



Methods for COVID-19 Surveillance in Washington Workers' Compensation Data

Background

Surveillance for potential COVID-19 cases began in March 2020 by SHARP's Occupational Respiratory Disease Surveillance Program. The goal of surveillance is the ongoing, systematic collection, analysis and dissemination of data to monitor exposure and disease of COVID-19 in Washington workers.

Data Source

Washington State workers' compensation is the data source. In Washington State, nonfederal employers are required to obtain workers' compensation insurance through the Department of Labor and Industries (L&I), unless they meet specific requirements to self-insure or are covered under an alternative workers' compensation program. L&I's State Fund (SF) insurance program provides coverage for approximately 1.9 million (about two-thirds) of the workers in the state and 99.7% of all employers. Data from both the SF insurance program and the Self-Insurance (SI) program are entered into L&I's Industrial Insurance Data Warehouse (IIDW) which contains both medical diagnoses and administrative codes.

The Industrial Insurance Act allows for wage replacement during quarantine and treatment of COVID-19 when work-related activity has resulted in probable exposure to the virus and certain criteria are met¹. In these cases, the worker's occupation must have a greater likelihood of contracting the disease because of the job (examples include first responders or health care workers)¹. There must also be a documented or probable work-related exposure, and an employee/employer relationship¹. For more information about COVID-19 workers' compensation coverage, see L&I's [coronavirus resource page](#).

Surveillance Case Definition for COVID-19

Suspected or confirmed exposure to or infection with COVID-19.

Surveillance Process

Potential cases are captured from L&I's data warehouse every Monday, Wednesday, and Friday and uploaded into a Microsoft Access database. Because it takes time for L&I to receive all necessary information for claim adjudication, the records from potential cases are reviewed by SHARP staff six weeks from the date they are established, allowing for claim maturation. Once reviewed, data are transferred to R statistical software and Excel for data cleaning, analysis, and report generation. Each potential case is individually reviewed in a process that confirms whether the claim is for COVID-19 exposure or disease and not for an unrelated disease, such as influenza.

At the onset of surveillance in March 2020, a historic review of claims was undertaken for the period Jan 2020 through March 2020, using the case capture criteria outlined in this document. The first claim in

¹ <https://www.lni.wa.gov/agency/outreach/novel-coronavirus-outbreak-covid-19-resources>. Accessed Aug 11, 2020

the L&I system to meet the case definition was established in late February, and that is considered the beginning of our surveillance data.

Step 1: Case Capture. Criteria to Identify Potential Cases (Appendix A)

To identify potential COVID-19 claims, four data definitions were used:

1. Text search for keyword terms
2. Medical diagnoses codes (ICD-10-CM codes)
3. Occupational Injury and Illness Classification System (OIICS) codes, and/or
4. Administrative orders allowing or denying claims on the basis of COVID-19 exposure or infection

A potential claim can be captured based on one or all of the above criteria.

The keyword term search is applied to the forms that initiate a claim, such as the Report of Accident (ROA) form used in the SF program or the Self-Insurer Accident Report (SIF-2) used in the SI program. The ICD-10-CM codes are identified in the injured worker's medical and hospital bills, and from the allowed diagnoses assigned in the claim adjudication process. OIICS codes are assigned by L&I staff at the time the claim is received and are used by SHARP to establish both COVID-19 case capture inclusion and exclusion criteria. The administrative orders sent to COVID-19 claimants are unique to Washington workers' compensation and pertain exclusively to COVID-19 related claims. Please see Appendix A for detailed capture criteria.

Step 2: Case Disposition. Definitions and Protocol

Once identified, potential cases are reviewed by SHARP staff six weeks after they are established at L&I to determine if they meet the following surveillance case definition: Suspected or confirmed exposure to or infection with COVID-19.

Cases are deemed Valid if they meet the case definition. To determine whether the definition is met, the following materials are reviewed for each case: L&I administrative data, claim initiation form, claim correspondence, and medical records. A given worker can have more than one valid COVID-19 claim if the exposures are unique events. For example, healthcare workers who have been quarantined more than once over the course of the pandemic may file more than one claim.

Cases that do not meet the case definition are defined as Not Valid, Duplicate or Undetermined and are excluded from analysis. Potential cases may be deemed Not Valid when the capture criteria do not serve as intended. For example, the claim initiation form may tangentially reference the pandemic's effects on the worker's tasks or work environment, resulting in a false keyword match for COVID-19. Additionally, potential claims can be captured from ICD-10 codes in the billing tables and rather than reflect a work-related infectious exposure, the codes may arise from COVID-19 screenings prior to an elective medical procedure. For example, a worker injured in a fall may undergo a COVID-19 test before medical treatment.

Cases that are suspected to be duplicate pairs are systematically identified with administrative data, reviewed, and coded as such. Examples of duplicate cases are two SF claims filed by the same worker for the same exposure incident or disease. Another example is if an injured worker initially files a SF claim which is rejected because the employer is self-insured. In this case, the rejected SF claim is

marked as a duplicate and the SI claim is kept as Valid in the surveillance system. Cases are deemed Undetermined if there are incomplete records to ascertain validity of the potential case.

Information regarding quarantine, laboratory testing, and travel are systematically recorded by SHARP staff at the time the case is reviewed. This information is not formally recorded by L&I but rather it is mentioned for some but not all claims by either the worker, employer, healthcare provider, or claim manager. Because it is not systematically obtained by L&I, these metrics are likely under-estimates. Quarantine is defined as any length of time the injured worker was told to self-isolate by their health care provider, employer, or a public health agency. When time loss is paid to a COVID19-exposed worker quarantine is assumed. Laboratory test dates and test results are recorded for each case when available. Laboratory tests are coded according to six different outcomes: Positive, Negative, Inconclusive, Not Administered, Administered with Unknown Result, or Unknown. Up to five unique tests can be recorded per claim. The type of laboratory test is often unknown and is not recorded. Work-related travel is recorded as None, Inside WA, Outside WA, or Undetermined.

Instances of hospitalization and fatalities are determined using administratively-coded data. Hospitalizations are counted for any claim that has a hospital admission date. Emergency room encounters are therefore not counted if they are not admitted to the hospital. Fatalities are initially identified from two means, a) when the administrative death date field has a date entered or b) if the claim status code indicates fatal. Fatalities are then confirmed by reviewing the medical record. The industry assigned to a claim refers to the North American Industry Classification System (NAICS) code assigned to an employer's business location.

Surveillance practice in an ever-evolving pandemic

The surveillance program maintains flexibility in its surveillance definitions and protocols as the pandemic progresses. For example, claims established in late February through June predominantly had one laboratory test at most; in June we began systematically recording multiple tests for claimants. When protocols are expanded, the changes are retrospectively applied to previous cases. Case capture criteria were established in early March 2020, these criteria will be periodically reviewed and may be simplified or expanded to return valid cases. The methods described here may be modified as the pandemic continues to unfold.

When comparing COVID-19 data estimates across different reporting sources, there can be areas of discrepancy. Factors such as case capture, case definition, and review protocols can all affect data estimates.

Appendix A

Criteria to Capture Potential COVID-19 Cases

Administrative Orders

L&I has deployed several types of COVID-19 specific administrative orders. Claims issued any of these orders are included in our case-capture list. There are four specific communications sent when the claim is accepted for COVID-19 exposure or infection (coded EK, EA, E6, E7) and one sent when the claim is rejected (2B).

Keywords

We search for keywords related to COVID-19 in the report of accident forms filled out by claimants, employers, and physicians. The spelling of the keywords can vary widely. To accommodate this, we use a flexible text search method called a regular expression.

Keywords
Variations of acronyms "COVID", "COV-19", and "NCOV"
/CO.{0,1}V.{0,2}D/
/COV.{0,10}{19 VIR}/
^bNCOV/
Variations on spelling of "corona", excluding "coronary" and "coronal"
/[C K][O A]R[O A]NA[^RY L]/
Variations on spelling of "quarantine" and "isolation"
/Q.{0,2}{REN RAN}.{0,4}T.{0,4}N/
/ISOLAT[E ION]/
Exact word "flu" and "influenza", excluding "flu shot"
^b(FLU[^ SHOT] INFLUENZA)\b/
Variations of the phrase "flu-like symptoms"
/FLU.{0,3}LIKE.{0,3}SYM/
Variations on spelling of "pneumonia"
^b[P N].{0,3}[E I U]MO.{0,3}A\b/

Occupational Injury and Illness Classification System (OIICS) Codes

We use the OIICS codes to identify potential COVID-19 cases and to exclude unrelated cases. OIICS codes are classified by nature, source, body part, and event/exposure. Cases with any of the excluded OIICS code are removed from the case-capture list, unless we have a high degree of certainty from the administrative orders and ICD-10 CM codes that this case is COVID-19 related. The presence of any inclusive OIICS code on a claim identifies a suspected case for review.

Inclusion OIICS Codes
Nature
(1432) Influenza
Source
(533) Viruses
Event / Exposure
(340) Exposure to caustic, noxious, or allergenic substances, unspecified

Exclusion OIICS Codes
Nature
(0*) Traumatic Injuries And Disorders
Body Part
(3*) Upper Extremities
(4*) Lower Extremities
Source
(1*) Containers
(2*) Furniture and Fixtures
(3*) Machinery
(4*) Parts and Materials
(51*) Animals and animal products
(52*) Food products--fresh or processed
(532) Fungi
(54*) Metallic minerals
(55*) Nonmetallic minerals, except fuel
(58*) Plants, trees, vegetation--not processed
(6*) Structures and Surfaces
(7*) Tools, Instruments, and Equipment
(8*) Vehicles
Event / Exposure
(1*) Falls
(4*) Transportation Accidents
(5*) Fires and Explosions
(6*) Assaults And Violent Acts

Diagnostic ICD-10-CM Codes

We search for COVID-19 related ICD-10-CM codes in the worker’s compensation claim hospital and medical bills and in the diagnoses allowed in the claims process. Our list of codes comes in part from the CDC’s guidelines for COVID-19 coding². We have added codes for pneumonia, influenza, other coronavirus infections, and COVID-19 symptoms to our case-capture definition. Potential cases captured exclusively through the COVID-19 symptom codes must have at least two of the symptom codes. This prevents an influx of unrelated claims.

ICD-10-CM Code
CDC Official Coding and Reporting Guidelines
(Z20.828) Contact with and (suspected) exposure to other viral communicable diseases
(U07.1) 2019-nCoV emergency code
(Z11.59) Encounter for screening for other viral diseases
(Z03.818) Encounter for observation for suspected exposure to other bio. agents ruled out
(B97.29) Other coronavirus as the cause of disease classified elsewhere
(J12.89) Other viral pneumonia
(J98.8) Other specified respiratory disorders
(J22) Unspecified acute lower respiratory infection
(J20.8) Acute bronchitis due to other specified organisms
(J40) Bronchitis, not specified as acute or chronic
(B34.2) Coronavirus infection, unspecified
Other Coronavirus Codes
(B34.2) Coronavirus Infection, Unspecified
(B97.21) SARS-Assoc Coronavirus Cause Dz Classified Elsw
Influenza and Pneumonia Codes
(J18.9) Pneumonia Unspecified Organism
(J10.1) Flu D/T Oth Id Flu Virus Oth Resp Manifestations
(J12.9) Viral Pneumonia Unspecified
(J11.1) Flu D/T Unidentified Flu Virus W/Oth Resp Manif
(J12.81) Pneumonia Due To SARS-Associated Coronavirus
(J09.X2) Influenza D/T Id Novel Flu Virus Oth Resp Manif
(J18.8) Other Pneumonia Unspecified Organism
(J16.8) Pneumonia Due To Other Spec Infectious Organisms
COVID-19 Symptoms
(R05) Cough
(R06.02) Shortness Of Breath
(R50.9) Fever, Unspecified
(R06.00) Dyspnea Unspecified
(R06.09) Other Forms Of Dyspnea
(786.2) Cough

² https://www.cdc.gov/nchs/data/icd/COVID-19-guidelines-final.pdf?fbclid=IwAR06h6zP8KkehNziEqlpGvACzMBhP26Khp9WG1JqbfLUQpYOt_LCqwGVHxU. Accessed August 13, 2020.