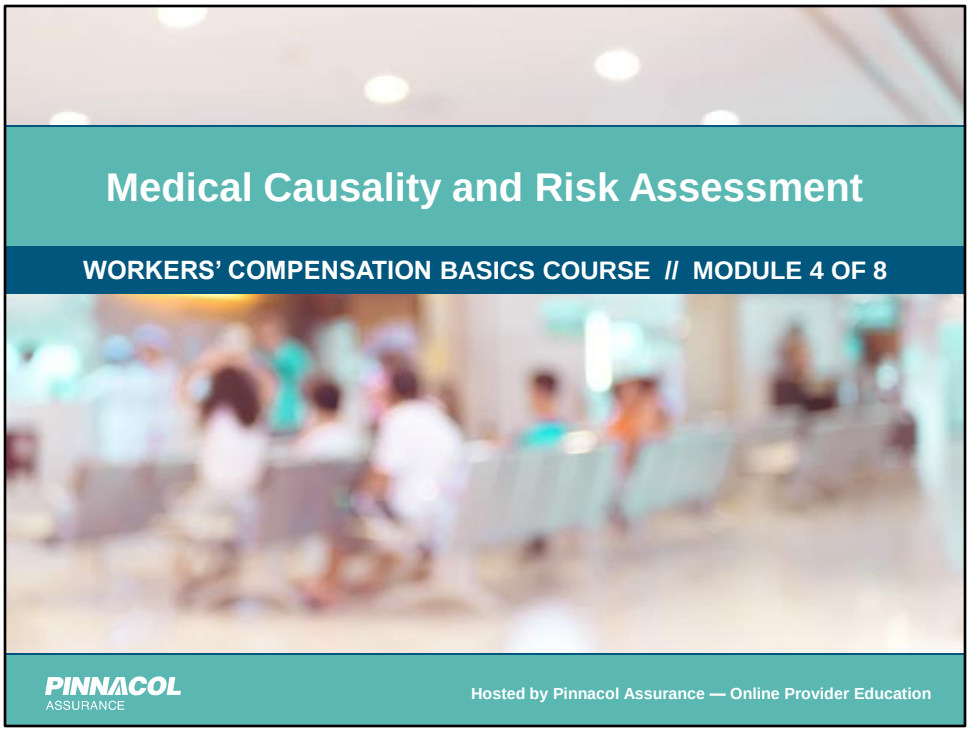
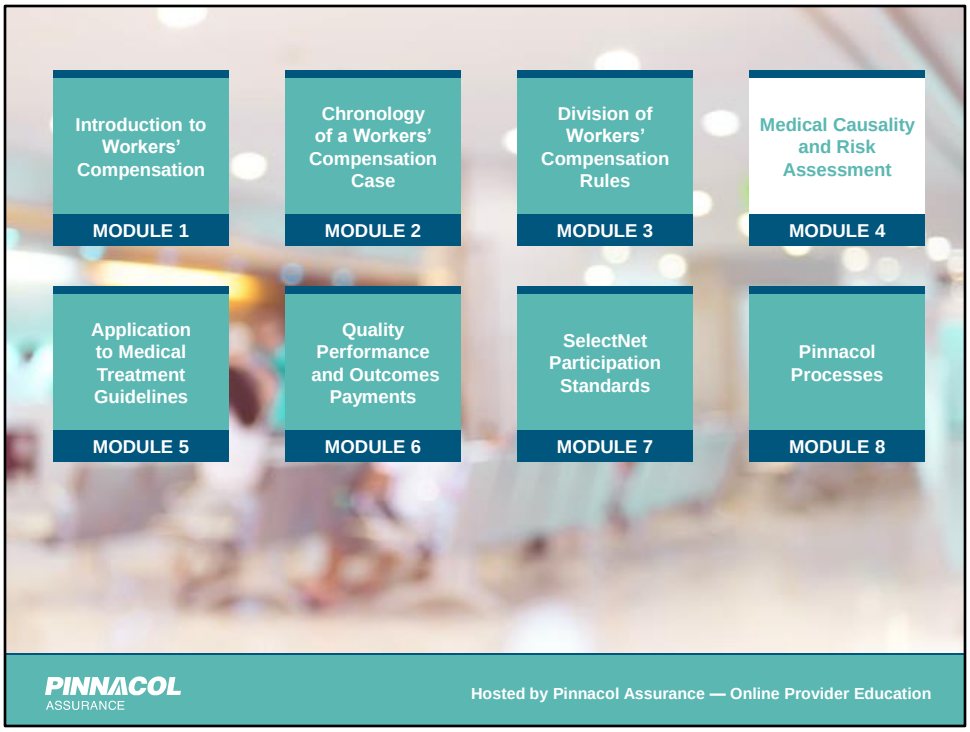
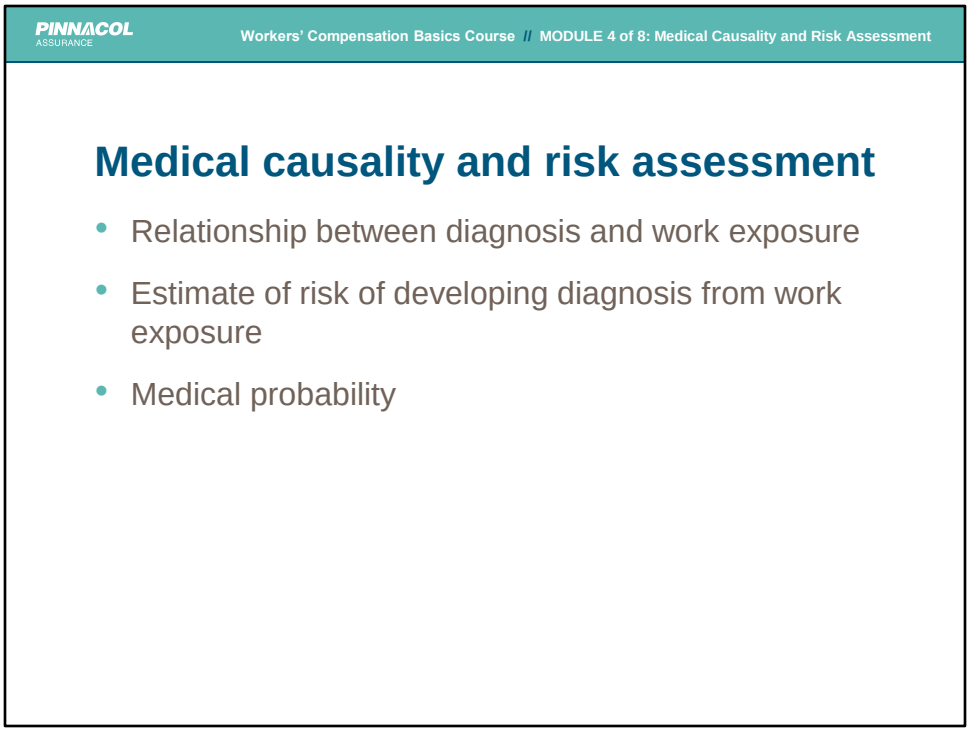


This is the fourth module of the Workers' Compensation Overview course.



This module will present an overview of causality and the assessment of risk associated with the work an employee performs.



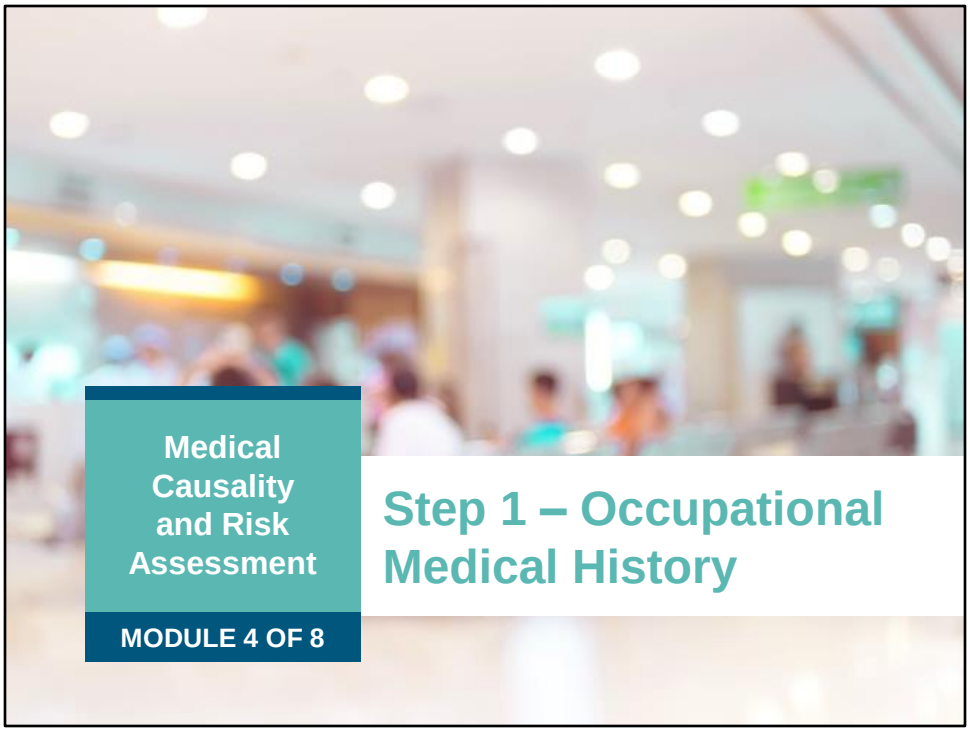
Causality is the relationship between diagnosis and work exposure.

By investigating the circumstances of the reported injury and the work environment, the provider will determine the medical probability of the relationship.

In the evaluation of the injured worker, the physician will estimate the risk of developing a diagnosis from the work exposure or incident.

Is the level of exposure, posture, or force related?

If the relationship is greater than a 50% probability, it is considered medically probable based on the legal definition.



The following slides will focus on the causation assessment.

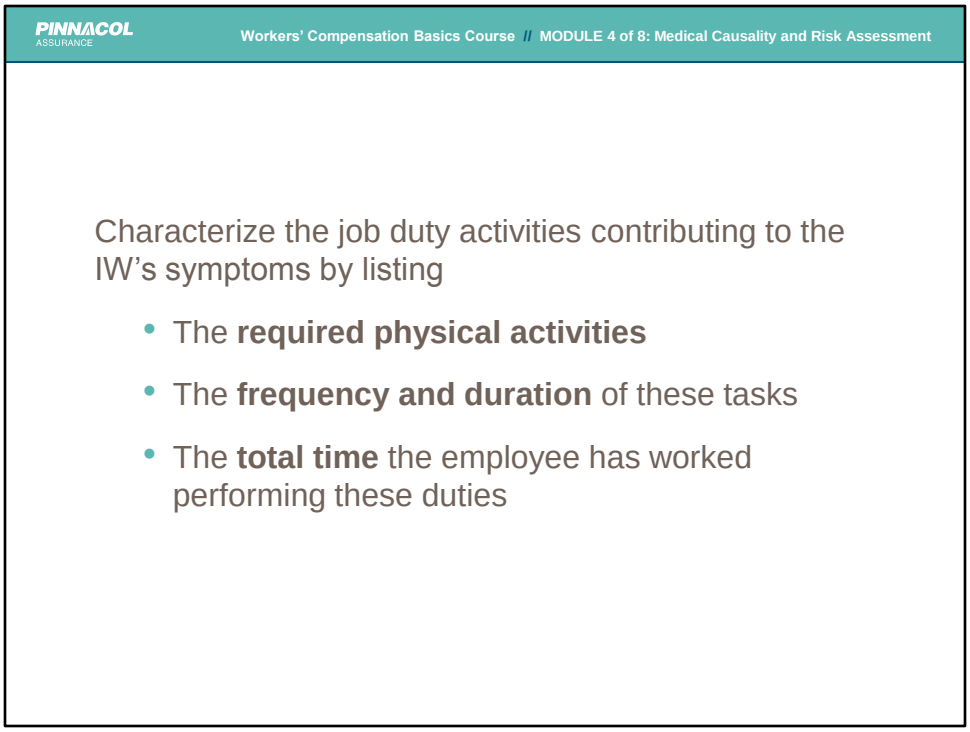
The first step is taking a good occupational medical history.

Occupational medical history

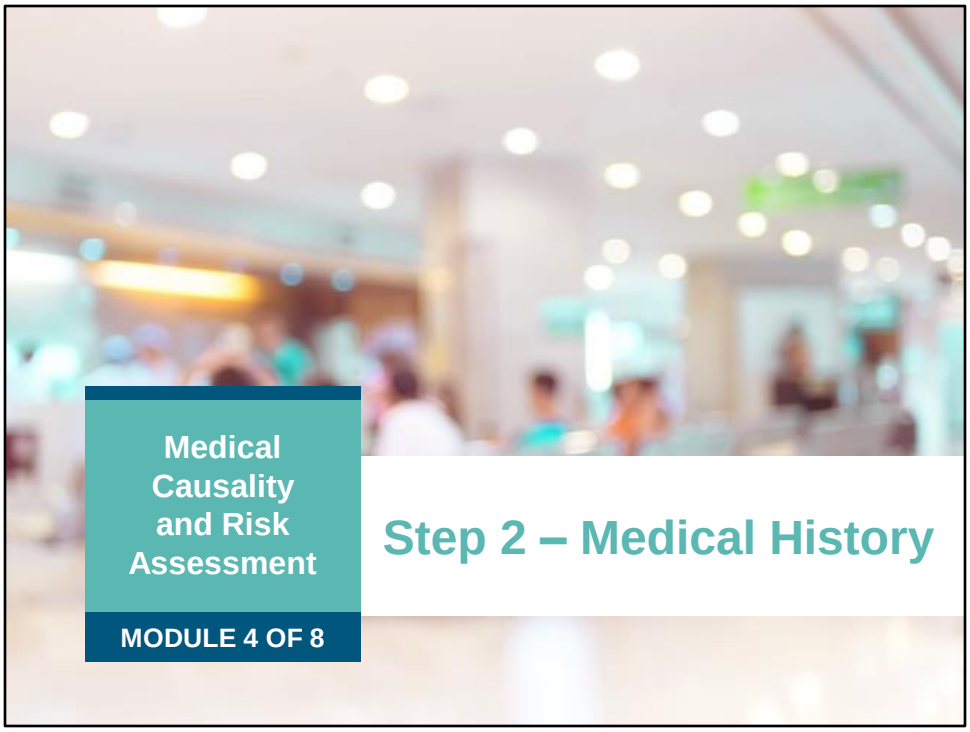
Obtain and document

- A detailed description of the incident reportedly causing the injury, or
- A thorough description of job duty activities contributing to the IW's symptoms

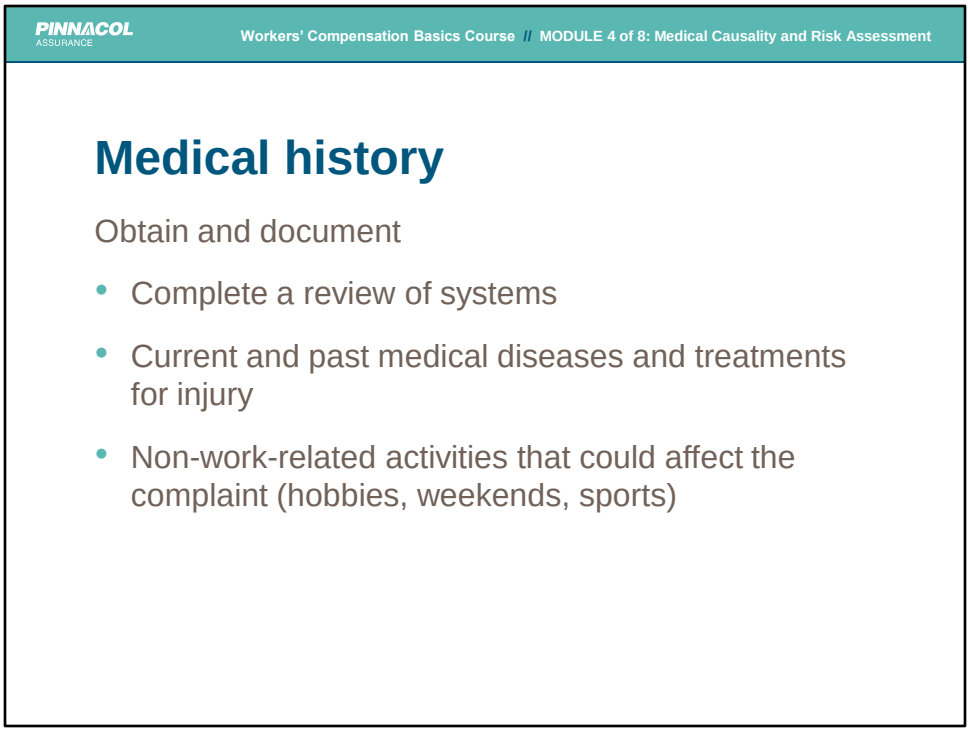
The provider needs to document a detailed description of the incident or the job duties that contributed to the reported symptoms.



The provider must document the required physical activities of the job, the frequency and duration of the tasks, and the total time the employee performs these duties.



Step two is the medical history and review of systems.

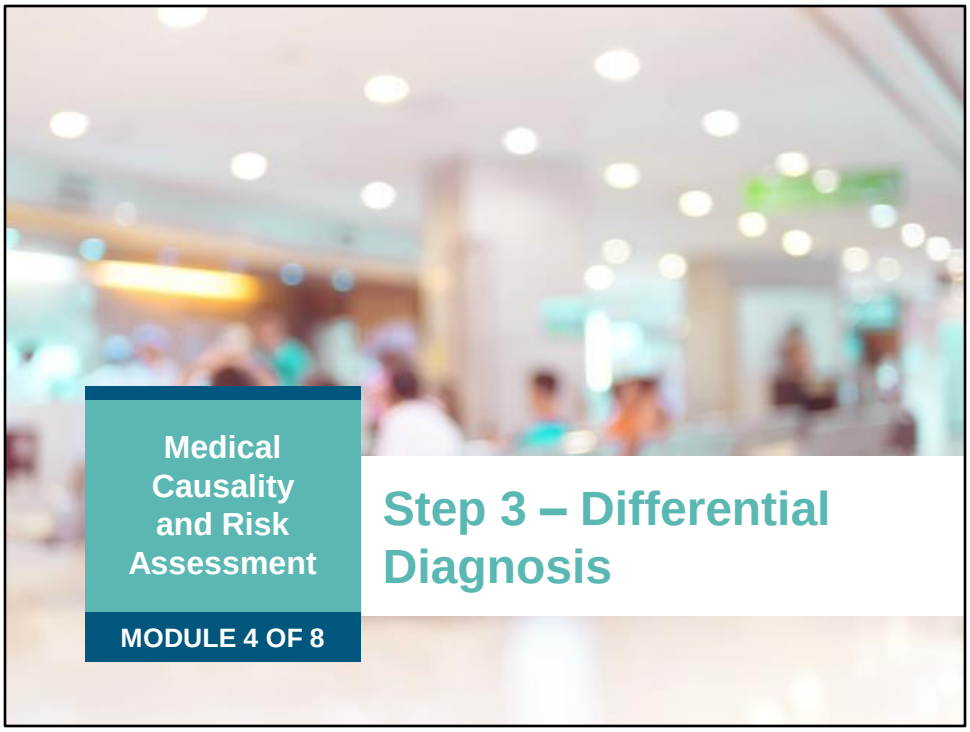


Perform and document a complete review of systems.

Asking about current and past medical disease and treatment will identify contributing factors and underlying health issues.

Document the non-work-related activities that could impact the injury and recovery, such as hobbies and weekend and sports activities.

Activities such as yard work, bowling, skiing, and kayaking work the upper and lower body.



Establishing a differential diagnosis is the third step.

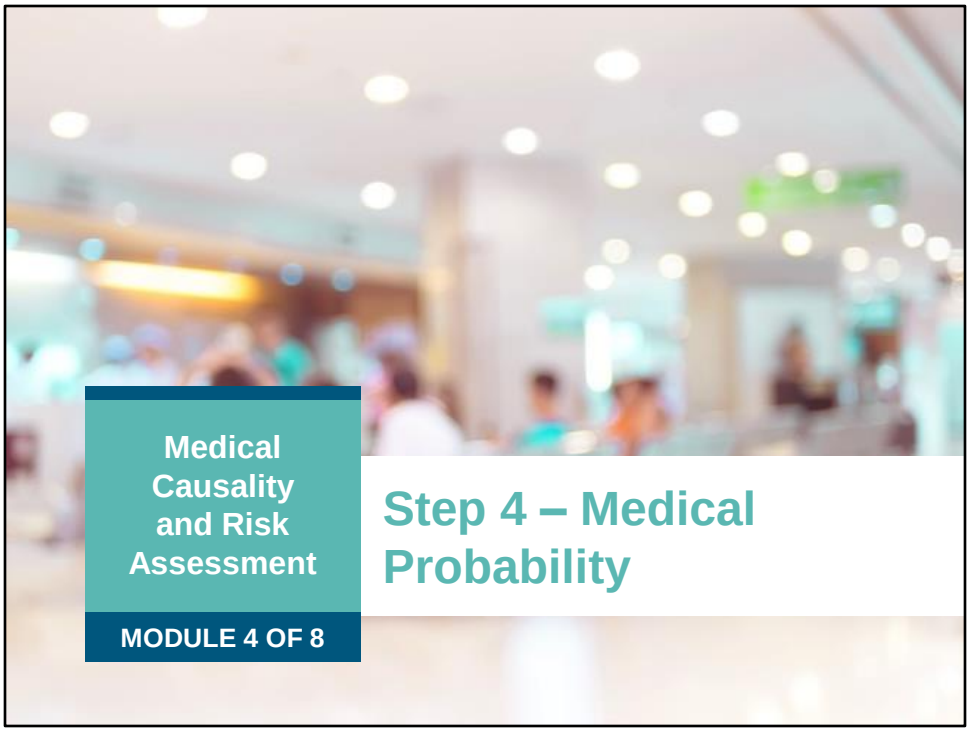
Differential diagnosis

Determine using

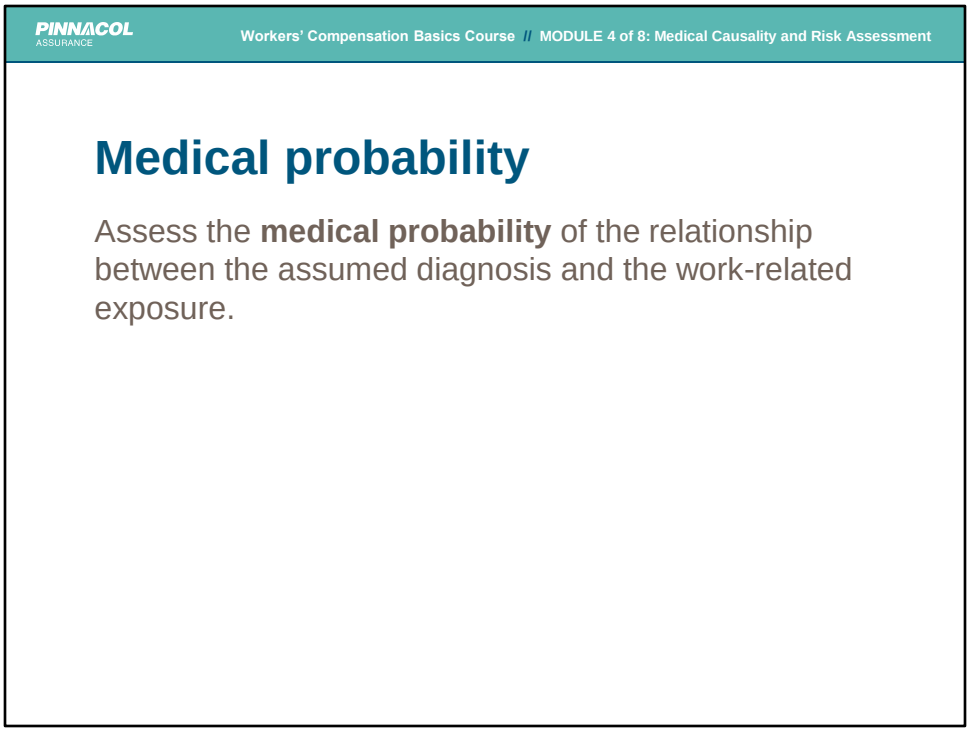
- Review of occupational and medical history
- Findings from physical exam
- Results of diagnostic testing

The diagnosis may be obvious or present a challenge based on how the illness or injury is presented.

As in any workers' comp case, the diagnosis is determined from the review of the occupational and medical history, the physical exam, and the results of diagnostic testing.



Step 4 is assessing medical probability.



Once the diagnosis is determined, providers must assess the medical probability of the relationship between the presenting diagnosis and work-related exposure.

Acute injuries from accidents may be clearly causative, but prolonged exposures or injuries from long-term activities will be less definitive.

Let's review a few scenarios to illustrate this.

Example: pulmonary

- Navy veteran from WWII
- Painter spraying popcorn ceiling texture 1950-1978
- Mesothelioma diagnosis is associated with exposure to asbestos
- Common in this time frame and occupation

This worker was a Navy veteran in World War II.

He worked as a painter spraying popcorn ceiling texture paint from 1950 – 1978.

His diagnosis of mesothelioma is consistent with his exposure to asbestos which was common in this period and occupation.

Based on these facts, it would be a reasonable association and medically probable that the condition is work-related.

Example: carpal tunnel

60 year old electrician

- Identify specific work duties
- Supervisory and inspection vs. installations
- Identify co-morbidities

A sixty-year-old electrician presented with the symptoms of carpal tunnel.

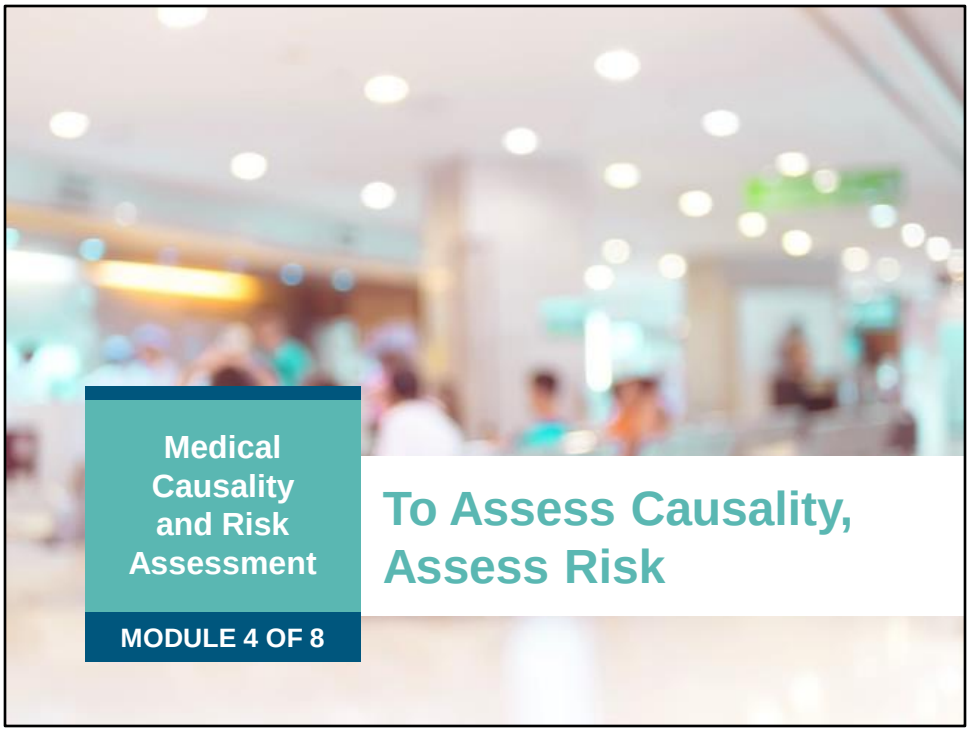
It would be important to document whether the person was responsible for installations or was working in a supervisory and inspection role before presuming the job caused the condition.

In the DOWC Rule 17, Exhibit 5, Cumulative Trauma Condition Guidelines, Section C states:

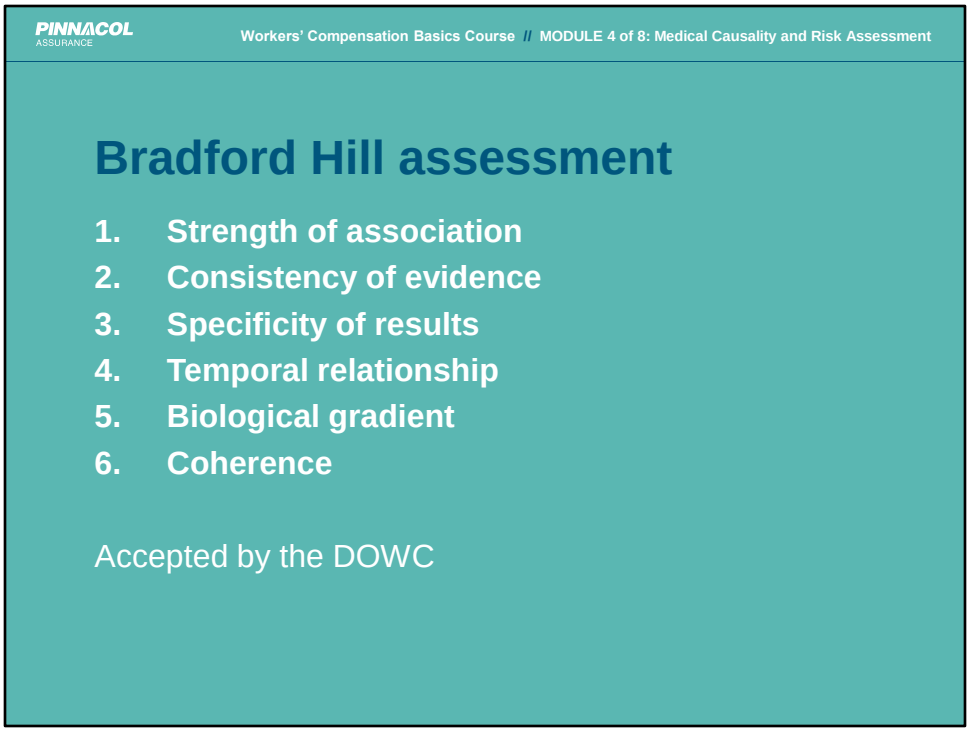
“Many patients present with more than one diagnosis, which requires a thorough upper extremity and cervical evaluation by the health care provider.

Furthermore, there must be a causal relationship between work activities and the diagnosis.

The mere presence of a diagnosis that may be associated with cumulative trauma does not presume work-relatedness unless the appropriate work exposure is present.”



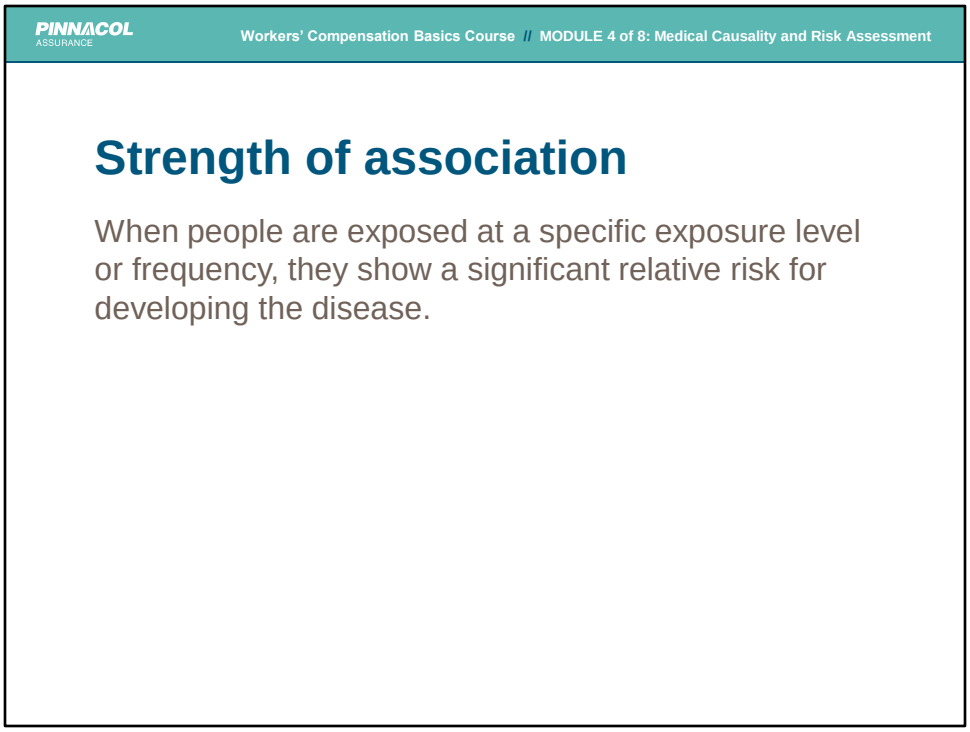
To assess causality, you must assess risk.



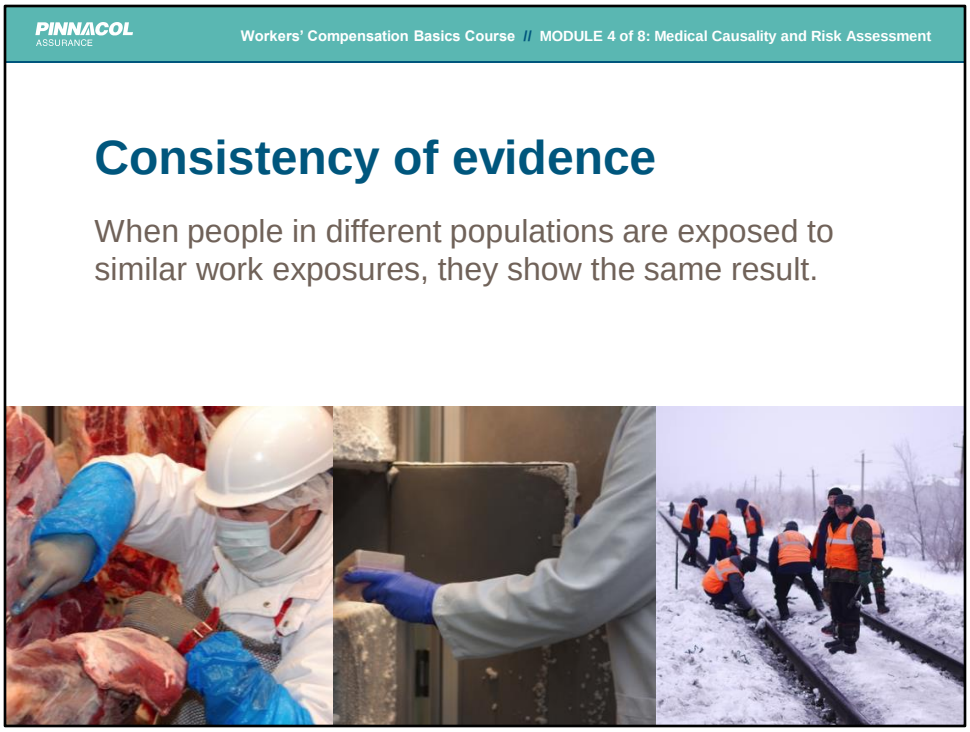
The Bradford-Hill Assessment is a risk assessment tool recognized by the DOWC.

It categorizes risk by six criteria: the strength of the association, the consistency of the evidence, the specificity of the results, the temporal relationship, the biological gradient, and the coherence.

Each of these will be briefly discussed.



The strength of the association means when people are exposed at a specific exposure level or frequency, they show a significant, relative risk for developing the disease.



Consistency of evidence is when people in different populations exposed to similar work exposures show the same result.

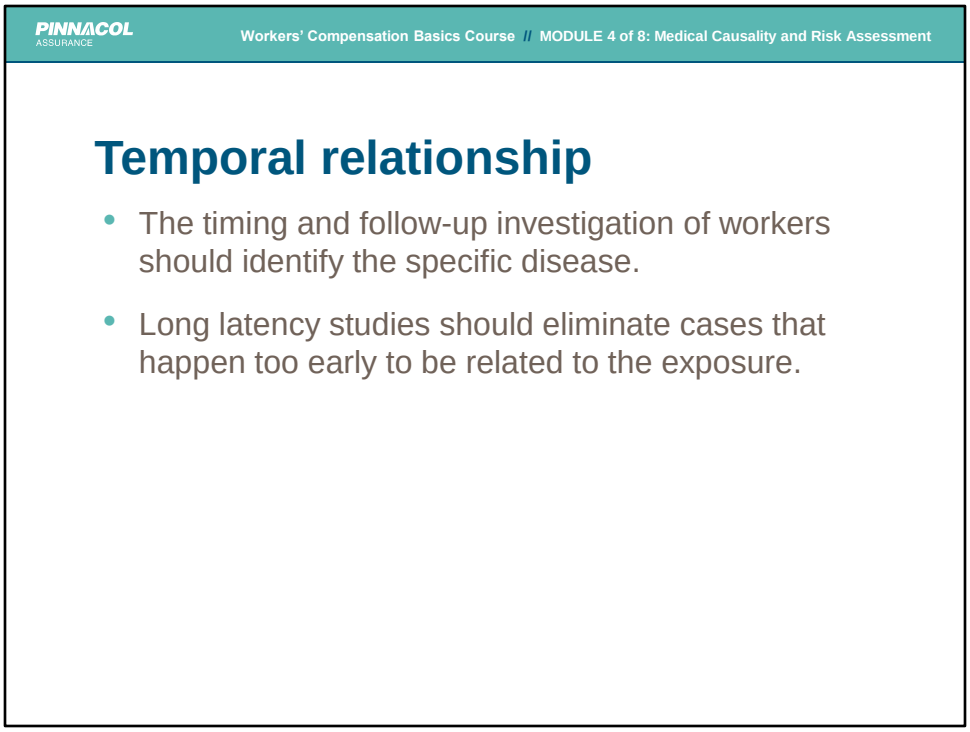
People who work in cold environments, such as meat packers, tow truck drivers in winter, and stockers for cold shipments, will exhibit the same symptoms because they all work in cold environments.

Specificity of the result

Studies must be controlled to prove the exposure was the cause of the diagnosis, and not from other exposures or diseases.

For specificity of the result, scientific studies must prove the exposure was the cause of the diagnosis and was not from other exposures or diseases.

In the example of occupational lead toxicity, the severity of the symptoms would be different in a battery assembly worker than workers exposed to lead solder, plumbing fixtures, bullets, or leaded glass.



For a temporal relationship, the timing and follow-up investigation should identify the specific disease.

Long latency studies should eliminate cases that happen too early to be related to the exposure.

An acute, temporary pulmonary condition such as bronchitis that resolves would not normally be associated with long-term exposure to a substance causing chronic lung disease.

Biological gradient

- The greater the exposure, the more likely the disease or injury can be correlated.
- In some cases, the situation is "all or none," and there will be no changes in severity with increased exposure.
- Example: a one-time puncture wound from infected needle vs. heavy metal or lead exposure over time

The biological gradient means long term exposure can be correlated with the increased likelihood of the disease or injury. In some cases, increased exposure does not increase the severity.

A single puncture wound from an infected needle is contrasted with exposure to lead or heavy metals over long periods.

Coherence

- The exposure should be biologically plausible and aligned with previous research.
- When a new causal relationship is discovered, initial reports may not conform with previous literature

Example: metal fume fever — inhaling zinc oxide fumes

Coherence is about being logical and consistent.

The exposure should be biologically plausible and aligned with earlier research.

An example of coherence is metal fume fever, which is a self-limiting, allergic syndrome due to inhaling zinc oxide fumes from welding, cutting or brazing galvanized metal.

However, new causal relationships may not conform with previous studies, so it's important to stay current on occupational medicine literature.

Work related exposure and "proximate cause"

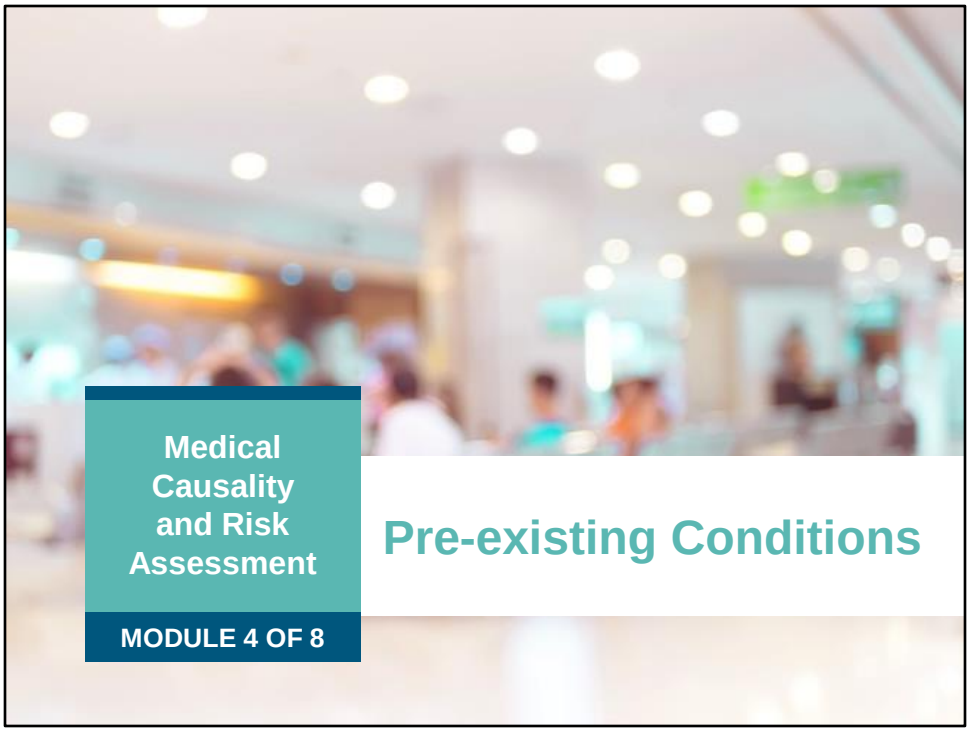
Proximate cause is the last act "contributory to an injury, without which such injury would not have resulted. The dominant, moving or producing cause."

Black's Law Dictionary

Black's Law Dictionary states proximate cause is the last act that contributes to an injury.

In other words, it doesn't matter that the defect was already present.

Proximate cause applies to auto liability and compensability, just as it does to workers' compensation cases.



To expand on proximate cause, we need to consider pre-existing conditions, which are medical conditions that may pre-dispose a worker to injury.

Pre-existing condition

- A medical condition that may predispose a worker to an injury
- It does *not* necessarily mean the case is *not* work-related.

Documentation: Discuss the impact of pre-existing diseases or injuries on the current work-related condition such as healing time, medication interactions, risk of infection, etc.

When a worker has an underlying condition, it does not necessarily mean the injury or illness is NOT work-related.

If the worker would not have had the injury without the work-related event, the injury is most likely also work-related.

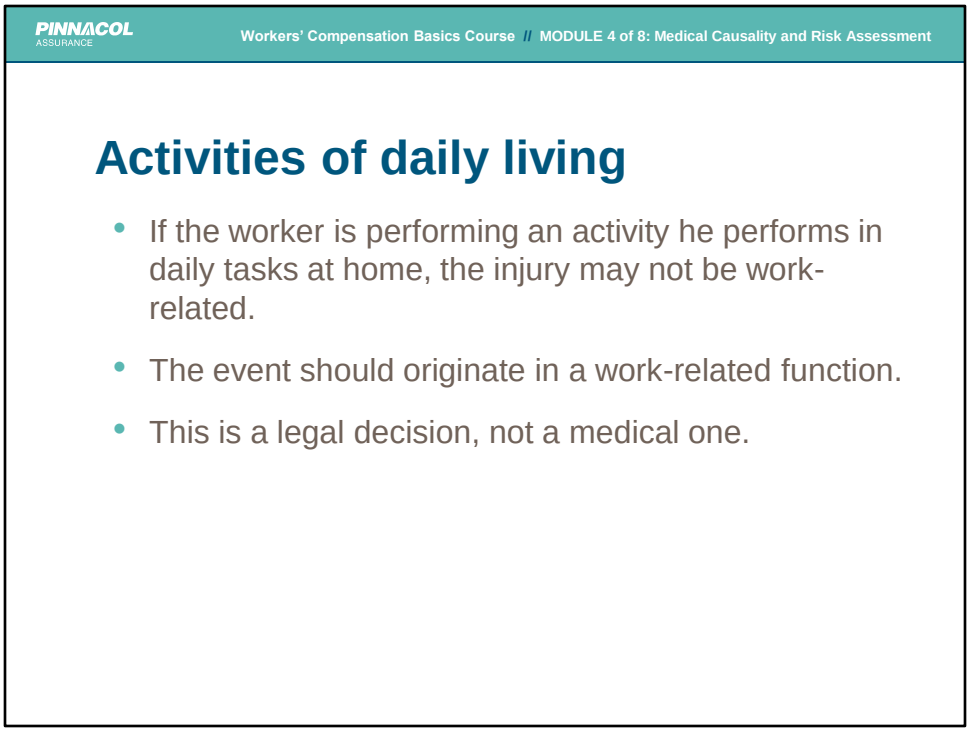
Pre-existing diseases or injuries may impact healing time, medication interactions, and a higher risk of infection.

Congenital defects may be unknown prior to the injury, and other medical conditions may increase the worker's vulnerability.

A worker with a partial meniscus tear may be in a car accident at work.

Upon exam, he is diagnosed with a full thickness meniscus tear following aggravation.

A diabetic patient with a foot injury is already vulnerable, but the employer can still be liable for infections or an amputation associated with a work injury.



The injury may not be work-related if the worker is performing an activity he performs in his daily life at home.

When an executive has a seizure at work while reading an email or on a phone call, the seizure is not considered work-related.

The event must originate from a work-related function.

However, the decision is a legal one, not a medical decision.

Mental impairment with no injury

- A recognized, permanent disability arising from an accidental injury arising out of and in the course of employment
- The accidental injury involves no physical injury.
- Consists of a psychologically traumatic event outside the workers' usual experience in most cases
- Would evoke significant symptoms of distress in a worker in similar circumstance

C.R.S. §8-41-301(2)(a)

The statute describes a mental impairment with no physical injury.

It is characterized by a psychologically traumatic event beyond the normal work experience.

Post-traumatic stress disorder might be a covered benefit based on this description.

Reference – Rule 17

DOWC Medical Treatment Guidelines

Treatment for work-related condition is covered when the work exposure

- Causes a new condition
- Causes the activation of a previously asymptomatic or latent medical condition, or
- Combines with, accelerates, or aggravates a pre-existing symptomatic condition

Cumulative Trauma Conditions
From CTC Medical Treatment Guideline

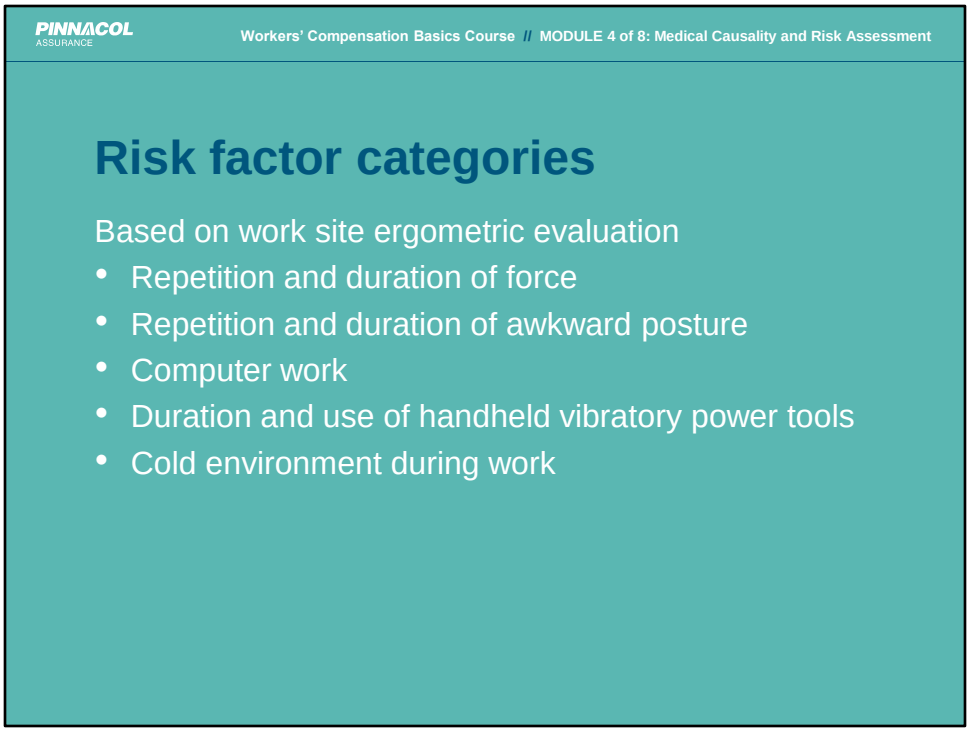
For assessment of causality and diagnosis of disorders, refer to the guidelines by condition.

Flowcharts will assist with the causality determination.

The example given here is from the Cumulative Trauma Conditions – Medical Treatment Guideline.

Causation is established by evaluating risk factors.

These can be a single factor or multiple secondary factors related to the diagnosis.



These risk factors can be quantitated from a work site ergometric evaluation

- The repetition and duration of force and awkward postures,
- The position, duration and extent of computer work,
- The duration and use of handheld vibratory power tools, and
- Working in extreme environments – heat, cold, outside, wind

DURATION

Hours are based on the cumulative exposure in an 8-hour day. Inactive periods such as breaks are not included.

FORCE and REPETITION/DURATION

Example: in assembly line job, secondary versus primary risks

- 4 or 6 hours — lifting 10 pounds over 60 times/hour
- 4 or 6 hours — using tools weighing over 2 pounds

Duration is calculated on the cumulative exposure over an 8-hour day, excluding breaks or periods of inactivity.

Force and repetition are based on weight and time.

Scientific studies can provide evidence for specific risk factors, against specific risk factors or provide no evidence of risk.

Evidence for specific risk factors

Evidence for specific risk factors

- **Strong:** Supported by multiple high-quality studies
- **Good:** One high quality or multiple adequate studies
- **Some:** One adequate study

Strong evidence is supported by multiple high-quality studies, good evidence is one or more high quality or multiple adequate studies, and some evidence is considered one adequate study.

An example of good evidence for epicondylitis

- A combination of awkward posture (forearm supination past 45 degrees) and forceful lifting
- A combination study of force and wrist and hand repetition

Against and non-evidence based

- **Evidence against**: Some evidence tool use is *not* related
- **Non-evidence based**: Posture in extension and repetitive supination of the forearm and elbow extension; additional factors must be considered

Scientific evidence may indicate the opposite or non-involvement of the factors in the diagnosis.

The Medical Treatment Guidelines and scientific literature will indicate the known correlations.

To summarize, the relationship of the diagnosis and work exposure will determine causality and the risk associated with the work the employee performs.

This concludes Module 4, Causality and Risk Assessment.

Please proceed to the survey section for the assessment questions and to print the continuing education certificate for this module.

To continue with the series, please select Module 5: Application to Medical Treatment Guidelines.