Policy

A worker who has a permanent impairment due to work-related asthma is entitled to a non-economic loss (NEL) benefit, based on the degree of the worker's permanent impairment.

NOTE

The WSIB is directed (by O. Reg. 175/98, s.18) to use the American Medical Association's Guides to the Evaluation of Permanent Impairment (the AMA Guides) (1), as the rating schedule for NEL determinations.

The AMA Guides indicate that impairment from some respiratory conditions (such as asthma) are not "readily quantifiable" by the methods used in the AMA Guides for respiratory disease. To supplement the AMA Guides the WSIB adopted this policy and guidelines.

1. American Medical Association. Guides to the Evaluation of Permanent Impairment(Third Edition Revised). American Medical Association, Chicago, 1990.

Guidelines

Description of the condition

Asthma is an illness in which there is a narrowing of the airways or bronchial tubes to the lungs resulting in breathing difficulties (2). Most experts agree that asthma is characterized by airways obstruction (that may be reversible), inflammation, and hyper-responsiveness to a variety of stimuli (3).

2. The Lung Association. Facts About Your Lungs.

3. U.S. Public Health Service. Definition & Diagnosis. In: Guidelines for the Diagnosis & Management of Asthma. Expert Panel Report. Natl. Asthma Educ. Pgm. Bethesda, MD: National Heart, Lung & Blood Institute, National Institutes of Health Publication No. 91-3042A, 1991, pp.1-13.

Summary of approach

The WSIB rates a worker's permanent impairment due to asthma by determining the worker's respiratory and immunological impairment.

Respiratory impairment is determined using the American Thoracic Society's "Guidelines for the Evaluation of Impairment/Disability in Patients with Asthma" ("ATS Guidelines") (4).

If the worker is found to be immunologically sensitized to a workplace substance and the sensitization is clinically significant (5), a separate percentage for immunological impairment is also provided. Consistent with the WSIB's whole person approach to permanent

impairment, the respiratory and immunological impairments are combined using the Combined Values Chart in the AMA Guides.

For the purposes of calculating the NEL benefit, the degree of a worker's permanent impairment is determined using the medical information in the worker's file. If the information in the file is insufficient to make a NEL determination, the WSIB will arrange for a NEL medical assessment to obtain the necessary information. For more information, see 18-05-03, Determining the Degree of Permanent Impairment, and 18-05-04, Calculating NEL benefits.

4. American Thoracic Society. Medical Section of the American Lung Association. Guidelines for the Evaluation of Impairment/Disability in Patients with Asthma. Am. Rev. Respir. Dis. 147:1056-61, 1993.

5. A sensitization is considered to be clinically significant if the worker is sensitized, and, upon exposure to the workplace substance, the worker experiences asthmatic symptoms. The level of exposure need not be excessive.

Who/when to rate

Workers with an accident date (6) of January 2, 1990 or later and who have work-related asthma, are eligible for a NEL determination if they have a permanent impairment and their condition has reached maximum medical recovery (MMR), (see, 11-01-05, Determining Maximum Medical Recovery (MMR)).

Workers diagnosed with asthma are tested periodically to determine whether they have reached MMR. With appropriate treatment, stabilization will likely occur in approximately two years. Because asthma is variable, in some cases a worker will reach MMR sooner.

Once it is determined that the worker has a permanent impairment due to asthma and is clinically sensitized to a workplace exposure, even if the asthmatic symptoms have not yet stabilized, the WSIB proceeds to provide any rehabilitation considered appropriate.

6. In occupational disease claims, the accident date is the date of diagnosis of the work-related disease or the date of the first report of medically related symptoms, whichever is the earlier.

Rating respiratory impairment

Three components of respiratory impairment are considered

1. airflow limitation (Table 1)
2. airways hyper-responsiveness (Table 2), and
3. the minimum medications required by the worker to remain stable (Table 3).

Scores obtained from Tables 1, 2 and 3 are added to produce a total respiratory impairment score. Table 4 assigns percentages for whole person impairment using the respiratory impairment score.

The WSIB arranges all pulmonary function and histamine or methacoline challenge tests. The WSIB ensures a copy of the spirometric tests are included in the claim file. This includes the curves or flow volume loops for the pre- and post-bronchodilator spirometry or for each measurement during the histamine or methacoline challenge. These results enable the WSIB to determine whether maximum effort was used.

1. Airflow limitation

The worker's medical information must include a post-bronchodilator FEV(1) test at MMR. The WSIB determines the worker's post bronchodilator FEV(1) (7), % predicted, consistent with the ranges in Table 1.

7. FEV(1) (Forced expiratory volume in one second) is the volume of air forcefully expired in one second after maximum inspiration.

Table 1 ("ATS Guidelines") Post-Bronchodilator FEV(1)

Score	FEV(1)% predicted
0	>lower limit of normal
1	70-lower limit of normal
2	60-69
3	50-59
4	<50

Spirometry results (FEV(1) or FVC (8)) vary with ethnic differences in body frame size. All laboratories use standardized reference tables based on studies of Caucasian individuals. To account for body frame differences, the values ascertained from these reference tables must be multiplied by 0.85 for persons of African descent and by 0.90 for persons of Asian and Indian descent.

8. FVC (Forced vital capacity) is the total volume of air expired as rapidly as possible

2. Airways hyper-responsiveness

Table 2 provides a score ranging from 0 to 4 based on either the reversibility of FEV(1) or on the degree of airways hyper-responsiveness. Based on a review of each spirometric effort used in the pre- and post-bronchodilator tests and in histamine or methacholine challenge tests, the WSIB determines the worker's percentage FEV(1) change (9) or PC(20) mg/ml (10) or equivalent based on the medical information in the claim file.

The degree of airways hyper-responsiveness is only measured when the FEV(1) is above the lower limit of normal (i.e. the lowest 5% of the reference population) or above 70% of predicted. The WSIB then ensures that airways hyper-responsiveness has been assessed by a non-specific challenge test as specified in Table 2.

9. The reversibility of FEV(1) is determined using the % change in the baseline FEV(1) after a bronchodilator has been administered.

10. Airways hyper-responsiveness or PC(20) (provocation concentration is the provocation concentration of methacoline or histamine required to produce a 20% decrease in FEV(1) from the baseline value).

Table 2 "ATS Guidelines"
Reversibility of FEV(1) or Degree of Airway Hyper-responsiveness

Score	% FEV(1) change	or	PC(20) mg/ml or equivalent
0	<10		>8
1	10-19		8 to >0.5
2	20-29		0.5 to >0.125
3	30		0.125
4	-		-

Note
When FEV(1) is above the lower limit of normal, PC(20) should be determined and used for rating of impairment; when FEV(1) is <70% predicted, the degree of reversibility should be used; when FEV(1) is between 70% predicted and the lower limit of normal, either reversibility or PC(20) can be used.
Reversibility with bronchodilator is calculated as,
$\frac{\text{FEV(1) post-bronchodilator - FEV(1) pre-bronchodilator}}{\text{FEV(1) pre-bronchodilator}} \times 100\%$

3. Use of medications

The WSIB considers information on the worker's medication use, including the frequency and type of medication used by the worker and compliance (if known).

Based on the minimum medication required for control of asthma, a score is assigned from Table 3. The information obtained on medication use should be applicable to the same time period as the post-bronchodilator FEV(1) test and the airways hyper-responsiveness measurement.

If medication use is revised, a reconsideration of permanent impairment maybe necessary.

Table 3 ATS Guidelines
Medication needed (11)

Score	Medication
0	No medication
1	Occasional bronchodilator (non-daily) and/or occasional cromolyn (non-daily)
2	Daily bronchodilator and/or daily cromolyn and/or daily low-dose inhaled steroid
3	Bronchodilator on demand and daily high-dose inhaled steroid (>800µg beclomethasone or equivalent)
4	Bronchodilator on demand and daily high-dose inhaled steroid (>800 µg beclomethasone or equivalent) and daily systemic steroid
11. The need for minimum medication should be demonstrated by the treating physician, e.g., previous records of exacerbation when medications have been reduced.	

Determining total respiratory impairment due to asthma

The scores from Tables 1, 2, and 3 are added. To convert the total score to a percentage permanent impairment rating for the respiratory system, the WSIB uses Table 4 below.

Table 4
Percent Whole Person Permanent Impairment (PI) of Respiratory System

ATS Total Score	% PI (12)
0	0
1	8
2	16
3	24
4	32
5	40
6	48
7	56
8	64
9	72
10	80
11	90
Asthma not controlled despite maximal treatment (i.e., FEV(1) remaining <50% despite use of 20 mg of prednisone/day).	95-100
12. Percentages were derived as follows: Total impairment was taken as 100%. Total ATS scores of 0 to 10 were assigned equally spaced impairment ratings between 0% and 80%. A total ATS score of 11 was assigned a value of 90%. Most severe asthma was rated as 95% to 100%.	

Rating immunological impairment

Sensitization may be determined by

1. detecting specific IgE antibodies in a skin or blood test; or
2. noting that the worker reacts with asthmatic symptoms to extremely low concentrations of a substance in the workplace (e.g., if there is increased bronchial reactivity or change in peak flow upon return to work without exposure to irritant levels of workplace substances).

Minor and clinically insignificant sensitization is common in some industries. Therefore, the WSIB only considers sensitizations which are clinically significant (13) based on results of skin or blood tests, bronchial reactivity or peak flow results, and relevant information regarding the worker's work and exposure history.

If the worker has a clinically significant sensitization to a workplace substance, the worker is considered to have a permanent impairment of the immune system of approximately 3-5%. Sensitization to a common agent results in a higher rating than sensitization to an agent found only in rare or unusual settings.

13. A sensitization is considered to be clinically significant if the worker is sensitized, and, upon exposure to the workplace substance, the worker experiences asthmatic symptoms. The level of exposure need not be excessive.

Combining respiratory & immunological impairments

The WSIB espouses the philosophy that impairment ratings of all conditions represent an impairment of the whole person. Therefore, to determine the extent of whole person permanent impairment due to asthma, the total respiratory percent obtained from Table 4 is combined with the immunological impairment rating (3-5%) (if the worker has a clinically significant workplace sensitization) using the Combined Values Chart in the AMA Guides.

Final rating

As indicated in the "ATS Guidelines", the WSIB considers any unusual circumstance which might impact on the worker's permanent impairment. Examples of unusual circumstances include barriers to compliance in treatment, limitations to environmental control measures, co-existing disease, particular sensitivity to exposure to cold which might limit time spent outdoors, or any other impact of asthma on worker's daily routine which might impact on the worker's permanent impairment.

If other work-related sensitizations are identified (e.g. dermatitis), then permanent impairment from other body systems must also be considered using the AMA Guides'Combined Values Chart in the final determination of whole person permanent impairment.

Aggravation of pre-existing asthma

The purpose of a NEL determination in workers with aggravation of pre-existing asthma is to decide whether, having achieved MMR, the extent of the worker's permanent impairment due to asthma has increased, and, if so, by how much.

If the impairment due to pre-existing asthma is known (e.g., through a surveillance program at work), then the percentage impairment for the pre-existing condition is subtracted from the percentage impairment ascertained for the present impairment using these guidelines. If the pre-existing impairment is not known, then the current impairment is determined independently of any impairment due to pre-existing asthma that may have been present. In this circumstance, the WSIB's policy on Second Injury and Enhancement Fund, see 14-05-03, Second Injury and Enhancement Fund (SIEF) for transfer of costs is applied.

Summary of steps for NEL determination

The following table provides a summary of the steps for WSIB to determining permanent impairment due to asthma.

Step	Action	Method used
1.	Determine if the worker is at MMR	Described in "ATS Guidelines"
2.	Consider the following information: a) respiratory impairment (which includes airflow limitation, airways hyperresponsiveness, and use of and compliance with medications) b) clinically significant immunological impairment and workplace substance which caused sensitization c) description of unusual circumstances which might have an impact on the worker's permanent impairment	Conform with "ATS Guidelines" and these medical guidelines
3.	Assign a score for airflow limitation, airways hyperresponsiveness and use of medications	Use medical information with Tables 1, 2, and 3 to assign a score
4.	Calculate a total respiratory impairment score	Sum each score from Tables 1, 2, and 3
5.	Assign a percentage for respiratory impairment	Refer to Table 4
6.	Assign a percentage for clinically significant immunological impairment if medical information indicates that the worker has a clinically significant sensitization for a workplace substance	Assign 3%-5% for immunological impairment
7.	Combine respiratory and immunological impairment into a single whole person permanent impairment due to asthma	Use percentages from Step 6 and Step 7, with Combined Values Chart in the AMA Guides to arrive

		at final percentage of the whole person
8.	Adjust final rating if there is indication of any unusual circumstances	Based on the individual case
9.	If worker has an aggravation of pre-existing asthma, and impairment remains worse than the impairment prior to work exposure, determine percentage permanent impairment which is work-related	Using these guidelines, subtract permanent impairment from a pre-existing impairment due to asthma condition from current permanent impairment. If prior impairment is unknown, determine the current impairment independently of any pre-existing asthma and applies WSIB policy on SIEF

Application date
This policy applies to all decisions made on or after December 5, 1995, for accidents on or after January 2, 1990.

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References
Legislative Authority
Workplace Safety and Insurance Act, 1997, as amended
Sections 46, 47

O.Reg.175/98, Section 18

Minute History
Administrative
#2, December 11, 1995, Page 194
#14, June 10, 2004, Page 363

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#17, May 26, 2008, Page 461