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Taking ODAP into the future

A protocol for occupational disease policy development and claims adjudication

Prepared by the Medical and Occupational Disease Policy Branch (MODPB) and the Occupational Disease and Survivor Benefits Program (ODSBP), Workplace Safety and Insurance Board (WSIB)

Toronto, Ontario, Canada

March 2005

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Abbreviations and Acronyms

BPB	Benefits Policy Branch
COPD	chronic obstructive pulmonary disease
CPP	Canada Pension Plan
DRPS	Disease Research and Policy Section
EI	Employment Insurance
EIW	Enterprise Information Warehouse
JEM	job exposure matrices
MODPB	Medical and Occupational Disease Policy Branch
MOL	Ministry of Labour
NWISP	National Work Injuries Statistics Program
ODAP	Occupational Disease Advisory Panel
ODISS	Occupational Disease Information and Surveillance System
ODSBP	Occupational Disease and Survivor Benefits Program
OMC	occupational medicine consultant
PEIR	Program for Exposure Incident Reporting
PYE	Person–years–exposure analysis
RPB	Revenue Policy Branch
WSIAT	Workplace Safety and Insurance Appeals Tribunal

Part 1: Introduction

Occupational Disease Advisory Panel (ODAP) Report

Background

This document is a protocol. It describes how the WSIB implements the principles and concepts developed in the Occupational Disease Advisory Panel (ODAP) Report in its day-to-day business. The protocol:

- elaborates on the ODAP Report (but does not supersede it)
- is accompanied by the full complement of ODAP documents, and
- will be supplemented with operational policy.

The ODAP Report:

- reviewed the statutory provisions, historical background and definitions related to occupational disease
- examined the levels of scientific evidence used for policy development in occupational disease
- presented legal principles that have generally guided the adjudication of occupational disease claims by the Workplace Safety and Insurance Board (WSIB) and Workplace Safety and Insurance Appeals Tribunal (WSIAT) in recent years, and
- recommended that these principles be formally acknowledged and declared as policy.

This protocol guides operational staff now and will continue to do so in the future. In addition, policy will be developed on the basic

legal and other principles of adjudication. The protocol will also be integrated into the training materials for staff in the occupational disease areas.

Occupational disease policy

For the staff of the occupational disease policy area, this protocol identifies the direction to take in understanding and interpreting the relevant science when developing occupational disease policy. It is written using terms from the scientific literature that supports the work (e.g., from epidemiology, toxicology, occupational hygiene). It assumes that the reader has an understanding of these disciplines.

Occupational disease adjudication

For the staff of the occupational disease adjudication area, this protocol represents the proper approach to considering both legal principles and evidence in making decisions about occupational disease claims.

Why have a protocol?

What is a protocol?

The word protocol derives from a Greek phrase meaning "first leaf," which refers to the first draft of a treaty. It is also defined as the etiquette of diplomacy and affairs of state.

Protocols specify proper and generally accepted behaviour in matters of state and diplomacy. Therefore, this document is called a protocol because it describes the proper and generally accepted behaviour in occupational disease issues.

Not policy

This is not formal "policy" as approved by the WSIB Board of Directors and placed in the Operational Policy Manual. Instead, it is WSIB's commitment on how it acts in relation to occupational disease issues. It outlines the standard procedures that the WSIB follows in dealing with all types of evidence in occupational disease policy development and adjudication.

Exceptional cases

Although exceptional and unforeseen circumstances may arise that prevent the use of this protocol, such occasions should be rare.

What parts of the WSIB handle occupational disease issues?

Two areas in the WSIB handle occupational disease issues:

- the Medical and Occupational Disease Policy Branch (MODPB), and
- the Occupational Disease and Survivor Benefits Program (ODSBP).

MODPB

The Medical and Occupational Disease Policy Branch (MODPB) is part of the Policy and Research Division of the Corporate Services Cluster at the WSIB. The other two policy branches in this division provide support for adjudication issues:

- The Benefits Policy Branch (BPB) develops policies that deal with issues such as:
    - claims entitlement
    - payment of benefits
    - health care benefits, and
    - return to work.

  These issues apply to all WSIB claims regardless of the condition reported.
- The Revenue Policy Branch (RPB) deals with who is covered under the *Workplace Safety and Insurance Act* and what classification (premium rate group) a business is in. RPB also develops the policies related to experience rating programs, which are influenced by occupational disease and the inter-jurisdictional agreement.

MODPB's mandate is to provide WSIB clients with statistical coding services and with information and advice on medical, scientific and data issues relating to occupational diseases. In recent years, MODPB has begun exploring different ways of providing these services.

MODPB's clients can include groups inside the WSIB, such as ODSBP and Appeals, as well as groups outside the WSIB, such as members of the public, employers and the Ministry of Labour.

MODPB is composed of three sections responsible for separate but related areas of activity:

- The Occupational Disease Information and Surveillance System (ODISS) Section is the corporate resource for information on disease and fatal claims submitted to the WSIB.
- The Disease Research and Policy Section (DRPS) is responsible for the following services:
    - providing scientific reviews and advice on individual claim files to ODSBP
    - responding to internal and external medical and occupational disease information requests, and
    - providing technical and scientific support to the WSIB's ongoing activities relating to occupational disease.

  DRPS staff are scientific professionals including policy analysts, epidemiologists, toxicologists, clinicians and occupational hygienists.
- The Statistical Services Section is responsible for capturing information on the Board's allowed lost-time claims and fatal claims, in accordance with national coding standards, for submission to the National Work Injuries Statistics Program

(NWISP). The section's on-line coding systems, along with information from the ODISS Section, are primary sources of data for the WSIB's Statistical Supplement and for populating the Enterprise Information Warehouse (EIW).

ODSBP

The Occupational Disease and Survivor Benefits Program (ODSBP) is part of the Health Services Division of the Operations Cluster in the WSIB. The program's primary objective is the adjudication and delivery of specialized benefits and services to all Ontario workers and their families who are affected by work-related illnesses, diseases and deaths.

Integrated multidisciplinary teams

Integrated multidisciplinary teams deliver the benefits and services. Team members include:

- adjudicators
- advanced practice nurse case managers
- occupational hygienists
- support staff, and
- an investigator.

Seven teams adjudicate claims. Six of them adjudicate occupational disease claims with the help of occupational medicine consultants from Clinical Services at the WSIB. The seventh team adjudicates claims for noise-induced hearing loss with the help of two audiologists.

Other team members

Program staff also include:

- exposure incident analysts, who gather information about reported exposures resulting from unplanned incidents in the workplace, and

- crisis intervention counsellors, who provide critical incident stress counselling and other services to the survivors of workers who have had traumatic deaths.

Activities

The knowledge gained from the work in ODSBP is used to:

- promote prevention of work-related illnesses and incidents
- identify community-based illness trends, and
- improve treatment outcomes.

Using this information, WSIB staff are able to respond proactively and flexibly to the increasing number of occupational disease claims and exposure incident reports from workers in Ontario.

MODPB and ODSBP staff work closely together to accomplish their respective objectives in adjudication, support of claims and policy development (see the Appendix).

MODPB and ODSBP working together

Policy development

ODSBP is MODPB's major internal stakeholder. They are partners in both developing and implementing operational policy. ODSBP staff advise MODPB on their claims experience for policy development and on the practicality of implementing policies. They also provide MODPB with feedback on policies that need updating and on the need to create new policies to manage new types of claims.

Claims adjudication

When ODSBP staff encounter difficulties in adjudicating a claim, they can ask the staff in MODPB for information and support. That support may take different forms including:

- a discussion to clarify an issue or detail in a standing policy
- a review of an exceptional claim with unusual features that falls outside the purview of an operational policy, and

- a full scientific review of the disease or work exposure.

The information from MODPB becomes part of the evidence that an adjudicator considers in deciding the claim.

Adjudicative support

MODPB can develop specific materials around clusters of claims for similar diseases or exposures under certain circumstances. Examples include when:

- policy development is not possible because of the nature of the scientific literature, or
- ODSBP asks for such material.

This material is referred to as the "binders" (see page 30). It may also take the form of exposure databases to help assess individual exposures in light of a group of similar exposures.

Part 2: Developing policy

What is scientific evidence?

Scientific evidence is all the information or data drawn from published peer-reviewed research that form the basis of the work done by MODPB staff. Occasionally, scientific authors limit the content of their publications to meet the requirements of the journal. In such situations, there may also be unpublished or non-peer reviewed material that may be consulted to help clarify relationships in the published data.

Scientific evidence is derived from learned journals in epidemiology, statistics, medicine, occupational hygiene, toxicology and process engineering. It also includes materials developed by agencies that produce peer-reviewed scientific reviews.

To provide the best information or advice to WSIB adjudicators and to increase the transparency of its activities, MODPB follows the "best evidence" approach to using and interpreting scientific evidence.

Using scientific evidence

Reference material

This protocol is not a basic manual on any of the disciplines that underpin the work. However, it uses the language and concepts of these disciplines. The following textbooks may help in understanding the terminology used and the underlying scientific or epidemiological concepts:

Burgess WA. **Recognition of Health Hazards in Industry: A Review of Materials Processes**, 2nd ed. John Wiley & Sons Canada, 1995.

Checkoway H, Pearce N, Kriebel D. **Research Methods in Occupational Epidemiology.** Oxford University Press, 2004.

Harris RL. **Patty's Industrial Hygiene**, 5th ed. (volumes 1–4). John Wiley & Sons, 2000.

Klaassen CD. **Casarett & Doull's Toxicology – The Basic Science of Poisons** (6th ed.). McGraw-Hill, 2001.

Last JM, Spasoff RA, Harris SS. **A Dictionary of Epidemiology**, 4th ed. Oxford University Press, 2000.

Systematic scientific review

The WSIB requires a reliable, transparent and broadly acceptable approach to identifying, evaluating and interpreting scientific evidence about the work-relatedness of occupational disease. This process begins with a systematic scientific review. Once the scientific evidence has been evaluated, the entire body of scientific evidence is carefully considered and decisions are made about where the weight of the evidence lies. This section outlines:

- how a systematic review is conducted
- how causality is assessed
- how the scientific evidence is used to decide on scheduling and policy development, and
- how the scientific evidence contributes to adjudicative support.

DRPS scientific staff are responsible for evaluating scientific evidence. They continuously evaluate and re-evaluate scientific studies to synthesize and analyze the evidence required for scheduling, developing policy and reviewing individual claim files.

When internal staff cannot do the review, qualified external researchers are engaged to undertake the work.

Limitations of science

Most researchers have concluded that human studies are good indicators of risk, but many have struggled with the issue of multifactorial causation based on epidemiology. However, because of the inherent limitations of epidemiology and the knowledge derived from it, establishing causation for public policy must rely on the totality of the existing scientific evidence. This existing evidence includes the use of knowledge from disciplines such as toxicology and occupational hygiene to objectively evaluate epidemiological literature in establishing causation.

Each scientific discipline has inherent challenges.

Epidemiology

Epidemiology is a branch of science developed to study the incidence of health outcomes in the population. Occupational epidemiology uses techniques and methodologies derived from these population health studies. Over the years, epidemiological techniques and methodologies have expanded and improved, but are influenced by societal and other non-scientific factors. These factors have combined to create a literature with numerous innate challenges to the understanding and interpretation needed to develop occupational disease policy.

Many epidemiological techniques were designed originally to monitor infectious diseases in large populations, and the interpretation of the results was set in a public health paradigm. The typical public health approach to establishing a public health risk was to use a “doubling of the risk” approach, which meant that results could be meaningful only if the risk estimates were greater than 200 in cohort studies or a relative risk was greater than two in case–control studies.

This approach was relatively straightforward in cases of infectious disease with a known infectious pathogen, an easily identifiable outcome and a short latency period. The approach was then transferred to other conditions in populations where less was known about the multifactorial nature of disease causation.

This approach becomes problematic now that more is known about the multiple factors that contribute to disease causation. The challenge grows when one tries to fit occupation into the paradigm.

As a discipline, occupational epidemiology is still in its infancy. It relies on a number of techniques and methodologies derived for population health that:

- may not be directly transferable to occupational disease research, and
- may have inherent limitations for occupational disease research.

Toxicology

Toxicology is an experimental science that studies the potential of chemicals, chemical mixtures or physical agents to produce harmful effects in living organisms under specific conditions of exposure. Occupational toxicology involves assessing the potential adverse effects of agents encountered in occupational settings. Much of this science is directed towards testing and regulating new agents and towards other regulatory and prevention activities, such as setting occupational exposure thresholds.

The aspects of toxicology most relevant to adjudicating occupational disease claims involve assessing causation: MODPB uses toxicological results, extrapolating from a variety of test systems on animal cells and assays to the human experience. However, the more remote the test system is from the human experience, the greater the uncertainty.

Occupational hygiene

Occupational hygiene is the science of recognizing workplace hazards and evaluating the degree of risk, and it can involve determination of appropriate control strategies. Occupational hygiene studies usually involve workplace exposure assessments, which can measure the concentration of an airborne contaminant to which a worker is exposed.

In evaluating causation, how occupational hygiene exposure data are used in epidemiological studies must be considered. Uncertainty or bias can enter the study results in several ways. For example:

- study participants may accidentally be classified in the wrong exposure level grouping, which would lead to inappropriate results, or
- occupational exposure measurements may be averaged, which would lead to conclusions about the average and not about the higher exposures.

Conducting systematic scientific reviews

This section outlines the processes used to assess the scientific evidence clearly and consistently. A systematic approach provides an efficient way of updating the evidence base as new studies emerge. The objectives of a systematic scientific review are:

- transparency
- avoidance of bias
- validity
- replicability, and
- comprehensiveness.

MODPB always conducts systematic scientific reviews to support policy development and adjudicative advice according to the following steps:

1. Defining the research question
2. Conducting a literature search
3. Specifying the inclusion and exclusion criteria
4. Completing a qualitative review and data extraction
5. Conducting a quantitative review (if appropriate)
6. Integrating qualitative and quantitative reviews (if appropriate)
7. Grading the evidence
8. Applying criteria for causation, and
9. Obtaining peer reviews.

1. Defining the research question

The scientific staff clearly define the research question before beginning to search the literature and accumulate evidence. The nature of the question dictates the scope of the review. A research question precisely defines the exposure and the occupation or industrial process under investigation, as well as the disease or diagnostic features of the condition.

Data from epidemiology, toxicology, clinical medicine and occupational hygiene exposure assessment, as well as the nature of the issue(s) raised by stakeholders all contribute to the framing of the research question and the scope of the review.

Anyone reading the scientific review should be able to identify the question that the review proposes to answer. Therefore, the scope and nature of the research question are clearly and explicitly stated at the beginning of each scientific review.

2. Conducting a literature search

After the research question and scope of the review are defined, the search strategy is developed. The literature search must include all related scientific disciplines including epidemiology, toxicology, medicine and occupational hygiene.

The methods used to identify the relevant studies are clearly specified. A systematic strategy includes:

- the key words and subject headings searched (separate searches using different search engines may be needed for the epidemiologic, toxicological and hygiene literature)
- the databases searched
- searches of any additional sources (e.g., hand searching of journals, unpublished data, reports)
- scientific reviews by other agencies that are known to adhere to rigorous scientific standards including peer review; examples include the National Institutes of Occupational Safety and Health (NIOSH) and the International Association for Research on Cancer (IARC), and perhaps the National Toxicology Program and the World Health Organization; the reviews from other workers' compensation or official agencies are considered if they have been peer reviewed and the peer reviews are available
- any other search criteria such as the range of publication dates considered or language restrictions.

3. Specifying the inclusion and exclusion criteria

Criteria for studies to be included in or excluded from the review are specified. Ideally, all inclusion criteria are set before reviewing the studies, but inclusion criteria may need to be refined as new information is uncovered during the review. Particular studies may be excluded because of factors not directly relevant to the research

question or because of uncertainty about the reliability of the study due to a lack of peer review.

4. Completing a qualitative review and data extraction

The information from each identified study is summarized by systematic extraction of data, which ensures consistency and helps in the later stages of analyzing data and reporting results.

In a qualitative systematic review, the results of the primary human, animal and cell studies are summarized. The descriptive and analytical data reported are assessed and documented, with a methodological quality assessment for each study. Details such as study design and characteristics of the study population are tabulated. In addition, issues about the validity of the study are assessed and recorded, and questions such as the likelihood of bias, whether confounding variables were addressed and the availability of exposure information are considered. The results from statistical analyses in each study are also tabulated.

An effect estimate (with statistical analysis results for the variance or confidence intervals) is recorded. The effect estimate may be risk of disease (e.g., SMR, PMR, OR) or a test of whether a health outcome is significantly related to exposure (e.g., noise-induced hearing loss, loss of lung function). Outcome variations with dose (duration or cumulative exposure) are also noted.

By systematically tabulating the study results, the strengths and weaknesses of each individual study can be easily reviewed and evaluated. Data from toxicology, clinical medicine and occupational hygiene exposure assessment, as well as the nature of the issue(s) raised by stakeholders all contribute to the understanding of the scientific literature.

5. Conducting a quantitative review

Some systematic scientific reviews can involve statistically combining results from two or more epidemiological studies. These

are referred to as systematic quantitative reviews. One frequently used technique is meta-analysis. However, meta-analysis is not the only quantitative method for combining the results of multiple epidemiological studies, and these other methods may be more appropriate.

In some circumstances, meta-analyses can be appropriate and informative. MODPB uses meta-analysis only when it is appropriate to do so (i.e., when the amassed scientific literature conforms to the tenets laid out by best practice in the discipline).

In such circumstances, meta-analytic methods, in conjunction with descriptive reviews of study findings, can enhance understanding of associations collected in a systematic review by:

- providing a summary effect measure for risk or dose–response estimates, where appropriate
- increasing statistical power to detect an effect by combining several smaller studies
- assessing the effect of study characteristics on risk estimates to determine the best assessment of risk for the relevant research question
- providing tools to assess the consistency of study results, and
- providing tools to assess publication bias.

6. Integrating qualitative and quantitative reviews

The result of the quantitative review should be integrated with the findings of the qualitative component of the scientific review.

Once qualitative and quantitative reviews have been integrated, the strengths and weaknesses of the individual studies must be discussed. It is also important to discuss the effects of various study and exposure characteristics on the summary risk estimate.

This is done by comparing summary risk estimates for studies with and without a particular characteristic.

7. Grading the evidence

The entire body of evidence is graded based on its overall strength and consistency.

Positive evidence

The scientific evidence is considered positive if it is consistent and strong enough to conclude that a causal association exists.

Reasons for classifying evidence as positive may include (but are not limited to):

- consistency across several cohort and/or case–control studies of high methodological quality
- the existence of studies with high statistical power and large population size, and
- evidence of an exposure–response relationship.

Limited evidence

The evidence is considered limited if a preponderance of scientific evidence or suggestive evidence supports a causal association, but inconsistent results and methodological weaknesses preclude a definitive conclusion.

Reasons for classifying evidence as limited may include (but are not restricted to):

- limitations in study design or lack of statistical power
- limitations in the type of studies that can be conducted on the working population of interest, and
- a limited number of studies due to a limited population with the exposure under study.

Inconclusive evidence

The scientific evidence is considered inconclusive if it is neither consistent nor strong. Both positive and negative findings may

result from a variety of study weaknesses. A causal association can neither be identified nor ruled out.

Evidence suggesting no association

If the scientific evidence, including several large, good quality studies, consistently shows no association between exposure and the disease, a causal association is unlikely.

8. Applying criteria for causation

Once the evidence has been synthesized, evaluated and graded, expert judgement is required to decide whether the observed associations are most consistent with work-relatedness or with some other alternative explanation. The results of the systematic review are considered in light of the Bradford Hill criteria for causation (see pages 19-22).

9. Obtaining peer reviews

MODPB subjects all of its major systematic scientific reviews relating to policy development or adjudicative support (i.e., the Adjudicative Support Model or the "binders") to at least two external, independent reviewers for comment. Peer reviewers are selected based on a search of the related literature for independent and subject-knowledgeable experts who can provide timely and informed comment.

These reviewers are invited to comment on:

- the comprehensiveness of the literature search including:
    - the appropriateness of the key words used to search the scientific literature
    - the resulting inclusiveness or exclusiveness of the search, and
    - the identification of missing literature in the review
- the nature and appropriateness of the methodology and analysis used in the review

- the appropriateness of the conclusions drawn by the review author, and
- any modifications needed to improve the review.

While the identity of reviewers is protected from the authors and others, the blinded reviews themselves are made available to those who want a copy.

The MODPB staff assess and integrate the comments of the external reviewers and modify the systematic scientific review in keeping with those comments.

Claim file reviews

Material generated for claim file reviews cannot receive external peer reviews. A claim file review is a literature review defined by the claimant's exposures to determine how those exposures might explain the outcomes. However, claim file reviews are subjected to internal peer review within MODPB or within the WSIB system. The claim file review represents part of the evidence considered by the adjudicator in case-by-case adjudication.

Assessing causality and using the Bradford Hill criteria to develop policy

Sir Austin Bradford Hill's criteria are principles used by scientists to evaluate the results of epidemiological research and the strength of scientific evidence for causal associations (Hill 1965).

Basing work-relatedness only on numerical risk estimates from epidemiological research is not the best approach. Bradford Hill offers a greater understanding of causation with his criteria for making causal inferences. However, Bradford Hill criteria continue to be reinterpreted and revised by scientists.

Nine considerations are involved in moving from association to causality.

Temporality

The exposure must precede the onset of the disease. Unlike the other eight Bradford Hill criteria, the temporality standard is a necessary condition for determining causality:

- Temporality is essential for understanding exposure and outcome relationships.

Strength of association

The degree of increased risk associated with an exposure is determined statistically with measures such as relative or attributable risk. The stronger the association, the less likely it is that the association is due to error. However, a weak association does not rule out a causal connection.

- In general, the WSIB does not use the public health approach of "doubling" the risk as the baseline to define an "increased" risk (see page 10). Risk estimates reflect an understanding of the entire body of evidence in the published peer-reviewed literature (including toxicological, occupational hygiene and clinical journals) interpreted according to the Bradford Hill criteria.
- For a disease to be included in Schedule 3 or Schedule 4, the strength of association needs to be considerably more robust than that required for a policy: It needs to be consistent across many studies, not just found in only one study.

Consistency

If all studies examining a given relationship produce similar results, a causal interpretation is enhanced. Bradford Hill also specified that the repeated observation of an association should be seen in different populations under different circumstances.

- The roles of confounding, bias and chance in epidemiological research must be discussed in relation to consistency.
- With toxicological evidence, animal study results across species can be reviewed for consistency.

- Lack of consistency does not necessarily rule out a causal association because some effects are produced by certain causes only under unusual circumstances. In addition, studies may differ in their results because they differ in their methodologies.

Specificity

If the exposure is associated with only one disease, or alternatively, if the disease is associated with only one exposure, a causal interpretation is suggested.

- Specificity operates only in one direction. When it is present, it strengthens the causal inference. Specificity may be a criterion for establishing an entry in the Schedules (e.g., asbestos and mesothelioma).
- Lack of specificity cannot be used to deny a causal relationship since many exposures have multiple effects and most diseases have multiple causes.

Biological gradient (dose–response)

Increasing incidence of disease with an increasing dose or level of exposure usually supports a causal interpretation (i.e., the greater the exposure, the greater the risk of developing the disease).

- If there is no dose–response effect, alternative explanations cannot be ruled out, such as a threshold effect or a saturation effect.
- An observed dose–response effect may be due entirely to a graduated distortion or bias.

Biological plausibility

If the suspected connection between the exposure and the disease is consistent with what is known about biology, chemistry and exposure patterns, a causal interpretation is more likely.

- Biological plausibility is not required to establish causation since the current state of knowledge may be inadequate to explain scientific observations.

Coherence

Coherence implies that a cause-and-effect interpretation for an association should not conflict with what is known of the natural history and biology of the disease.

- The absence of coherent scientific information should not be taken as evidence against a causal association. The scientific community may not yet have explored or documented the natural history and the biology of the disease.
- The presence of coherent information supports an association.

Experimental evidence

All experimental evidence is highly relevant, but it is likely that such evidence does not exist.

- While experimental evidence is seldom available for human populations, occasionally "quasi-experimental" evidence may result from observations of the effects of removal from exposure.

Analogy

Support for a causal association may be strengthened by analogy with a similar exposure that causes the same or a related disease or by analogy with animal and toxicological studies.

- This criterion should be used cautiously since many analogies may be spurious. However, they may lend support when associated with exposure to a similar class of substances.

Limitations to using scientific evidence in policy development

Background

In a perfect world, all of the needed information would be available and the results would be directly applicable for policy development.

Interpreting scientific evidence is both an art and a science. The conclusions drawn from a scientific review must take account of the limitations intrinsic to that discipline.

The most common limitations arise from:

- study design and analysis
- methodological techniques, and
- funding of research.

Study design and analysis

The best known limitations in study design and analysis of epidemiology are:

- selection biases (e.g., unexposed individuals are assigned to exposure groups, exposed individuals are not assigned to exposure groups)
- biases introduced by inappropriate comparison groups that may result in an under- or overestimate of the true risk
- failure to control for known confounders such as risk factors
- biases introduced by inadequate measurement of occupational exposures, and
- grouping of data to create a sample that is large enough to produce reliable risk estimates; when the resulting averages are used to describe a range of study group characteristics, groups at greater risk may inadvertently be hidden.

Evolving methodological techniques

Over the past 20 years, researchers have improved the methodological techniques used to conduct occupational disease research:

- Job exposure matrices (JEM) are an improvement over the traditional person–years–exposure (PYE) analysis of dose–response trends in epidemiological research. However,

exposure levels must be assigned and classified in a way that minimizes the introduction of bias. One author notes that the misclassification of exposures can result in a serious underestimate of the true risk by as much as 40%.

- Meta-analysis is a quantitative technique that was designed originally for assessing the effectiveness of a medical treatment in clinical trials. There have been few standardized rules for meta-analysis. Therefore, there is considerable distrust of the technique, although it has been refined and clear rules on application have evolved. It is a powerful tool for combining large data sets where risk estimates may vary considerably. Some clarity may be gained from using meta-analysis, but the rules of interpretation of meta-analytic results must be adjusted to evaluate the findings. The use of meta-analysis for occupational epidemiology has not yet been defined.

Much of the occupational epidemiological literature predates the development of these improvements, and often the newer techniques cannot be applied because of limitations in knowledge about the available study population and exposure information. While recent studies are generally of a higher quality than very early studies, the quality of research from all eras needs to be assessed.

Funding of research

In a world where researchers must publish or perish, funding of research is critical. By necessity, researchers follow the research dollars. This has influenced the literature and is reflected in a variety of ways that must be addressed to understand the scientific evidence. For example, limited research on an issue may reflect a lack of funding for the research and not the absence of concern about the issue.

Using scientific evidence in policy development and case-by-case adjudication

For occupational disease, a systematic assessment of the scientific literature always precedes the development of operational policy (which includes scheduling) at the WSIB. The Bradford Hill criteria are used primarily for guidance in understanding the scientific evidence on causal association. The weight of the overall evidence helps to establish causal association.

The next step involves the WSIB's usual policy development process, which includes:

- a review of the approach taken by other workers' compensation systems on the same or a similar issue and the basis for that approach
- a review of the current practices and experience in adjudicating WSIB claims on the condition
- a review of Ontario's economic and industrial history to identify past workplace exposures relevant to the outcome and to understand the workplaces at risk for this outcome and the anticipated numbers of claims resulting from the exposures in those workplaces
- a consultation process with external stakeholders from the appropriate sectors and internal stakeholders such as occupational disease adjudicators
- preparation by the scientist of a proposal for the WSIB Board of Directors, and
- a review of the implications of the various options available for the WSIB Board of Directors.

Defining standards for occupational disease policy

From association to causation

Most researchers agree that association is not causation. To make the leap, all the factors that contribute to an association must be thoroughly analyzed. These include bias, confounding factors and other methodological issues. Then Bradford Hill criteria can assist in moving from association to causation. Through the scientific review, the scientist hopes to gain a sense of:

- the risk associated with the exposures
- the nature and severity of the outcome
- latency of the condition, and
- the exposure–response relationship.

This is the first step. The scientist may see several options, depending on the content and thoroughness of the scientific research. In consultation with his or her manager, the scientist decides whether to proceed to scheduling, policy development or the creation of adjudicative support material using the standards developed in the ODAP process.

Recommended standard for Schedule 4

Diseases are listed in Schedule 4 when there is strong and consistent scientific evidence that, in virtually every case, the disease occurrence is linked to a single cause and that cause is associated with an occupation, workplace or work process.

Since the presumption of work-relatedness in Schedule 4 cannot be rebutted, non-occupational factors must be unlikely to confound the association. Entries in Schedule 4 require both:

- a definitive finding of a causal association, and
- a strong statistical association.

The aim is to ensure that in virtually every case, workers who fit Schedule 4 requirements have developed their diseases because of

the scheduled occupational processes. There should be little or no evidence of non-work exposure that would override the work exposure in individual claims in practice. For example, mesothelioma due to asbestos exposure meets this criterion.

Recommended standard for Schedule 3

Diseases are listed in Schedule 3 when there is strong and consistent scientific evidence supporting a multicausal association with the disease, one cause being occupation.

Schedule 3 entries require evidence of:

- a strong causal association, and
- a high rate of disease in a defined group of workers.

A number of issues lead to causal associations being placed in Schedule 3 rather than being handled by policy.

- Use of Schedule 3 should result in quick and clear claims resolution. This is best achieved by including in Schedule 3 only diseases and processes for which the presumption of work-relatedness is not usually rebutted.
- If the scientific evidence shows that the risk of disease is high only in certain processes (i.e., high-risk subgroups) and the processes can be readily described, they are considered for a Schedule entry. For example, tuberculosis in the health care sector meets this criterion.

On the other hand, if the disease outcome is common in the general population and often attributable to non-occupational factors, and the work-relatedness of individual claims is often rebutted, it is preferable not to use Schedule 3.

In Schedule 3, the presumption that a disease is work-related can be rebutted. A condition is presumed to be work-related unless the contrary is shown. "Rebuttal guidelines" will be developed as a

structured approach for analyzing evidence to determine whether the presumption is rebutted. These guidelines will set out a framework for adjudication.

Wherever possible, the evidence about general causation (i.e., the evidence supporting the scheduling of the disease) will be described in a way that clarifies known work-related and non-work-related causes. The description will include information about exposure and latency periods and indicate what evidence (where known) may rebut the presumption.

Recommended standard for occupational disease policy

Diseases are handled by occupational policy when there is strong and consistent scientific evidence supporting a single or multicausal association with the disease, one cause being occupation. This category can be used when Schedule 3 criteria are met, but no process readily defines the risk group.

When subgroups consist of workers with a certain minimum latency or exposure duration, this information is not easily described in terms of a work process in the Schedule. These subgroups cannot be entered into the Schedule. If the whole cohort were included in the Schedule, and the presumption rebutted in the case of workers not included in the appropriate subgroup, a high rebuttal rate would occur. To avoid this situation, policy is preferable to Schedule 3.

Policies focus on specific subgroups, levels of exposure and occupational categories that are not possible to use in the Schedules. This approach is more flexible for developing broad guidelines for adjudication.

Recommended standard for case-by-case adjudication

Case-by-case adjudication is used when the evidence is inconclusive about whether an occupation is a definitive or likely cause of a disease. Examples include situations where:

- the scientific evidence is inconclusive or there is no research on whether an occupation is a definitive or likely cause of a disease; a causal relationship cannot be ruled out, but the evidence may be too equivocal or inadequate to make a general policy
- the scientific evidence may be conclusive:
    - but the worker may not fit the study group or occupational category sufficiently to meet the Schedule or policy requirements, or
    - the contribution of non-occupational factors may require case-by-case assessment.

As with all claims, the adjudicator must still determine, on the balance of probabilities, whether the work was a significant contributing factor in developing the disease.

Providing scientific evidence for adjudicative support

The General Condition and Scientific Review sections of the Adjudicative Support Material (the "binders") require the same systematic review of the scientific literature as is performed in policy development. Similarly, these reviews are subjected to peer review.

When epidemiological evidence is used to help make decisions on an individual claim, the scientific literature is cited in the claim file to help stakeholders understand the information used in the decision. The information in any scientific advice provided by MODPB is only one of the pieces of evidence the adjudicator considers in deciding the claim.

Scientific information and technical support for adjudication can be provided in a variety of forms. The type of support provided is based on the adjudicative need at the time it is requested.

The adjudicative support model

The Adjudicative Support Model binders are designed to provide adjudicators with information and advice on diseases, where no policy can be produced because the scientific information is not sufficient or conclusive enough to create a policy for a specific subgroup.

The WSIB has developed a binder (the first in a planned series of disease binders) on chronic obstructive pulmonary disease (COPD). Other binders covering cardiac disease, pancreatic cancer, bladder cancer and non-Hodgkin's lymphoma are already planned.

The binders have four sections:

General disease characteristics

1. The General Disease Characteristics section provides background information on the pathogenesis, diagnosis, natural history, treatment and prognosis of the condition in general. It is a holistic overview designed to provide a broad-based foundation of knowledge about the disease and its effects.

Scientific review

2. The Scientific Review section is a summary in non-scientific terms of the evidence in the scientific literature on the work-relatedness of the condition, including references to the appropriate literature. The original systematic scientific review has been peer reviewed and is always available on request.

Adjudicative advice

3. The Adjudicative Advice section highlights the details from the systematic scientific review that can be applied in case-by-case adjudication. The relevant details from the scientific studies present:

- guidance about the likely ranges of exposures, and
- statistics that describe how many and which individuals in an exposed population can be expected to develop a disease.

This section also compiles the relevant Ontario exposure data that may help with adjudication of the claim.

The aim of the Adjudicative Advice section is to help the adjudicator make the transition from a generalized situation of the disease in a study population to the individual circumstances in any one claim. However, this section:

- does not direct the adjudicator in deciding a claim
- does not offer fixed criteria
- does not set guidelines to be applied in decision-making
- does not replace policy, and
- must work with existing policies.

Rather, the section provides a comprehensive reference tool to complement the claims investigation and claims evaluation processes.

The adjudicator must examine the individual case, consider the unique medical history and the claimant's idiosyncratic collection of exposures, and determine whether the aetiology is work-related or the condition is idiopathic.

Program of care

4. The final section of the binder is the Program of Care, which will be derived through consultation with health care professionals in the province and the Health Services Division of the WSIB.

Claim file reviews

Claim file reviews are used when the adjudicator is unable to arrive at a decision through the usual approaches. These situations can include claims with extraordinary exposures, unusual diagnoses or some other element that is atypical. The result may be that the usual policies, guidelines and operating procedures do not apply or are not helpful in determining whether the worker's condition is work-related. These claim files are referred to MODPB where staff review the file and gather scientific evidence that would apply specifically to that worker's unique situation.

Claim file reviews do not set precedent and do not become part of the institutional memory. They are subject to internal peer review and are applicable only to the specific claim for which they are prepared. They are one of the pieces of evidence used by an adjudicator in deciding a claim, and they support case-by-case adjudication of an individual claim based on its individual merits and justice.

Scientific opinions

Scientific opinions generally are provided by MODPB after scientific information has been presented to support a factor in the claim and the adjudicator asks for help in understanding the material.

Other resources

Overview documents

Overview documents are prepared by MODPB to make the scientific literature meaningful to the day-to-day work of the WSIB. They offer general understanding on the issues and are provided for educational purposes only. They are not peer reviewed, nor is there any analysis of issues related to a claim. These overview documents help where there is no policy and where new information is emerging.

On-call help

On-call help is always available from MODPB staff to ODSBP, the WSIB as a whole and the public.

Public access to MODPB help

The WSIB website allows external users to email MODPB with inquiries relating to medical and occupational disease issues. The website also provides information about how to contact the WSIB by telephone or regular mail.

Part 3: Adjudication

Legal principles: Determining the contribution of work to the disease

Background

Adjudicators at the WSIB have been making decisions based on the principles now stated in the ODAP Report. The courts also require adjudicators to use common sense in assessing evidence to determine the individual merits and justice of a claim.[1]

Legal principles

Adjudicators use five legal principles to evaluate the contribution of workplace exposures to occupational disease:

- the causation test—"significant contribution"
- the burden of proof
- the standard of proof
- the benefit of doubt, and
- merits and justice.

The causation test—"significant contribution"

Description

"Significant contribution" is a test used by WSIAT and "material contribution" is a test used by the courts. WSIB considers "significant contribution" and "material contribution" as the same thing, which ends any speculation that there are two tests and that one might mean more than the other. A factor is considered to be significant if it falls outside the *de minimis* (trifling) range.

The commonly known meaning of the word "significant" and the

[1] This guidance was given by the Supreme Court of Canada in *Snell v. Farrell* (1990), 72 D.L.R. (4th) 289 and *Lawson v. Laferriere* (1991), 78 D.L.R. (4th) 609, and the Ontario Court of Appeal in *Rothwell v. Raes* (1990), 2 O.R. (3d) 332, leave to appeal to the S.C.C. refused (1991), 2 O.R. (3d) xi (Note).

legal definitions of the concept of *de minimis* make it clear that the connection must not be trifling, to ensure that entitlement is not based on a tenuous or merely speculative workplace connection.

The common meaning of the word "significant" is "having or likely to have influence or effect: important, weighty." "Significant" cannot be equated with a percentage, as any chosen number would be arbitrary and unhelpful.

Use

Adjudicators may apply the "significant contribution" test to any disability or disease. However, it is most useful for multifactorial diseases.

Single cause

In claims where only one cause of the disease is known, the causal relationship is direct and straightforward; "but for" the exposure, the disease would not have developed. Examples include mesothelioma, silicosis and isocyanate-related asthma.

Multiple causes

Adjudicators use the principle of "significant contribution" when assessing claims for multifactorial diseases that are not covered by Schedules 3 or 4 or by WSIB policy.

Multifactorial diseases may arise in different ways. For example, the disease may:

- be linked to any one of several external causes, any one of which could account for the disease (some factors may be work-related and others not)
- result from several external factors that together could cause the disease (some factors may be work-related and others not), or
- be due to the combined effect of necessary underlying conditions and external exposures (some work-related and others not).

Most diseases do not show their exact cause (e.g., a smoking-related lung cancer is identical to one caused by occupational exposures).

When a particular case may have multiple factors, the adjudicator determines whether the work component contributed "significantly" to its development. Even when non-work-related factors contribute more than work-related factors, the key requirements are that:

- the workplace played a role in developing the disease, and
- the workplace contribution is outside the *de minimis* range.

Common sense

Although the "significant contribution" test is reasonably simple to state in principle, it is not easy to apply in practice. Where there is no conclusive medical or scientific evidence, the adjudicator determines significance by using ordinary common sense. The courts also refer to this as "a robust and pragmatic approach to the facts" (see the footnote on page 34).

When the scientific evidence cannot settle the issue, the adjudicator evaluates all the relevant circumstantial evidence to make an informed but pragmatic judgement about which way the available evidence seems to point.

The burden of proof

Description

The adjudicator's responsibility is to investigate and find the necessary evidence to make a decision (*Workplace Safety and Insurance Act* [*WSIA*]). The adjudicator cannot refuse to make a decision because there is not enough evidence. Neither the worker nor the employer has to prove his or her case. The adjudicator makes a decision based on whatever evidence is available or can be found.

This principle is not new to the WSIB and grows out of the concepts that:

- the WSIB is an investigative as well as a decision-making body, and

- the adjudicator is responsible for ensuring that the necessary information is gathered to make the best possible decision.

Use

An adjudicator must apply the principle of burden of proof to any claims decision. He or she uses WSIB's extensive investigatory powers in a non-partisan search for information:

- the adjudicator decides to investigate a matter based on what he or she needs to make a decision, not what either party needs to make its case
- whenever the adjudicator has the information to make an informed decision, either for or against a claim, he or she makes the decision, and
- the adjudicator does not indicate or suggest that either the worker or the employer has to prove his or her case; for example, the adjudicator does not make an adverse decision because a claimant has submitted "insufficient evidence."

The standard of proof

Description

The standard of proof is the balance of probabilities, not the more stringent "beyond a reasonable doubt" found in the criminal justice system. To apply the balance of probabilities as the standard of proof, the adjudicator asks: "Is it more likely than not that this worker's employment was a significant contributing factor in the development of the occupational disease?"

Use

The analysis of the balance of probabilities should be evident in any claim where the significant contribution test is applicable.

There is a difference between balance of probabilities and work-relatedness. For example, a worker smoked four packs of cigarettes a day and was also exposed to agent X. The question is whether it is more likely than not that his or her employment significantly

contributed to the development of the disease. The adjudicator does not consider whether it is more likely than not that the disease is work-related. Considering work-relatedness suggests the concept of a "predominant cause," which is a higher standard of proof than envisioned by the *WSIA*.

Using the balance of probabilities as the standard of proof also reminds us that adjudicators can make decisions without having scientific or other certainties.

The benefit of doubt

Description

The concept of the benefit of doubt is based on Section 119(2) of the *WSIA*, which states:

> "If … it is not practicable to decide an issue because the evidence for or against it is approximately equal in weight, the issue shall be resolved in favour of the person claiming benefits."

This section applies:

- only to decisions on specific issues, not to the final decision, and
- where the evidence either way is approximately equal.

Operational Policy 11-01-13, Benefit of doubt

See WSIB's Operational Policy 11-01-13.

Use

An adjudicator's analysis of an occupational disease claim generally follows a standard approach in which the adjudicator considers:

- the worker's exposure at work
- the clinical evidence concerning the worker's medical condition, and
- the scientific evidence about the possible causal connection between the worker's exposure and his or her medical condition.

Each of these three components of the decision-making process is a separate issue to which the benefit of doubt could apply.

The evidence either way must be approximately equal for the benefit of doubt to apply. The adjudicator:

The evidence either way must be approximately equal for the benefit of doubt to apply. The adjudicator:

- evaluates the evidence carefully to determine that the evidence for each side is approximately equal and a clear decision based on the evidence is impossible
- does not use this section to give the claimant the benefit of doubt where there is only supposition for and against entitlement, and
- does not resort to this section because it is too hard to make a decision.

Adjudicators indicate when the benefit of doubt principle is being applied to an issue and show how the evidence for and against that issue is approximately equal. To ensure that this issue-by-issue consideration is transparent, adjudicators state:

- their thought process clearly in their decisions, and
- where the weight of the evidence lies for each issue.

Therefore, adjudicators are always conscious of the decision-making methodology they are using.

Merits and justice

Description

The ODAP Report does not discuss the statutory obligation of all adjudicators to make a decision based on the "merits and justice" of a case. However, this is an important obligation that adjudicators keep in mind in occupational disease claims.

Section 119(1) of the *WSIA* states:

> "The [WSIB] shall make its decision based upon the merits and justice of a case and it is not bound by legal precedent."

Use

This provision allows an adjudicator to make a case-by-case determination, particularly when no policy applies, without worrying that the case might set precedent.

Operational Policy 11-01-03, Merits and justice

General guidelines on the meaning of "merits and justice" are given in WSIB's Operational Policy 11-01-03.

This policy emphasizes that adjudicators apply relevant legislative and policy provisions to similar situations to ensure that:

- similar claims are adjudicated in a similar manner
- each participant in the system is treated fairly, and
- the decision-making process is consistent and reliable.

The unique challenges of adjudicating occupational disease claims are acknowledged in this policy:

> "When determining entitlement to a disease claim, a decision-maker considers the worker's clinical condition and exposure at work, the up-to-date clinical and scientific information, any pertinent non-occupational factors, and all of the relevant policies."

The policy acknowledges that a wide variety of facts and circumstances can arise and that it is not possible to set policies in advance to cover every conceivable situation. It also acknowledges the well-established principle of administrative law that policies cannot "fetter discretion," even though they are generally developed to create consistency and fairness in the application of legislation.

In other words, policy provides a basic framework for the decision-making process, but should not be followed so stringently that the adjudicator fails to properly consider the circumstances of the individual claim.

The courts have concluded that the concept of "merits and justice" implies that:

- factual material is allowed into evidence if it could have a bearing on a case, regardless of whether it would be admissible in a court of law, and
- claims are not to be defeated because of technicalities that do not affect the merits of the case.

Fettering discretion

The courts have commented often on the legal doctrine against "fettering discretion" (DeSmith 1995, Craig 1993, Jones 1989, Foulkes 1986). They have ruled that a public body that has discretionary powers cannot adopt a policy or rule that allows it to dispose of a case without considering the merits of the individual applicant before it. A factor may be taken into account in exercising discretion without becoming a general rule. Such a general rule might result in the pursuit of consistency at the expense of the merits of individual cases.

This principle against over-rigid adherence to a policy is part of the statutory obligation to make a decision on the "merits and justice" of a case. An adjudicator cannot exercise discretion by mechanically applying the predetermined policy without being willing to consider any special circumstance of the case that might warrant departure from the usual policy.

However, the WSIB policy on "merits and justice" forbids an adjudicator to circumvent the legal requirements of the *WSIA* by relying on the "merits and justice" provision in the statute to ensure that:

- adjudicators apply all relevant provisions of the *WSIA*, without exception

- adjudicators do not disregard clear and unambiguous provisions of the legislation
- adjudicators apply all relevant WSIB policies, provided that the claim does not have any exceptional circumstances, and
- adjudicators do not use the "merits and justice" argument to avoid the intended result of a policy simply because they do not like that result.

Operational Policy 11-01-03, Merits and justice

Operational Policy 11-01-03 indicates that an adjudicator may depart from relevant WSIB policy in exceptional circumstances (which the policy considers to be "rare"). This may be done only if the application of such policies would lead to "an unfair or absurd result that could never have been intended."

In these rare cases, the adjudicator clearly identifies the exceptional circumstances and explains why the policy is not applicable.

Identifying the adjudicative approach

Background

Adjudicating an occupational disease claim requires that the appropriate adjudicative approach be identified. The adjudicative approaches are:

- Schedules 3 and 4
- applicable WSIB Operational Policy, and
- case-by-case adjudication.

Information gathering

Regardless of which adjudicative approach is appropriate, certain information must be obtained to assess causal relatedness and determine entitlement.

The complexity of the information-gathering process depends on the individual circumstances of the worker and is also guided by the adjudicative approach being used.

The adjudicator identifies the approach that should be taken after conducting an initial assessment of a newly registered claim.

Types of information gathered

Information relevant to an adjudicative review to determine entitlement typically includes:

- the worker's complete employment and exposure history:
    - chronological employment history with dates
    - detailed description of work processes
    - description of chemical or substance agents used (with Material Safety Data Sheets where available)
    - level, duration and frequency of exposures, and
    - exposure measurements.
- the worker's medical history:
    - similar problems in the past (prior or co-existing complaints)
    - date and circumstances of the onset of symptoms
    - reported improvements in symptoms, and
    - clinical records to confirm current findings of the health condition claimed.
- reports of non-occupational factors that may have caused or contributed to the development of the disease.

Information-gathering matrices

In ODSBP, adjudicators currently have access to information-gathering matrices that are relevant to many occupational diseases. These matrices can help in the investigative process. Matrices currently available for the adjudication of claims involve:

- asbestos and silica exposure
- blood-borne pathogen exposure

- chronic obstructive pulmonary disease
- dermatitis
- general respiratory conditions
- hand–arm vibration syndrome
- heart and stroke, and
- infectious diseases.

The matrices set out:

- the categories of information required
- the sources and corroborators of the information
- the member of the service delivery team who is responsible for collecting this information
- the method of collecting it, and
- the expected time needed for collection.

Adjudication with Schedules 3 and 4

Description

Scheduling of a disease gives legal recognition to a work-related occupational disease. The worker's disease is presumed to have been caused by his or her employment if the worker both:

- becomes disabled by a disease listed in the Schedules, and
- was employed in a process or industry described in the second column of the Schedule opposite to the disease.

This presumption applies regardless of whether the disease manifests itself while the worker is employed in that particular process.

Use

The adjudicator begins by asking whether the disease is listed in Schedule 3 or 4 of the *WSIA*.

The purpose of the Schedules is to enable adjudicators to make

decisions quickly and efficiently when it is clear that there is little, if any, doubt that the disease was caused by exposures in the workplace. When an adjudicator decides a claim for a disease listed in a Schedule, he or she does not need evidence to determine the contribution of work to the development of the disease.

Schedule 4

For diseases listed in Schedule 4, the presumption that the disease is related to work cannot be rebutted; the causal connection to work is considered to be conclusive if the prerequisites in columns 1 and 2 of the Schedule are met. Latency and exposure variation are irrelevant.

Schedule 3

For diseases listed in Schedule 3, the presumption that the disease is related to work can be rebutted. The question is: "Are the non-work factors of such importance that it is more likely than not that the employment was *not* a significant contributing factor in developing this worker's disease?" (Rebuttal guidelines will be developed by MODPB.)

When a worker's occupation, trade or work process does not fit within the wording in column 2 in the Schedule, the adjudicator does not automatically deny the worker's claim. Instead, he or she considers whether any policies apply to the worker's situation. If no policy applies, the adjudicator applies the case-by-case approach to the review of the claim.

Both approaches are discussed in more detail below.

Adjudication with policy

Description

Some claims are submitted for diseases that are not listed in the Schedules. Alternatively, the worker may have been employed in a process that is not listed for his or her specific disease.

The authority to adjudicate a claim involving a disease not listed in the Schedules is found in the definitions that relate specifically to

occupational disease. Under Section 2(1)(a) and (b) of the *WSIA*, an occupational disease is:

> "a disease resulting from exposure to a substance relating to a particular process, trade or occupation in an industry"
>
> or
>
> "a disease peculiar to or characteristic of a particular industrial process, trade or occupation."

Use

The statutory provisions give the adjudicator substantial flexibility in recognizing a disease as occupational even though it is not in the Schedules. However, in these circumstances, there is no presumption of work-relatedness.

Medical and scientific information may help the adjudicator make this determination. If a WSIB policy exists, the adjudicator applies the guidelines of the relevant policy to the individual circumstances of a claim (unless there are "exceptional circumstances" as discussed on page 42).

A worker's exposure to chemicals or substances can vary greatly depending on factors such as safety controls, work practices (collective and individual) and other circumstances.

Some policies are specific and provide a range of exposure requirements. In claims where the details of a worker's exposure history must be understood to evaluate the causal relatedness of a disease, the adjudicator can ask an occupational hygienist to analyze the worker's employment and exposure experience (see pages 48–50).

After gathering the facts related to the claim, the adjudicator is responsible for determining:

- what policy or policies for the disease exist and should be considered
- whether the claim falls within the application date of the policy
- whether the facts of the claim fall within the framework established by the policy, and
- whether any exceptional circumstances exist.

Adjudication when there is no policy

Description

If a worker claims benefits for an occupational disease for which there is no policy, the adjudicator must decide whether the worker's employment contributed significantly to the development of the disease. When there is no applicable policy, entitlement is determined on the merits and justice of the claim (see pages 39–42) without any presumptions.

Use

The worker is not required to prove his or her case. The adjudicator is responsible for gathering information that describes the worker's employment and exposure history and any other information that helps in understanding the worker's circumstances. The information gathered must be reliable and complete enough for the adjudicator to reach an informed decision.

Once the adjudicator is satisfied that all of the necessary information has been collected, he or she may need to review the relevant medical and scientific literature. Adjudicators are expected to consider and evaluate new scientific or technical information on an individual case basis in the context of existing WSIB guidelines and the advice of medical and technical staff.

As noted above (pages 39–42), the adjudicator is not bound to follow precedent or decisions in previously adjudicated claims for the same

disease diagnosis. He or she makes each decision according to the individual merits and justice of the case.

Evaluating scientific evidence for adjudication

Occupational hygiene assessments

Background

As noted above (pages 36–37), the adjudicator is responsible for ensuring that all appropriate information-gathering activities and resources are used to collect all available evidence.

WSIB occupational hygienists

An adjudicator may ask an occupational hygienist to do a thorough assessment of a worker's personal employment and exposure history. An occupational hygienist is available to each service delivery team in ODSBP.

The primary responsibilities of the occupational hygienist are to:

- provide current and retrospective historical assessments of the exposure to chemical, physical and biological agents in either individual claims or clusters of claims, and
- interpret the exposure information for the specific industry, occupation or workplace process under review.

The occupational hygienist's exposure assessment process

There are two important steps in the exposure assessment process:

1. Identifying the potential health hazards that can result from a particular work process. This requires a thorough understanding of the manufacturing process, including:
    - The raw materials used
    - the by-products and end products of the process, and
    - any combustion or reaction products.
2. Assessing the likelihood or intensity of exposure to the potential hazards identified. This involves the use of exposure assessment tools (qualitative and/or quantitative) to determine

the extent or likelihood of exposure of the workers involved in the work process.

An exposure assessment for most disease claims requires reconstruction of the following:

- Workplace processes
- work histories, and
- related exposures.

In undertaking a workplace exposure evaluation, the hygienist may consider initiating any or all of the following:

- reviewing all industry processes and exposure information submitted to the claim file by the workplace parties
- gathering information by field visits to the workplace to do a walk-through assessment of employer operations (if the employer still exists)
- interviewing workplace parties and others (e.g., workers, co-workers, unions, employers, health and safety associations) to gather information on job tasks, areas of work, chemical materials used, ventilation and the work site environment
- reviewing other sources of information on the work environment under study (e.g., Material Safety Data Sheets, employer exposure data, Ministry of Labour survey reports, information from the literature review, information from health and safety associations), and
- researching scientific literature.

The goal of an exposure assessment report is to provide a comprehensive, scientifically supportable assessment of the worker's actual or potential exposure to hazardous materials in the workplace. The report may simply present the relevant facts about work

processes and worker exposures, or it may interpret the information and provide an opinion on the likelihood and extent of exposures.

The adjudicator's use of a hygiene assessment report

How an adjudicator considers the evidence in an exposure assessment report depends in part on the nature of the claim under review. For example, an adjudicator may consider an assessment in a specific claim for a single worker differently from an assessment for a group of claims whose only commonality is a single industry, occupation or workplace.

If the assessment was completed for an individual claim, the adjudicator can be reasonably certain that the information reflects the exposures specific to the worker's employment period as accurately as possible. However, if an assessment was done for a group of claims, in most cases it reflects the potential exposures that existed in that industry, occupation or workplace. While such an assessment provides important evidence, the adjudicator has to assess its applicability to each claim individually to determine what hazards and exposures existed for a particular worker. In some cases, an individual assessment may have to follow the more general assessment.

The adjudicator's decision to ask for an individual exposure assessment may depend on the strength of the available evidence. When the scientific evidence is lacking or not clear, thoroughly analyzing the worker's individual employment and exposure history is especially important.

Clinical review assessments

WSIB occupational medicine consultant

As part of the decision-making process, the adjudicator may ask a WSIB occupational medicine consultant (OMC) to review all the clinical information gathered in the claim.

In general terms, the OMC (who is an important resource for the

ODSBP multidisciplinary service delivery teams) provides clinical advice on the compatibility between the reported clinical findings from the worker and the occupational exposures identified by the adjudicator's review of the claim.

However, the OMC does not make entitlement decisions or comment on claims adjudication issues. Rather, the OMC's clinical advice becomes part of the overall evidence available to the adjudicator when making the entitlement decision.

The clinical review assessment process

When referring a claim to an OMC, the adjudicator is responsible for providing a comprehensive and chronological review of all the information gathered relating to:

- medical concerns attributed to short-term exposure:
    - a description of work activities, work processes, the workplace environment and complete documentation relating to the worker's exposure to irritant or sensitizing chemicals or substance agents
    - a definitive description of the worker's symptoms with the trend or pattern of symptoms identified with a particular work activity, process or work environment with correlation to medical attention and time lost from work, and
    - an appropriate summary, with reference to relevant clinical records submitted to the claim file.
- medical concerns attributed to long-term exposure:
    - a complete and thorough employment and exposure history
    - reference to supporting documentation (e.g., an occupational hygienist's exposure assessment, see pages

48–50) defining the worker's potential cumulative dose exposure to the chemicals or substance agents in relation to the trade or occupation of the worker

- the worker's personal and medical history and any other risk factors, and
- an appropriate summary, with reference to relevant clinical records submitted to the claim file.

In response to the adjudicator's referral, the OMC reviews the claim and provides a clinical opinion on the claim file. The OMC may comment on the following:

- considerations relating to the medical condition:
  - general information on the nature of the medical condition, its treatment, diagnostic criteria, causes, risk factors and progression
  - the significance of clinical literature and its relevance and possible application to the worker's condition
  - the completeness of diagnostic testing and whether further testing should be arranged
  - the appropriateness of the medical treatment the worker is receiving and whether alternative treatment should be considered
  - the consistency of the diagnosis with both clinical findings and the worker's symptoms, and
  - the likely influence of any pre-existing condition or other risk factors in contributing to the development of the medical condition under review.

- considerations relating to outcome:
    - the prognosis
    - maximum medical recovery and the likelihood of permanent impairment
    - medical precautions for employment re-entry, where appropriate, and
    - clinical comment on the likely cause of death, where appropriate.

The adjudicator's use of the clinical review assessment

Once the adjudicator receives the OMC's clinical opinion, he or she may be able to reach a conclusion about the relation between the workplace exposure and the reported medical condition.

When there is either adjudicative or clinical uncertainty about the most recent medical or scientific information for a particular clinical condition and its connection to occupational exposure, the adjudicator may consider asking MODPB to conduct either a scientific literature review on the issues in the claim or a general scientific review.

MODPB reviews

MODPB helps the adjudicators to understand the literature available on the disease–exposure relationship being claimed. For example, if the general cause is unknown, an adjudicator can rely on the expertise of staff in MODPB to evaluate the literature and provide answers to the following:

- What risks are reported in the literature?
- What kinds of studies have been done?
- Have both human and animal studies been considered?
- Have occupational groups or exposures been clearly identified?
- Has a causal agent been identified?

- Does the disease have multiple risk factors? If so, how do they interrelate?

See also pages 29–33 for MODPB support.

The adjudicator then compares the circumstances of the individual claim with the information reported in the literature.

As with other expert evidence provided to the adjudicator (e.g., an opinion from an OMC), an MODPB review is only one piece of the evidence needed to reach a decision in a case-by-case review. MODPB does not make entitlement decisions or comment on claims adjudication issues.

Prior medical and other non-occupational factors

Background

Except when Schedule 4 applies, the adjudicator considers evidence of any prior medical and other non-occupational risk factors in determining the causal relationship between a disease and occupational exposure.

When the connection between the disease and occupational exposure is clear, the existence of a non-occupational factor is not as important.

When an occupational connection is not apparent and WSIB policy or conclusive medical and scientific evidence does not exist, the adjudicator looks for other possible contributing factors.

The consideration of non-occupational factors is especially important when evidence of a disease's association with employment exposure is weak or absent (usually with claims being determined on their individual merits and where entitlement may rely on the "benefit of doubt").

The existence of a pre-existing condition or other non-occupational factor does not preclude a finding of entitlement. For entitlement, it must be more likely than not that the employment contributed

significantly to the development of the disease. Employment factors need not play a greater role than any non-occupational factors.

Non-occupational factors

Adjudicators consider a non-occupational factor to be the existence of any condition or circumstance that is not attributable to an occupation or employment situation. Such factors include:

- personal characteristics such as age, gender or ethnic background
- pre-existing or co-existing medical conditions and medical treatment associated with them
- a genetic predisposition such as a family history of the same or a related disease or genetic markers for disease susceptibility
- relevant lifestyle choices such as smoking, drinking or substance abuse, and
- relevant hobbies and recreational or other activities.

The adjudicator's use of prior medical and other non-occupational factors

Prior medical and other non-occupational factors are particularly relevant to two types of claims:

- claims with a pre-existing (currently or previously symptomatic) condition that is aggravated by a workplace exposure, and
- claims where there is a lengthy latency period between the workplace exposure and the disease.

Aggravation of a pre-existing condition

Where the claim is for aggravation of a pre-existing condition by a workplace exposure, the adjudicator must assess whether the occupational exposure likely contributed to the development of the current medical condition.

To understand the extent of the pre-existing condition, the adjudicator may ask the worker about his or her prior medical history.

Operational Policy 11-01–15, Aggravation basis

If the aggravation has a connection with work, entitlement to WSIB benefits is considered for the acute aggravation and recovery period only (see WSIB Operational Policy 11-01-15).

Operational Policy 16-01-01, Determining permanent impairment due to asthma

If the claim is for permanent worsening of the pre-existing condition, the adjudicator must understand the degree of the pre-existing impairment before it was affected by an occupational exposure (the benchmark). An example of how to apply a benchmark is set out in guidelines for determining a worker's entitlement to a non-economic loss benefit when there has been a compensable aggravation of pre-existing asthma (WSIB's Operational Policy 16-01-01).

In most cases, identifying the benchmark requires the worker's prior medical records relevant to the medical condition being claimed. The adjudicator compares the clinical findings in the records with current medical findings and diagnoses. The adjudicator may ask an OMC for an opinion on any evidence of permanent worsening.

Long latency

Assessing the contribution of any occupational exposure may be relatively straightforward if:

- the claim involves a disease with a short latency period between the workplace exposure and the disease, and
- the claim involves a Schedule 3 or Schedule 4 entry or is the subject of specific WSIB policy.

In such a case, there may be little need to consider the effect of non-occupational factors.

However, many diseases are not recognized as peculiar to occupational exposure, and assessing the likelihood of occupational relatedness can be complicated by a long latency factor. These claims rarely have an obvious occupational association.

With long-latency diseases, the adjudicator considers the possibility of a pre-existing condition or other non-occupational factor as part of the overall evidence in assessing the likelihood of occupational factors contributing to the development of the medical condition. The adjudicator determines the relevance of understanding in detail a worker's personal characteristics, genetic background and lifestyle choices together with other environmental exposure concerns. Current medical reports may also provide indications of prior similar medical conditions in the worker or his or her family.

The Bradford Hill criteria in adjudication

Background

When scientific evidence is available, the adjudicator considers that evidence to determine the contribution of work to the development of a disease.

However, the adjudicator does not assume that the claim should automatically be denied if scientific evidence does not exist to support the connection between a disease and an industry or occupation. When scientific evidence is lacking, the adjudicator carefully reviews all available evidence on a case-by-case basis.

Case-by-case adjudication

In case-by-case adjudication, an adjudicator can use the Bradford Hill criteria to review information gathered and to help determine whether occupational exposures significantly contributed to the development of a disease. These concepts are valuable even when scientific evidence is lacking. They are a general guide, not an inflexible framework or an exhaustive list. As with scientific causation, not all criteria are necessarily evident or applicable.

The Bradford Hill criteria are only guides to help determine a cause-and-effect relationship. Except for temporality (see page 20), none of the criteria necessarily proves or disproves a relationship.

The adjudicator's use of the Bradford Hill criteria

The following are examples of possible questions an adjudicator may ask that are influenced by the Bradford Hill criteria:

- Did the occupational exposure precede the disease with enough time for the natural development of the disease?
- Was it a one-time, short-term, high-intensity exposure, or was it a cumulative experience involving a low-intensity exposure?
- Has an exposure assessment for that workplace been completed?
- Has a thorough description been obtained from the worker and other pertinent sources as outlined in the matrices?
- Have the exposure agents experienced by the worker been studied in relation to other diseases?
- Have other workers from that same workplace experienced a similar disease?
- Have other workers registered claims for a similar condition with the WSIB?
- What is the pattern of the worker's symptoms?
- Did the worker's symptoms worsen with increased exposure?
- Did the symptoms improve with the worker's removal from the workplace?
- Based on what is known about the disease in relation to similar chemical or substance agents, is it plausible that occupational exposure contributed to the worker's condition under review?

Part 4: Conclusion

This protocol describes the proper and generally accepted behaviour for WSIB staff around occupational disease issues.

For the staff of the occupational disease policy area, the protocol identifies the direction to take in understanding and interpreting the relevant science when developing occupational disease policy.

For the staff of the occupational disease adjudication area, the protocol represents the proper approach to considering both legal principles and evidence in making decisions about occupational disease claims.

This protocol guides operational staff now and will continue to do so in the future. In addition, policy will be developed on the basic legal and other principles of adjudication. The protocol will also be integrated into the training materials for staff in the occupational disease areas.

Part 5: References and Bibliography

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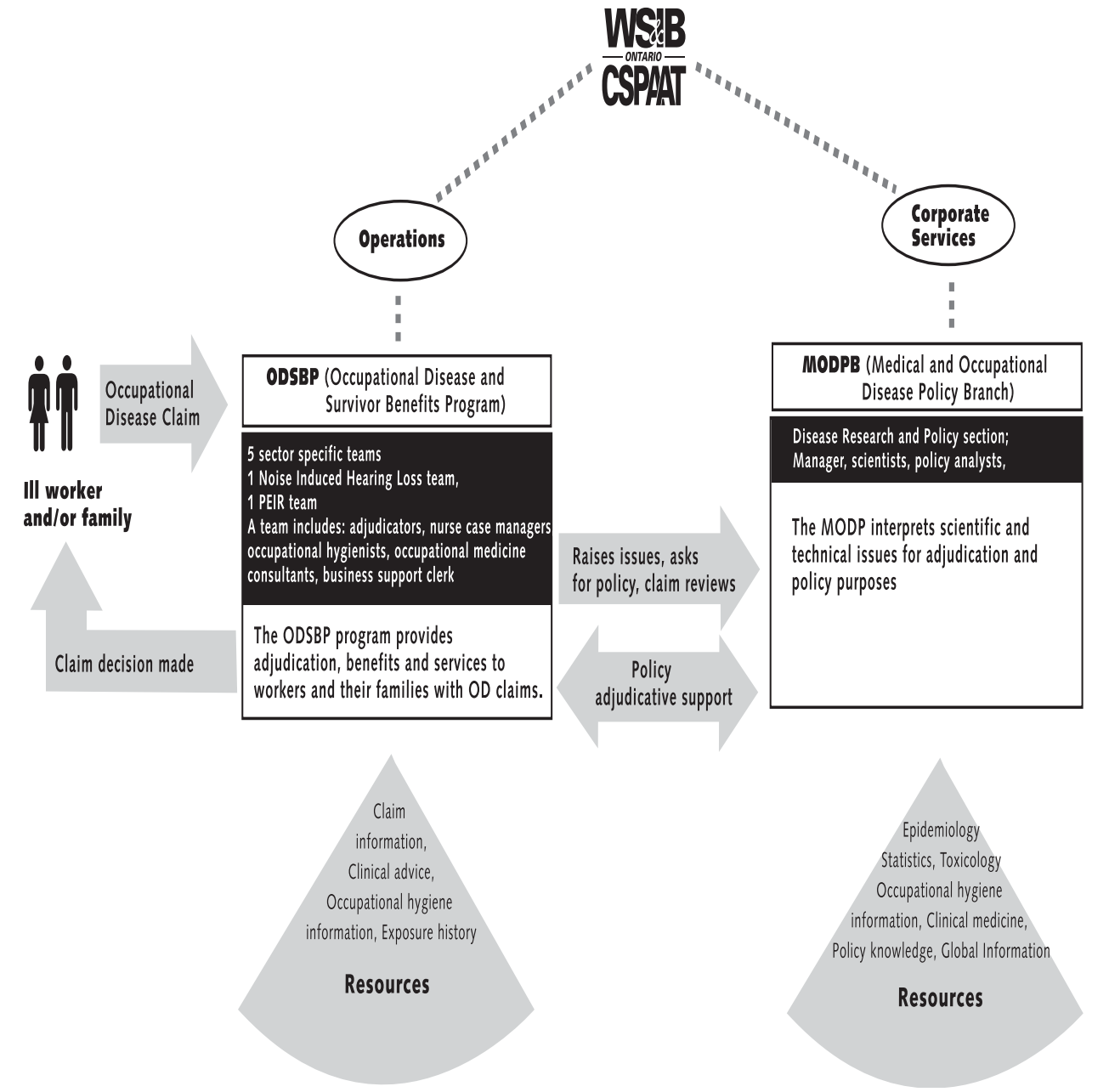
Appendix



Relationship between MODPB and ODSBP