional significance (that is, how great is the physiologic impairment due to the asthma at a particular time?). The Guides accomplish this by relating the abnormal function determined to a series of tables that are used to classify physiologic impairment into 4 general categories. Thus, the objectively documented abnormality is used for classifying the extent of impairment. This, of course, assumes that impairment due to asthma is comparable to that due to other respiratory disorders. Although lung volume changes (particularly hyperinflation) may affect symptoms without concomitant basic spirometric changes, this phenomenon has been primarily documented during the short-term therapy stages of asthma and is therefore unlikely to be directly relevant in the disability assessment setting. It is reasonable to assume that physiologic limitation of air flow is the primary cause of functional limitation in asthma. Although short-term changes in respiratory sensation may be relevant to very short-term impairment, as during the course of a severe attack, they are not particularly relevant when assessment of disability due to occupational asthma is the question.

A more serious question is which of multiple measures of pulmonary function should be the one on which assessment of asthma is based—the best, the worst, or the average? A rational argument in favor of each of these choices could be made. Theoretically, one might assume that an individual should not exceed his or her minimal level of functioning when selecting a job, for example. Conversely, the best measure of lung function may be indicative of what can be achieved with optimal therapy. Furthermore, the best measure also reflects the level of "permanent" impairment, whereas transient deviations from this simply represent "temporary exacerbation." In that the AMA Guides are focused on permanent impairment, the best lung function measurement might be indicative of the permanent component. Nevertheless, this may be unrealistic. Specifically, it is quite possible that it can only be achieved in very rare instances or while the patient is taking medication that should not be maintained for prolonged time periods (*eg*, high-dose corticosteroid or immunosuppressant therapy).

The Guides (p 118) provide a clear definition of severe impairment. To fall into this category, an individual must meet at least 1 of the criteria for severe (class 4) impairment on 3 separate occasions.

Is Asthma Well Treated?

Until this point in the analysis, the Guides do not require considering the origin of the asthma, simply whether it is present and the magnitude of its effect physiologically. The evaluating physician is advised that treatment can affect the degree of physiologic effect. For this reason, it is requisite to consider whether treatment is adequate. However, unlike some other proposed schemes, the Guides do not estimate the impairment based on the nature of the treatment utilized. For example, the Guides do not require that an individual be hospitalized a certain number of times per year in order to qualify as impaired, as does the Social Security System. This is a significant benefit, since it does not penalize patients who practice appropriate preventive measures to stay out of hospitals and emergency rooms or who select physicians who are particularly effective at avoiding hospitalization. The Guides do, however, suggest that optimum medical therapy should include daily bronchodilation and physician supervision. This is, therefore, a more valid measure, and it avoids possible interference of the disability evaluation process with treatment (*eg*, by ensuring that no benefit accrues from hospitalizing a patient a sixth time in a year). It also means that the evaluating physician's subjective opinion about what is extensive treatment does not enter the process, only using a general opinion about whether adequate treatment is being provided.

Job-Specific Disability

The fourth consideration in the Guides concerns job-specific effects; that is, in certain instances, an asthmatic may be capable of most activities of daily living, but may be incapable of performing certain jobs. This specific work limitation may be of 3 sorts. First, some jobs may simply require exertion levels that are much higher than a particular asthmatic can attain on a physiologic basis. Second, nonspecific irritants or other stimulant aspects of a job (*eg*, exposure to cold air) may tend to induce asthma exacerbation. Third, an occupational asthma patient may be sensitized to a very specific workplace chemical. In such an instance, he or she may have only limited symptoms normally but may experience life-threatening attacks when exposed to even minute quantities of the chemical in question. Thus, if freedom from exposure to the specific chemical cannot be ensured within his occupation, then he is effectively disabled for that work.

The title of the Guides implies that the recommendations are concerned with impairment rather than disability. For occupational asthma, the distinctions are quite difficult, and the evaluation system cannot clearly separate these considerations. Whereas Americans tend to focus on impairment and disability, another scheme may be more relevant conceptually for occupational asthma. Specifically, impairment relates to the actual physiologic loss, reasonably well reflected in the FEV_1. *Handicap* indicates the specific activities of which an individual is incapable (*eg*, inability to walk up a flight of stairs due to exercise limitation, inability to operate an auto spray paint gun because of isocyanate sensitivity). *Disability* is the broader impact of the actual handicaps. For example, an automobile body repair technician may become sensitized to isocyanates by working near auto spray painters who use isocyanate-containing paints. If exposed, he will develop an impairment (objectively documentable air flow obstruction), which will produce a handicap (inability to do his work because of ventilatory limitation) and a consequent disability (cannot work in his trade). However, if he recovers from nonspecific airway hyperreactivity and it is possible for him to work in an area without any isocyanate exposure, then he will have no current impairment and not be disabled for his work. Hence, whether he is "disabled" depends on whether the work site may be modified rather than on his level of actual impairment. Alternatively, if complete separation from spray painting operations is not feasible, he may have disability (cannot do body work) even in the absence of current measurable impairment. The Guides include the terms "employability" and "employment-related disability." These are particularly appropriate to occupational asthma, in which disability may be particularly specific to an individual job. As such, it may be considered a handicap (limit of specific activity) rather than a disability. Whether the handicap of specific job inability implies disability depends largely on nonmedical factors such as the availability of alternative jobs.

The AMA Guides suggest considering sensitivity to specific chemicals and work requirements. This aspect, however, is treated differently than others. Specifically, the Guides provide extremely clear criteria for assignment to an impairment class for restrictive disease and obstructive fixed disease. In addition, the Guides provide a rational algorithm for classifying the level of impairment due to a variable obstructive disease such as asthma. The Guides specifically but briefly mention job-specific effects, such as those due to specific chemical sensitization, in occupational asthma; however, they do not provide the physician with advice on how to use this information, but simply recommend collecting and considering such information. Thus, consideration of occupational asthma is qualitatively differ-

ent from other aspects of respiratory impairment assessment.

Conclusions

In summary, the AMA Guides treat occupational asthma as a special case or subset of respiratory impairment assessment, but do not develop an entirely separate evaluative process. The Guides provide a clear criterion for determining if asthma is actually present and also indicate a mechanism to categorize the physiologic impairment due to the asthma. The Guides are also eminently practical, and it should be possible for most evaluating physicians to comply with the recommended evaluative procedures. Furthermore, the Guides provide a clear and externally verifiable mechanism for testing.

The simplicity, practicality, clarity, and continuity with past guides do, however, carry a price. There are many unresolved questions, as I have discussed. It is therefore likely that in the future, the Guides will again be revised as more information is gained and as additional evaluative procedures become more generally available.

Note: The opinions expressed herein are those of the author and do not necessarily reflect those of the association or of the committee responsible for revising the Guides.

References

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