2019 Novel Coronavirus (COVID-19) Surveillance Investigation Protocol

Office of Epidemiology and Prevention Services

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Purpose

To provide standardized statewide guidance to public health and other designated personnel for COVID-19 case investigation and contact tracing.

Quick Guide to Reporting Timelines

Data Category	**Reporting Timelines**
COVID-19 Case/Laboratory Report	Immediately reportable to state and local health departments (LHD) by providers and laboratories via surveillance system
COVID-19 case investigation, including isolation of case	Complete within 24 hours of receipt of confirmed laboratory report via surveillance system
Contact tracing	Complete within 72 hours of receipt of confirmed laboratory report of associated case via surveillance system
Suspect or confirmed outbreaks of COVID-19	Report within 1 hour of LHD notification via telephone to the Division of Infectious Disease Epidemiology (DIDE) Epidemiologist on-call
Deaths associated with COVID-19	Immediately reportable to the state health department upon LHD notification via ChexOut
Multi-System Inflammatory Syndrome in Children (MIS-C)	Immediately reportable to the state health department upon LHD notification via telephone to the DIDE Epidemiologist on-call

COVID-19 Definitions

Acceptable Respiratory Specimens: An acceptable respiratory specimen includes a nasal swab, nasal wash, nasopharyngeal swab, oropharyngeal swab, saliva, sputum, bronchoalveolar lavage fluid, pleural fluid, or lung tissue.

Asymptomatic Individual: Someone who has tested positive for COVID-19 but who is not showing any observed symptoms of the disease.

Close Contact: Generally defined as being within 6 feet for a cumulative total of 15 minutes or more over a 24-hour period* starting from 2 days before illness onset (or, for asymptomatic patients, 2 days prior to test specimen collection date) until the time the patient is isolated.
* Individual exposures added together over a 24-hour period (e.g., three 5-minute exposures for a total of 15 minutes). Data are limited, making it difficult to precisely define "close contact;" however, 15 cumulative minutes of exposure at a distance of 6 feet or less can be used as an operational definition for contact investigation. Factors to consider when defining close contact include proximity (closer distance likely increases exposure risk), the duration of exposure (longer exposure time likely increases exposure risk), whether the infected individual has symptoms (the period around onset of symptoms is associated with the highest levels of viral shedding), if the infected person was likely to generate respiratory aerosols (e.g., was coughing, singing, shouting), and other environmental factors (crowding, adequacy of ventilation, whether exposure was indoors or outdoors). Because the general public has not received training on proper selection and use of respiratory PPE, such as an N95, the determination of close contact should generally be made irrespective of whether the contact was wearing respiratory PPE. At this time, differential determination of close contact for those using fabric face coverings is not recommended.

> NOTE: On August 3, 2021, CDC updated close contact definition exclusively in K-12 indoor classroom settings to exclude students who were within 3-6 feet of an infected student if both the infected student and the exposed student(s) correctly and consistently wore well-fitting masks the entire time. This exception does not apply to teachers, staff, or other adults in the indoor classroom setting.

Congregate Living Setting: A setting where multiple unrelated people reside, such as a long-term care facility, nursing home, assisted living facility, residential settings, prison, etc.

Symptom-Based Strategy Criteria for Discontinuation of Isolation: Discontinuation of isolation should occur in accordance with guidelines provided by CDC and using the symptom-based strategy as explained below. A test-based strategy is no longer recommended and should only be used in limited situations because, in most cases, it results in excluding individuals from work who continue to shed detectable SARS-CoV-2 RNA but are no longer infectious.
For symptomatic cases: At least 10 days have passed since symptoms first appeared **and** at least 24 hours have passed since the last fever without the use of fever-reducing medication **and** symptoms have improved.*

For persons with severe to critical illness or who are immunocompromised, the duration of isolation should be extended for up to a total of 20 days following the onset of symptoms.

*Loss of taste and smell may persist for weeks or months after recovery and need not delay the end of isolation.
For asymptomatic cases: Asymptomatic cases can be released from isolation 10 days after their specimen collection date provided the case-patient does not develop symptoms during the isolation period.

If during the isolation period, the case-patient develops symptoms, they should be reassessed, and the symptom-based strategy (see above) should be used to release them from isolation.

Epidemiologic Linkage: One or more of the following exposures in the 14 days before onset of symptoms:

- Close contact with a confirmed or probable case of COVID-19 disease, OR
- Member of an exposed risk cohort as defined by public health authorities during an outbreak or during high community transmission

Fully Vaccinated Person: A U.S. resident who is ≥2 weeks following receipt of the second dose in a 2-dose series, or ≥2 weeks following receipt of one dose of a single-dose vaccine.

Isolation: Separation of ill persons who have a communicable disease from those who are healthy.

Multi-System Inflammatory Syndrome in Children (MIS-C):

An individual aged <21 years presenting with fever (≥ 100 ◦F for ≥ 24 hours, or report of subjective fever lasting ≥ 24 hours), laboratory evidence of inflammation (including, but not limited to one or more; an elevated C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), fibrinogen, procalcitonin, d-dimer, ferritin, lactic acid dehydrogenase (LDH), or interleukin 6 (IL-6), elevated neutrophils, reduced lymphocytes and low albumin), and evidence of clinically severe illness requiring hospitalization, with multisystem (≥2) organ involvement (cardiac, renal, respiratory, hematologic, gastrointestinal, dermatological, or neurological);

AND

No alternative plausible diagnoses;

AND

Positive for current or recent SARS-CoV-2 infection by RT-PCR, serology, or antigen test; or COVID-19 exposure within the 4 weeks prior to the onset of symptoms.

Consider MIS-C in any pediatric death with evidence of SARS-CoV-2 infection. Some individuals may fulfill full or partial criteria for Kawasaki disease but should be reported if they meet the case definition for MIS-C.

Note: Refer to the Multisystem Inflammatory Syndrome in Children (MIS-C) Surveillance and Investigation Protocol for more details regarding MIS-C investigation and surveillance.

Personal Protective Equipment (PPE): specialized clothing or equipment worn for protection against infectious materials (ex. Masks, gloves, gowns, eye protection, and respiratory protection)

Quarantine: Separation and restriction of the movement of well persons who may have been exposed to a communicable disease while monitoring for development of symptoms.

Recovery: For COVID-19, recovery will reflect the case-patient's end of isolation date for all case-patients that are not reported as COVID-19 associated deaths or lost to follow-up. See "Symptom-Based Strategy Criteria for Discontinuation of Isolation" above for details.

Reinfection: Person was most recently enumerated as a confirmed or probable case with onset date (if available) or first positive specimen collection date for that classification >90 days prior.

Symptomatic Individual: Someone who has contracted the virus and has symptoms of COVID-19.

Vaccine Breakthrough Case (VBC): A U.S. resident who has SARS-CoV-2 RNA or antigen detected on a respiratory specimen collected ≥14 days after completing the primary series (one dose of a single dose vaccine or both doses of a two-dose series) of an FDA-authorized COVID-19 vaccine.

Variant: A variant of the SARS-CoV-2 virus has one or more mutations that differentiate it from other variants in circulation. These mutations may change properties about the virus such as transmissibility, disease severity, efficacy of treatments, ability of diagnostic tests to detect virus, ability of virus to avoid immunity from prior vaccination or infection. The CDC classifies the potential impact of variants as Variants of Interest, Variants of Concern, or Variants of High Consequence.

Laboratory Analysis

Types of SARS-CoV-2 Testing

Molecular tests (i.e., nucleic acid, reverse transcription polymerase chain reaction (RT-PCR), isothermal) are recommended to diagnose acute COVID-19 infections in symptomatic and asymptomatic individuals and to guide public health and clinical management.

- Considered highly accurate and usually do not need to be repeated.
- RT-PCR (a nucleic acid test typically conducted in certified laboratories) is considered the gold standard.
- These tests are classified as "viral tests" by the CDC and as "diagnostic tests" by the FDA.
- These tests detect components of the SARS-CoV-2 virus in respiratory specimens. Molecular tests make copies of the virus's RNA and detect it.
- Some of these viral tests are rapid and can be performed in point-of-care settings, while others must be performed in a clinical laboratory and may take days for results.

Antigen tests are also recommended to diagnose acute COVID-19 infections in symptomatic and asymptomatic individuals (who have been exposed) and to guide public health and clinical management.

- Have lower sensitivity but comparable specificity to molecular tests, meaning they are more likely to produce false negative results but not likely to produce false positive results.
- Specimens collected more than 5-7 days after symptom onset may have too little antigen remaining to be detectable and result in a false negative.
- These tests are classified as "viral tests" by the CDC and as "diagnostic tests" by the FDA.

- These tests detect components of the SARS-CoV-2 virus in respiratory specimens. Antigen tests detect proteins on the virus's outer surface.
- Many of these viral tests are rapid and can be performed in point-of-care settings.
- Currently, the antigen tests authorized by the FDA are only authorized for use on symptomatic individuals within 5-7 days of symptom onset or those otherwise suspected of having COVID-19 (known exposure, working in a high-risk environment).

Serologic or antibody tests are not recommended by CDC or authorized by FDA to diagnose acute SARS-CoV-2 infection.

- Antibody tests that are currently available vary in terms of sensitivity and specificity and must be interpreted with local SARS-CoV-2 prevalence in mind.
- These tests detect antibodies in blood or saliva that bind to SARS-CoV-2 virus and suggest a previous infection.
- Some COVID-19 cases do not develop a detectable antibody response to SARS-CoV-2. For those who do develop an antibody response, it typically becomes detectable 2-3 weeks after illness onset. However, it is not known how long the antibodies remain or whether they confer protection against future SARS-CoV-2 infections.
- There are no known advantages as to whether a test looks for IgM, IgG, or total antibody. Testing for IgA is not recommended.
- Because the immune response to SARS-CoV-2 is not fully understood yet, it is not advised to make public health decisions (e.g. cohorting of patients, use of PPE, isolation or quarantine decisions) based on serologic testing alone.
- Serologic tests may be used when a person is suspected of having a post-infectious syndrome such as MIS-C.
- Serologic tests are useful in surveillance and public health studies that are investigating disease transmission dynamics in communities (i.e. seroprevalence studies).

Viral culture is only conducted by the CDC and select institutions with appropriate capacity at this time.

Understanding and Responding to SARS-CoV-2 Tests

Several variables need to be considered when conducting and interpreting SARS-CoV-2 testing.

- Instructions for test use (what patients can be tested and in what settings, how specimens should be collected and handled) and whether they were followed in the testing process.
- Sensitivity: Percentage of infected patients for which the test provides a positive result.
- Specificity: Percentage of non-infected patients for which the test provides a negative result.
- Predictive value: The probability that a test result (positive or negative) is truly that result. This value depends on the sensitivity and specificity of a test, as well as local disease prevalence.
- Pre-test probability: The probability the patient is infected before the test result is known.
    - This variable considers the local prevalence of SARS-CoV-2 and the patient's clinical presentation.
    - If pre-test probability is low, there is an increased likelihood of obtaining a false positive result.
    - If pre-test probability is high, there is an increased likelihood of obtaining a false negative result.
- Whether the patient has been exposed to SARS-CoV-2 and how long-ago exposure occurred.

Responding to a Positive SARS-CoV-2 Test Result

Molecular tests

- If this is the case-patient's first positive molecular test result, the case will be classified as confirmed (see COVID-19 Surveillance Case Definition in Appendix A-1) and the case-patient requires immediate isolation and investigation.
- If the case-patient was previously identified as a confirmed case <90 days ago and is currently asymptomatic, the new molecular test result is likely due to persistent viral shedding. No follow-up is required.
- If the case-patient was previously identified as a confirmed case <90 days ago, but ≥45 days from initial infection, and is currently symptomatic, the new molecular test result may indicate a new infection. The case-patient should be isolated and further investigated to determine the best public health actions on a case by case basis.
- If the case-patient was previously identified as a confirmed case ≥90 days ago, the case-patient should be considered a SARS-CoV-2 reinfection case. The case-patient requires isolation and a new case investigation should be immediately initiated.

Antigen tests

- If the case-patient has a positive antigen test result (regardless of clinical or epidemiologic criteria), the case will be classified as probable (see COVID-19 Surveillance Case Definition in Appendix A-1) and the case-patient requires immediate isolation and investigation.
- A subsequent positive molecular test result makes the case a confirmed case.
- A subsequent negative molecular test result must be interpreted carefully, and several factors must be considered. See the "Antigen Test Result Interpretation and Public Health Action" section below and Appendix A-2 for guidance.

Antibody tests

- If the case-patient has never been identified as a confirmed or probable case, a positive antibody test result will be classified as a suspect case of COVID-19.
- LHDs may choose to conduct a case investigation if they have the capacity to do so but are not required to do so.
- If the case has additional laboratory (antigen or molecular), clinical, or epidemiological evidence of COVID-19 that would meet probable or confirmed case classification, the case should be investigated as such.
- The results of antibody tests should not be used to advise public health decisions.

Responding to a Negative SARS-CoV-2 Test Result

1. If the case-patient has been exposed and is under quarantine, they must remain in quarantine for the full 14 days regardless of negative test results.
2. If it has been <5 days after a known exposure, it is possible that the virus is not at a detectable level yet. Consider re-testing 5-7 days after the exposure or earlier if symptoms develop.
3. If the case-patient is symptomatic and tested negative via antigen test, the case-patient should be re-tested by RT-PCR within 48 hours of their original specimen collection. If the case-patient is not already under isolation, they should be isolated until the RT-PCR test is complete and further isolation recommendations can be informed.
4. If the case-patient is symptomatic and tested negative via an antibody test, a viral test is required to rule-out COVID-19.

Antigen Test Result Interpretation and Public Health Action

The availability and use of point of care (POC) antigen tests to detect SARS-CoV-2 is increasing across West Virginia. The main advantage of using these antigen tests is the rapid turnaround time for results; however, these tests are not as sensitive as molecular tests (i.e. PCR). The results of POC antigen tests are impacted by pretest probability (i.e., the probability of a person having an infection before the test result is known) and need to be carefully interpreted. POC antigen tests are most appropriately indicated for testing individuals who are suspected of having COVID-19 or individuals who have been exposed to COVID-19 either individually (e.g., household or close contact) or as part of an outbreak/cluster. Symptomatic individuals should be tested during the early stages of infection with SARS-CoV-2 (i.e., typically within the first 5-7 days of symptom onset). Using antigen tests in symptomatic and exposed individuals correlates with a high pre-test probability which increases the likelihood of true positives but also increases the likelihood of false negatives. For this reason, additional molecular testing should be considered for symptomatic or exposed individuals who test negative using antigen tests.

While these tests can be performed on individuals who are asymptomatic or who have not been exposed, this can present challenges for test interpretation and public health action. Use of antigen tests in asymptomatic and not exposed individuals correlates with a low pre-test probability which increases the likelihood for false positives. For this reason, additional molecular testing should be considered in patients with a positive POC antigen result who are asymptomatic and have not been exposed. **See Appendix A-2 for antigen test interpretation for asymptomatic and/or not exposed individuals.**

Testing of asymptomatic and/or not exposed individuals using antigen tests should be reserved for congregate living settings (i.e. nursing homes, correctional facilities, residential settings, and shelters), where early identification of COVID-19 introduction into these settings could limit further transmission. Separate guidance (HAN 171) regarding the use of antigen testing in long-term care facilities is available and should be used to guide actions in those settings.

State Laboratory Testing

Approval for COVID-19 testing by the West Virginia Department of Health and Human Resources (DHHR), Bureau for Public Health, Office of Laboratory Services (OLS) should be obtained before submitting specimens by calling DHHR's Bureau for Public Health (BPH), Office of Epidemiology and Prevention Services (OEPS), Division of Infectious Disease Epidemiology (DIDE) at: (304) 558-5358, extension 1. Alternatively, health care providers can request OLS testing for COVID-19 for patients who meet public health testing criteria by using the online form available from COVID-19 Testing Criteria Portal. Requests for OLS COVID-19 testing will be authorized or denied within minutes once providers answer specific questions regarding the patient's public health testing criteria.

If OLS testing is approved, the provider will complete information online for the patient and the provider, and then an authorization number will be provided on the following page, as well as instructions on specimen collection/submission, and a button that provides the COVID-19 specimen form. The provided authorization number **must** be included on the COVID-19 specimen submission form. This form is required to be submitted with the specimen for OLS testing.

Criteria for State Laboratory Testing

Patients involved in an outbreak or in a congregate setting. All suspected and confirmed outbreaks are immediately reportable to the LHD.

OR

Individuals with or without COVID-19 symptoms who are close contacts of cases of COVID-19. Asymptomatic close contacts should be tested no sooner than 5 days after initial exposure.

Other individuals who will be considered for prioritized testing by OLS to protect the health and safety of others include:

Individuals with or without COVID-19 symptoms in any of the following groups:

1. Health care workers;
2. Patients in public safety occupations (law enforcement, fire prevention, EMS, etc.);
3. Hospitalized patients;
4. Persons otherwise at highest risk of poor health outcomes, includes any of the following:
   - Persons over the age of 60
   - Persons with certain serious underlying medical conditions* or who are immunocompromised† and pregnant women.

*People of any age with the following underlying medical conditions are at increased risk of severe illness from COVID-19: cancer, chronic kidney disease, COPD (chronic obstructive pulmonary disease), immunocompromised state, obesity (body mass index of 30 or higher), serious heart conditions such as heart failure, coronary artery disease or cardiomyopathies, sickle cell disease, and Type 2 diabetes mellitus.† Many conditions can cause a person to be immunocompromised, including cancer treatment, bone marrow or organ transplantation, immune deficiencies, poorly controlled HIV or AIDS, and prolonged use of corticosteroids and other immune weakening medications.

Specimen Collection and Shipping Instructions

Specimen collection guidance and the specimen submission form can be found at www.coronavirus.wv.gov. Please follow the specimen collection and submission guidance to prevent any delays or other issues.

Disease Overview

Agent: SARS-CoV-2, a novel coronavirus identified in 2019 which causes the respiratory disease COVID-19 (Coronavirus Disease 2019).

Clinical Description: Patients infected with SARS-CoV-2 develop COVID-19. Although asymptomatic infections are common, patients with COVID-19 have reported mild to severe respiratory illness. Common symptoms include fever, cough, shortness of breath and new loss of taste or smell. Severe disease may progress to pneumonia and acute respiratory distress, blood clotting, heart and kidney injury, and death. This organ damage may contribute to post-COVID conditions such as “Long-haul COVID”. Refer to CDC for information on additional symptoms and further details on clinical course.

Reservoir(s): SARS-CoV-2 likely came from an animal source. More information is needed to identify the possible role that bats and other animals may play in transmission to humans.

Mode(s) of Transmission: The principal mode by which people are infected with SARS-CoV-2 is through exposure to respiratory fluids carrying infectious virus. Exposure occurs in three principal ways: (1) inhalation of very fine respiratory droplets and aerosol particles. These droplets and particles of the virus linger in the air. This can occur when an individual is more than 6 feet away from the person infected or after that person has left the space. (2) Deposition of respiratory droplets and particles on exposed mucous membranes in the mouth, nose, or eye by direct splashes and sprays. Close contact (within 6 feet for a cumulative total of 15 minutes or more over a 24-hour period) with an infected person can cause exposure through respiratory droplets produced when an infected person coughs, sneezes, sings, talks, or breathes. And (3) Less commonly, exposure can occur through touching mucous membranes with hands that have been soiled either directly by virus-containing respiratory fluids or indirectly by touching surfaces with virus on them. SARS-CoV-2 is rarely spread between people and animals and the risk is considered to be low.

Incubation Period: The period of time between when a person is exposed to an infectious agent and when they can start to show symptoms of the infection. For COVID-19, symptoms usually appear 2-14 days (median time of 4-5 days) after exposure.

Period of Communicability/Infectious Period: Period of time when an infected person can transmit or spread the infection to other people. Persons who develop symptoms are more infectious than persons who do not develop symptoms; however, asymptomatic cases are also infectious and can spread the virus to others. Evidence does show that people are most infectious 1-2 days before symptom onset.

For investigation purposes:

- Symptomatic persons are considered infectious 2 days prior to onset of any symptoms (including fever) until the following conditions are met:
    - 10 days (up to 20 days for persons with severe illness or those who are immunocompromised) have passed since the onset of symptoms, **and**
    - 24 hours have passed since the fever has resolved (without use of antipyretic medication), **and**
    - There has been a significant improvement in symptoms.
- Persons never experiencing symptoms will be considered potentially infectious 2 days prior to their specimen collection date until 10 days after the specimen collection date.
- Asymptomatic persons who were previously diagnosed with COVID-19 and determined to no longer be infectious by the above criteria within the previous 3 months should not be considered infectious again, based on their history of COVID-19.

Susceptibility and Resistance: Active immunity to SARS-CoV-2 is developed through prior infection with the virus or vaccination. The persistence of this immunity is still under investigation. Rates of antibody positivity have been shown to be high at 8 months after infection, even in asymptomatic or mildly symptomatic participants (69.0%–91.4%). A recent study of Kentucky residents with previous infections through June 2021 found that those who were unvaccinated had 2.34 times the odds of reinfection compared with those who were fully vaccinated. The findings suggest that among people who have had COVID-19 previously, getting fully vaccinated provides additional protection against reinfection. Immunity after vaccination takes 2 weeks to reach maximum efficacy. The length of time that immunity last after vaccination is still under investigation but the FDA has only approved 3rd doses for immunocompromised individuals.

Treatment: For information on investigational and developing therapies refer to CDC.

Notification of Test Results to Public Health

1. OEPS will receive electronic laboratory reports (ELR) from OLS, ordering providers, and commercial laboratories into the West Virginia Electronic Disease Surveillance System (WVEDSS).
2. ChexOut is a cloud-based platform that will be used for case investigation and contact tracing for COVID-19 only.
3. ELRs will be transferred electronically from WVEDSS into ChexOut every two hours from 6am – 6pm daily.
4. Initiation of cases from ELRs will occur at the state level automatically or by dedicated case assigners. Cases will be assigned to the identified LHD primary contact.
5. Case jurisdiction will be assigned based on the case-patient's residence. Residence will be determined by the address listed on the ELR or the address of the ordering facility when patient address is not provided.
    - Usual residence is defined as the place where the person lives and sleeps most of the time or the place where they became infected with a notifiable disease.
    - For college/university students, the county of jurisdiction should be where the student remains most of the year.
6. When a record needs to be assigned to another local public health jurisdiction, the LHD case investigator should follow the instructions in the ChexOut Job Aid.
7. If a laboratory report is received by fax and is not received electronically by BPH within 2 hours of receipt, OEPS via ChexOut, the LHD case investigator can follow the instructions in the ChexOut Job Aid for manual data entry.

Case Investigation and Control Methods

Confidentiality and Voluntary Nature of Case Investigation and Contract Tracing

All aspects of case investigation and contact tracing must be voluntary, confidential, and culturally appropriate.

Minimum professional standards for handling confidential information should include providing employees with appropriate information and/or training regarding confidential guidelines and legal regulations. All public health staff involved in case investigation and contact tracing activities with access to such information should sign a confidentiality statement acknowledging the legal requirements not to disclose COVID-19 information. Efforts to locate and communicate with clients and close contacts must be carried out in a manner that preserves the confidentiality and privacy of all involved. This includes never revealing the name of the client to a close contact unless permission has been given (preferably in writing), and not giving confidential information to third parties (e.g., roommates, neighbors, family members).

Maintaining confidentiality during COVID-19 case investigations and contact tracing can be particularly difficult in congregate settings. Prior discussions with the client can generate solutions for safeguarding confidentiality. Onsite administrators/employers who know confidential information regarding a client or contacts can be asked to respect confidentiality, even if they are not legally bound to do so.

All personal information regarding any COVID-19 clients and contacts should be afforded the same protections, including all patient records. Data and security protocols should be in place for password-protected computer access, as well as locked, confidential storage cabinets and proper shredding and disposal of notes and other paper records. Protocols should include instructions for the protection of confidential data and confidential conversations in a working-from-home setting (e.g., make telephone or video-conferencing calls from a private room to avoid the conversation being overheard). Approaches to ensuring confidentiality and data security should also be included in training of staff.

Modified Case Investigation and Management:

As COVID-19 case volume increases and LHD resources are challenged with meeting all the demands presented by the COVID-19 pandemic, it has become important to reevaluate the case investigation procedures and expectations to refocus primary efforts. In addition to the modified case investigation and management outline below, **Minimum Data Elements for Reporting COVID-19 in ChexOut** (Appendix C-3) have been developed and recommended for use by LHDs to help streamline COVID-19 case investigation.

1. Case investigation should be initiated within 24 hours of receipt of the laboratory report to ensure the case-patient is isolated, to complete the 2019 Novel Coronavirus (COVID-19) Case Report Form (recommend direct data entry into ChexOut to maximize use of the system), and to identify close contacts that will require follow-up.
    - At least three attempts should be made to contact the case-patient via phone, each on different days and different times.
    - A certified letter should also be mailed to the case-patient in certain circumstances. For example, if the phone number is disconnected or otherwise unreachable, if there is not option to leave a voicemail, or if there is not a phone number for the case-patient.
    - All attempts to contact the case-patient must be clearly documented in the case investigation in ChexOut. Case investigators are strongly encouraged to use Ring Central for all communications to ensure time and date of attempted contacts are documented automatically in ChexOut. ChexOut has an automated text, email and phone feature that can be used to make these contacts and to facilitate mailing of the certified letter. Instructions can be found in the ChexOut Job Aid.
    - If a case-patient is unable to be reached after at least three telephone attempts and, if warranted, a certified letter, the case investigation may be ascertained based on the information available and submitted for review as lost to follow-up (LTFU). Case investigations will not be approved as LTFU without the appropriate contact attempts documented.
    - If the case-patient is hospitalized, the infection preventionist (IP) or floor nurse may be able to assist with the completion of the case investigation.
    - If public health personnel must interview a case in person or in a home, PPE, including a gown, gloves, eye protection (e.g., goggles or a disposable face shield that covers the front and sides of the face) and respiratory protection that is at least as protective as NIOSH approved N95 must be worn. Appropriate social distancing of 6 feet should be maintained. A filtering facepiece respirator must be worn at all times during contact with the patient.
2. Institute isolation measures as recommended by most current guidance.
    - For hospitalized patients, Standard and Transmission-Based Precautions.
    - For non-hospitalized patients, ensure proper care and resources are available.
        - Caring for COVID-19 Patients at Home
        - Pets at Home: Managing COVID-19 Pet Owners in Home Isolation

- For asymptomatic patients who test positive, the date of specimen collection will be the date used to determine isolation measures.

3. Coordinate activities related to isolation with outside facilities.
   - Work with medical providers to collaboratively follow patients in isolation.
   - Support referral to services for those who may need treatment and care.
   - Work with facilities and organizations collaboratively to obtain names of individuals potentially exposed and ensure proper notification of public health officials.
4. Use the 2019 Novel Coronavirus (COVID-19) Case Report Form to guide the interview with the case-patient.
5. Use the Minimum Data Elements for Reporting COVID-19 in ChexOut to guide data entry into ChexOut.
6. Collect and document information on the case-patient's occupation and activities during their infectious period. Remember that asking "Who?", "What?", "When?", and "Where?" regarding potential exposures can help you gather a more complete description of the case-patient's history during their infectious period. For example: "**What** was the event?", "**Who** were the attendees at the event?", "**Where** was the event held/located?", and "**When** was the event (date/time)?". Obtaining information that the case-patient can recall could help guide public health action to prevent transmission.
   - For asymptomatic case-patients who never experienced symptoms, investigate and consider the potential infectious period as two days after a known exposure to COVID-19 or, without known exposure, two days prior to positive specimen collection.
   - For case-patients with no known exposure, interview the case-patient about activities 14 days prior to symptom onset (or prior to positive collection date for asymptomatic cases).
   - Cases determined to be associated with a high-risk setting (e.g., working or residing in a long-term care facility, nursing home, assisted living facility, group home, prison, childcare facility, etc.) may require further action if determined to meet outbreak criteria. For a list of outbreak toolkits, visit: OEPS Toolkits.
7. Obtain a list of all close contacts by completing the COVID-19 Contact Line List with information that the case-patient can provide for each close contact. This might only be a name, phone number, and date of last exposure but if the case-patient is able to provide a date of birth or address that is helpful to collect.
   - For COVID-19, a close contact is generally defined as any individual who was within 6 feet of an infected person for a cumulative total of 15 minutes or more over a 24-hour period starting from 2 days before illness onset (or, for asymptomatic patients, 2 days prior to positive specimen collection) until the time the patient is isolated.
     - This also includes:
       - A person living in the same household as a COVID-19 case.
       - An intimate partner.
       - An individual providing direct care in a household without using recommended infection control precautions.
       - A person having had direct physical contact with a COVID-19 case (e.g., shaking hands).
       - A person having unprotected direct contact with infectious secretions of a COVID-19 case (e.g., being coughed on, touching used paper tissues with a bare hand).
       - A person having had face-to-face contact with a COVID-19 case within 6 feet and for longer than 15 minutes (consecutive or cumulative).
       - A person who was in a closed environment (e.g., classroom, meeting room, hospital waiting room, etc.) with a COVID-19 case for 15 minutes or more and at a distance of less than 6 feet.

        - A healthcare worker or other person providing direct care for a COVID-19 case, or laboratory workers handling specimens from a COVID-19 case without recommended PPE or with a possible breach of PPE.
        - A contact in an aircraft sitting within two seats (in any direction) of the COVID-19 case, travel companions or persons providing care, and crew members serving in the section of the aircraft where the index case was seated. If severity of symptoms or movement of the case indicates more extensive exposure, passengers seated in the entire section or all passengers on the aircraft may be considered close contacts.
8. The public health evaluation of close contacts to patients with confirmed or probable COVID-19 may vary depending on the exposure setting. Contacts in special populations and/or congregate settings require additional considerations and may need handoff to a senior health department investigator or special team.
9. Review COVID-19 education with case:
    - COVID-19 is a contagious disease that is spread primarily through respiratory droplets. It is usually a short-term illness that causes you to be sick for a few days to weeks. However, in some persons, COVID-19 can be very serious and can cause pneumonia and death.
    - COVID-19 is usually spread person-to-person when you ingest or inhale the virus through respiratory droplets in the air or from contaminated objects/surfaces you touch. COVID-19 can also spread from close contact with an infected person or caring for someone who is ill.
    - Cases can prevent others from getting sick by staying home (except to get medical care), avoiding public areas and transportation, staying away from others, limiting contact with pets and animals, wearing a facemask, covering their coughs and sneezes, cleaning their hands often, avoiding sharing household items (wash thoroughly after use), and cleaning all “high touch” surfaces every day.
    - Provide CDC’s fact sheet “Steps to help prevent the spread of COVID-19 if you are sick”: https://www.cdc.gov/coronavirus/2019-ncov/downloads/sick-with-2019-nCoV-fact-sheet.pdf.
10. Investigate epidemiologic links among cases (clusters, household, co-workers, etc.).
    - Unreported, highly suspected patients or exposed symptomatic contacts should be investigated as a probable case and referred for COVID-19 PCR testing.
    - When identified, link new cases/contacts exposed to a previously reported case-patient by following the instructions in the ChexOut Job Aid.
11. Provide a release from isolation date to the case-patient. Discontinuation of isolation should occur in accordance with guidelines provided by CDC and using the symptom-based strategy (see definition).
12. Consideration for health care workers:
    - Return to work for health care workers who are COVID-19 positive should be based on the same criteria as described above for release from isolation for community cases. However, health care workers should wear a mask at work until complete resolution of their signs and symptoms and should self-monitor for any recurrence of signs of illness. A face mask instead of a cloth face covering should be used by these health care workers for source control during this time period while in the facility. After this time period, these health care workers should revert to their facility policy regarding universal source control during the pandemic. https://www.cdc.gov/coronavirus/2019-ncov/hcp/return-to-work.html.
    - In some instances, a test-based strategy could be considered to allow HCP to return to work earlier than if the symptom-based strategy can be considered for HCP who are severely immunocompromised if concerns for the HCP being infectious for more than 20 days.
    - The Criteria for the test-based strategy are:
        - HCP who are symptomatic:

        - Resolution of fever without the use of fever-reducing medications **and** improvement in symptoms **and** results are negative from at least two consecutive respiratory specimens collected ≥24 hours apart, tested using an FDA-authorized molecular viral assay to detect SARS-CoV-2 RNA.
    - HCP who are not symptomatic:
        - Results are negative from at least two consecutive respiratory specimens collected ≥24 hours, tested using an FDA-authorized molecular viral assay to detect SARS-CoV-2 RNA.

Modified Contact Tracing and Management

As COVID-19 case volume increases and LHD resources are challenged with meeting all the demands presented by the COVID-19 pandemic it has become important to reevaluate the contact tracing procedures and expectations to refocus primary efforts. Close contacts will continue to be traced, notified, and educated; however, LHDs will no longer be required to perform daily monitoring of close contacts. LHDs who must prioritize their current capacity should follow the below modified contact tracing and management outline.

- Contact tracing should be conducted for close contacts of confirmed and probable COVID-19 case-patients.
- Contact tracing staff should make initial contact immediately upon notification to assess the health status of the contact, offer locally available testing opportunities, and provide education about COVID-19, self-quarantine, and self-monitoring.
    - Initial communication with identified contacts should occur within 72 hours of receipt of laboratory report of the associated case-patient.
    - To ensure confidentiality of both the case-patient and the contact, the following guidelines must be followed:
        - Verify the identification of the contact by asking them to provide their full name, date of birth and phone number.
        - The name of the COVID-19 case-patient should not be disclosed to the contact.
    - At least three attempts should be made to contact the individual, each on different days and different times. A certified letter can be sent if the address is the only contact information known or if the phone number provided does not work or have an option to leave a voicemail and the address is known.
        - Documentation of at least three attempts is required to submit as LTFU.
    - Contact tracers are strongly encouraged to use Ring Central for all communications to ensure time and date of attempted contacts are documented automatically in ChexOut. ChexOut has an automated text, email and phone feature that can be used to make these contactsInstructions can be found in the ChexOut Job Aid.
- Provide COVID-19 education to the contact:
    - COVID-19 is a contagious disease that is spread primarily through respiratory droplets. It is usually a short-term illness that causes you to be sick for a few days to weeks. However, in some persons, COVID-19 can be very serious and can cause pneumonia and death.
    - COVID-19 is usually spread person-to-person when you ingest or inhale the virus through respiratory droplets in the air or from contaminated objects/surfaces you touch. COVID-19 can also spread from close contact with an infected person or caring for someone who is ill.

- Contacts can prevent others from getting sick by staying home (except to get medical care), avoiding public areas and transportation, staying away from others, limiting contact with pets and animals, wearing a facemask, covering their coughs and sneezes, cleaning their hands often, avoiding sharing household items (wash thoroughly after use), and cleaning all "high touch" surfaces every day.
- Provide CDC's fact sheet "Steps to help prevent the spread of COVID-19 if you are sick": https://www.cdc.gov/coronavirus/2019-ncov/downloads/sick-with-2019-nCoV-fact-sheet.pdf.

- All close contacts, except for fully vaccinated persons (see section on Interim Recommendations for Fully Vaccinated), should always be asked to self-quarantine starting from their last potential exposure to an infectious case (day 0) and maintain social distance (at least 6 feet) from others. Appendix C-6 outlines the quarantine options which can be used in accordance with the CDC's quarantine guidance. **Note: A 14-day quarantine period is the gold standard and contacts who can maintain a 14-day quarantine should do so.**

All close contacts should always be asked to monitor themselves daily for symptoms and contact their LHD immediately if symptoms develop.

- Educate the contact about COVID-19 symptoms they should monitor for:
  - Nasal congestion or runny nose
  - Fever (measured or subjective) (felt feverish)
  - Difficulty breathing
  - Muscle aches (myalgia)
  - Nausea or vomiting
  - Chest pain or pressure
  - Sore throat
  - Diarrhea (>3 loose/looser than normal stools /24 hr period)
  - Rigors
  - Shortness of breath (dyspnea)
  - Loss of sense of smell (olfactory disorder)
  - Fatigue
  - Cough (new onset or worsening of chronic cough)
  - Chills
  - Headache
  - Loss of sense of taste
  - Confusion of change in mental status
  - Pale, gray, or blue-colored skin, lips, or nail beds, depending on skin tone
  - Inability to wake or stay awake

- Provide the contact with the phone number for their LHD and the point of contact if one has been identified for that LHD.
- Educate the contact that if they develop any symptoms of COVID-19 it is very important that they notify their LHD immediately as this will impact the recommendations for the contact's safe release from self-isolation. It will also become important for the LHD to conduct a public health investigation to prevent additional transmission of COVID-19.

- For contacts that do not report symptoms:
  - Provide information on local testing opportunities. It is recommended that testing be performed at least 5 days after last exposure for asymptomatic contacts. The last potential exposure would initially be determined by the case investigator.
  - Educate the contact what to do while waiting on COVID 19 results (self-quarantine and maintain social distance).

    - Educate the contact about the different quarantine options and provide clear guidance which explains the date which they can be released from self-quarantine, providing no subsequent illness occurs.
- For contacts that report symptoms:
    - Those with symptoms meeting the COVID-19 clinical criteria (see COVID-19 Surveillance Case Definition in Appendix A-1) should be investigated as a probable case.
    - If medical evaluation is needed, refer to appropriate medical care. Pre-notification should occur to the receiving health care facility and EMS (if EMS transport is indicated) with all recommended Infection Control Precautions in place. Testing for COVID-19 should be considered as part of the evaluation.
    - If symptoms are mild and medical care is not needed, the person should remain in self-isolation until no longer considered infectious (refer to the symptom-based strategy for release from isolation on page 6).
    - Provide information on local testing opportunities or coordinate with the LHD to facilitate testing as soon as possible.
    - Educate the contact what to do while waiting on COVID-19 results (self-isolate and maintain social distance).
    - Create a new case investigation in ChexOut from the contact record and refer to the LHD/case investigator for investigation.
- For contacts that have previously been diagnosed with COVID-19 either by (1) a positive RT-PCR test for COVID-19 RNA within the last 90 days or (2) a health care provider based on their symptoms, and 90 days or less have passed since their symptoms began:
    - Those with no current symptoms of COVID-19 do not have to quarantine, and retesting is not recommended.
    - Those with symptoms should self-isolate immediately for 10 days and consult with a medical provider to determine if they may have been re-infected with COVID-19 or if symptoms are caused by another etiology.
- Considerations for individuals who need to work:
    - Critical infrastructure workers who may have had an exposure with a person with COVD-19 may be permitted to continue working following potential exposures, provided they remain asymptomatic and additional precautions are implemented to protect them and the community. This includes wearing a cloth face covering for source control for 14 days after the exposure.

Asymptomatic health care workers who may have had an exposure to a person with COVD-19 may be permitted to continue working following potential exposures in crisis staffing shortages, provided they remain asymptomatic and additional precautions are implemented to protect them and the community. This includes wearing a face mask instead of a cloth face covering for source control for 14 days after the exposure and reporting temperature and absence of symptoms daily before starting work.

Prioritizing Case Investigations and Contact Tracing for LHD in Crisis Situations

Case investigation and contact tracing are an essential part of the COVID-19 response in West Virginia. Prompt isolation of individuals diagnosed with COVID-19, and identification and quarantine of close contacts, can effectively interrupt disease transmission and reduce spread of SARS-CoV-2. The CDC and DHHR recognizes that as COVID-19 cases surge they strain resources, and LHD may need to prioritize case investigation and contact tracing. LHD should assess their capacity in terms of prioritizing case and contact investigations when cases surge in their community. As vaccination

rates increase and cases decrease, contact tracing all cases will be critical in stopping transmission of COVID-19.

Case investigation and contact tracing prioritization steps:

1. LHD are encouraged to implement the Modified Contact Tracing Protocol outlined above. In this protocol close contacts will continue to be traced, notified and educated; however, LHDs will no longer be required to perform daily monitoring of close contacts.
2. LHD who are experiencing a surge or in crisis situations should prioritize case investigation interviews of people who tested positive for or were diagnosed with COVID-19 in the past 6 days based on specimen collection date. They should focus contact tracing efforts on:
   - Household contacts exposed in the past 6 days, and
   - People living, working, or visiting congregate living facilities, high density workplaces or settings (or events) with the potential for disease propagation.
3. For cases that fall beyond 6 days (based on specimen collection date) that cannot be contacted, complete the following:

   • Go to Note & Attachments section of the case investigation
   • Click "+ New Note/File"
   • Enter in Subject line: No public health action or No PHA
   • Enter in Message line: Reason why no public health action was taken (e.g. beyond 6 days from specimen collection, etc.).

Vaccine Breakthrough Case (VBC) Surveillance

A VBC is defined as a U.S. resident who has SARS-CoV-2 RNA or antigen detected on a respiratory specimen collected ≥14 days after completing the primary series (one dose of a single dose vaccine or both doses of a two-dose series) of an FDA-authorized COVID-19 vaccine.

A case will be excluded from further investigation if:

- They received a COVID-19 vaccine that is not authorized or approved by FDA;
- The respiratory specimen that was positive for SARS-CoV-2 RNA or antigen was collected <14 days after completing the primary series; or
- The person was recently positive for COVID-19, defined as a positive test <45 days prior to the positive test currently under investigation.

Case Investigations for VBC

Case investigations for VBC should be investigated in accordance with the standard and/or modified investigation procedures outlined in this document. Once a VBC is identified by the LHD, they should be entered in ChexOut. These cases could indicate a variant of concern and are eligible for whole genome sequencing. To coordinate whole genome sequencing, please contact your regional epidemiologist or DIDE the epidemiologist on-call at 304-558-5358 ext. 2 if you are seeking sequencing approval.

Designating a VBC in ChexOut

It is the responsibility of the LHD/investigator to enter the requested information on all Confirmed/Probable cases they are assigned. Using the Vaccine History module mark 'yes' to the 'Vaccine breakthrough case?' indicator and complete all the requested fields in the Vaccine History

module. Be sure to enter complete information for each dose of COVID-19 vaccine that the case has received. Please refer to the VBC case definition to determine if the case meets the specific criteria to be a VBC. If you are not sure, mark 'unknown' to this question so it can be reviewed by an Epidemiologist.

Interim Public Health Recommendations for Fully Vaccinated People

Although many of the activity and travel restrictions and post exposure quarantine recommendations for unvaccinated people are still not applied after an individual is fully vaccinated, the CDC has announced interim guidance due to the dominance of the Delta (B.1.617.2) variant. These updates include:

- Recommendation for fully vaccinated people to wear a mask in public indoor settings in areas of substantial or high transmission.
- Fully vaccinated people might choose to wear a mask regardless of the level of transmission, particularly if they are immunocompromised or at increased risk for severe disease from COVID-19, or if they have someone in their household who is immunocompromised, at increased risk of severe disease or not fully vaccinated.
- Recommendation for fully vaccinated people who have come into close contact with someone with suspected or confirmed COVID-19 to be tested 3-5 days after exposure, and to wear a mask in public indoor settings for 14 days or until they receive a negative test result.
- Recommendation for universal indoor masking for all teachers, staff, students, and visitors to schools, regardless of vaccination status.

COVID-19 Variant of Concern (VOC) Surveillance

The CDC and DHHR are conducting enhanced surveillance for any cases of COVID-19 involving SARS-CoV-2 variants of concern (e.g., B.1617.2, B.1.1.7, B.1.351, B.1.429, B.1.427, P.1) confirmed by genetic sequencing. Enhanced surveillance will identify local variants unique to West Virginia and other variants of concern. Surveillance for variants will capture important data that will help inform the transmissibility and clinical severity of cases caused by each variant and could play a role in statewide strategies to mitigate variants of concern.

Testing for COVID-19 VOC

LHD and providers should coordinate VOC testing through the DIDE by contacting the epidemiologist on-call at 304-558-5358 ext. 2. The epidemiologist on-call can approve VOC testing if the following screening criteria is met. NOTE: Testing for VOC is for surveillance purposes and individuals will not receive results back if they test negative for a VOC.

Indications for SARS-CoV-2 VOC testing: at least one of the criteria below must be met[1]:

- SARS-CoV-2 infection (symptomatic or asymptomatic) during international travel (including the United States where emerging variants have been identified).
- SARS-CoV-2-positive contacts of recent international travelers.[2]
- SARS-CoV-2 positive contacts of cases with confirmed SARS-CoV-2 VOC infection.
- Suspected re-infection.[3]
- Multitarget PCR assay e.g. Thermo Fisher (TaqPath), with S gene dropout (S gene negative) and other gene target/s positive with Ct <30.
- Severe (i.e. requiring ICU admission or ICU level of care) acute COVID-19 in individuals <50 years old without significant comorbidities.

- Vaccinated individuals with subsequent laboratory-confirmed SARS-CoV-2 infection, with symptom onset (or test date if asymptomatic) >7 days post first dose, or any time after second dose of vaccine.
- Known or suspected super spreading events or unusual rapid transmission within facilities which may suggest increased transmissibility.[4]

Footnotes

1. Specimen cycle threshold (Ct) value must be ≤30 to ensure adequate viral load, which is required for successful gene sequencing.
2. Contact with the international traveler occurred within 14 days of the traveler's entry.
3. Re-infection is defined as clinical recurrence of symptoms compatible with COVID-19, accompanied by positive PCR (Ct<35), more than 90 days after the onset of the primary infection, supported by close contact exposure or outbreak settings, and no evidence of another cause of infection.
4. A super-spreading event is a type of outbreak where there is additional epidemiological and/or genomic evidence of one person with over-dispersed transmission of COVID-19, (i.e. directly transmitting to at least five non-household individuals).

If a patient meets the VOC screening criteria, the epidemiologist on-call will need to know if PCR specimens are available in state (e.g., Q Labs, OLS, hospital, or another in-state reference laboratory). If specimen is available, the epidemiologist will recommend a positive PCR specimen be sent to the OLS. The submitter must complete a SARS-CoV-2 (COVID-19) Molecular Sequencing Specimen Submission Form which must accompany the specimen. In addition to whether a PCR specimen is available the epidemiologist on-call will need to know the specimen collection date, laboratory, and the case-patient's name and date of birth.

If specimen collection is needed, collect a nasopharyngeal (NP) swab in viral transport media. Specimens should be shipped to OLS using standard COVID-19 specimen shipping instructions.

A completed SARS-CoV-2 (COVID-19) Molecular Sequencing Specimen Submission Form must accompany the specimen whether it is transferred to OLS or newly collected.

If a variant is detected within your jurisdiction, the local health officer, administrator, and regional epidemiologist will be notified by DHHR.

COVID-19 VOC Specimen Collection Requirements

1. Container: 5ml sample tubes/cryo vials. Inner diameter: 7.8mm - 11mm, Height 75mm - 105mm. Other sizes may be possible to accommodate but we will need a sample tube for testing.
2. Sample type: Nasal or oropharyngeal swabs.
3. Storage Media: Viral Transport Media (VTM) or Saline. VTM is strongly preferred.
4. Storage conditions: No more than two weeks at +4C (5 days for saline samples), or 12 months at -70 if stored in VTM. Frozen saline samples will not be accepted.
5. Sample volume: Preferred range is 2.5 to 3ml.

COVID-19 VOC Case Investigation Requirements

As part of public health follow up for COVID-19 case investigations involving SARS-CoV-2 genetic variants of concern (e.g., B.1.1.7), consistent completion of select data fields should be prioritized. Four categories of select data fields to prioritize have been identified by the CDC.

1. All basic patient demographic information.
    a. Date of Birth
    b. Ethnicity
    c. Race
    d. Country of Usual Residence
    e. Sex
    f. Age at Case Investigation
    g. Age Unit
    h. Date Reported
    i. Reporting State
    j. Reporting County
2. Measures of severity, particularly hospitalization and ICU admission as well as death.
    a. Hospitalized?
    b. Patient admitted to an Intensive Care Unit (ICU)?
    c. Pregnant at time of event?
    d. Did subject die from illness/complications of illness?
3. Select exposure information, including domestic and international travel, time spent in congregate settings (e.g., adult living facilities, schools, correctional facilities) as well as exposures to contacts in household and other settings.
    a. Adult congregate living facility
    b. Childcare facility
    c. Community event/mass gathering
    d. Correctional facility
    e. Domestic travel
    f. International travel
    g. School/University
    h. Contact of a confirmed/probable COVID-19 case
        i. Community
        ii. Healthcare associated
        iii. Household
        iv. Other
        v. Unknown
4. Vaccine history, including vaccination status and vaccine type and number of doses for vaccinated persons.
    a. Vaccinated (has the case-patient ever received a vaccine against this disease)?
    b. Number of doses against this disease received prior to illness onset.
    c. Vaccine type
    d. Vaccine dose number

Public Health Recommendations for COVID-19 VOC

Public health prevention measures should be reinforced. These measures include vaccination, wearing masks, staying at least 6 feet apart from others, avoiding crowds, ventilating indoor spaces, and washing hands often. **Shortened quarantined is not advised for close contacts of VOC cases.** Prompt response is

needed to interrupt transmission to prevent further propagation of VOC. Additional community testing is recommended following variant detection. A request for surge testing and sequencing can be submitted to Health Command at: DHHRBPHCommand@wv.gov.

Appendix A-1: COVID-19 Surveillance Case Definition

Criteria for COVID-19 Case Ascertainment (See Appendix C-1 for Case Ascertainment flow chart)

Narrative: A description of suggested criteria for case ascertainment of COVID-19.

Symptoms of COVID-19 are non-specific, and the disease presentation can range from no symptoms (asymptomatic) to severe pneumonia, respiratory failure, and death. COVID-19 is a mild to moderate illness for approximately 80% of individuals evaluated with the disease; 15% are severe infection requiring supplemental oxygen; and 5% of individuals have critical infections requiring mechanical ventilation. People with COVID-19 generally develop signs and symptoms, including mild respiratory symptoms and fever ~5 days after infection (mean incubation period 5-6 days, range 1-14 days). In exposed populations such as nursing home residents, half of all infections detected during cohort screening may be presymptomatic or asymptomatic.

Clinical Criteria for Reporting

In the absence of a more likely diagnosis, any medically attended (including symptoms ascertained telephonically by public health staff, e.g., contact tracers) person with:
Acute onset or worsening of at least two of the following symptoms or signs:
Fever (measured or subjective),
Chills,
Rigors,
Myalgia,
Headache,
Sore throat,
Nausea or vomiting,
Diarrhea,
Fatigue,
Congestion or runny nose.

OR

Acute onset or worsening of any one of the following symptoms or signs:
Cough,
Shortness of breath,
Difficulty breathing,
Olfactory disorder,
Taste disorder,
Confusion or change in mental status,
Persistent pain or pressure in the chest,
Pale, gray, or blue-colored skin, lips, or nail beds, depending on skin tone,
Inability to wake or stay awake.

OR

Severe respiratory illness with at least one of the following:
Clinical or radiographic evidence of pneumonia,
Acute respiratory distress syndrome (ARDS).

Laboratory Criteria for Reporting

- Detection of SARS-CoV-2 RNA in a post-mortem obtained respiratory swab or clinical specimen using a diagnostic molecular amplification test performed by a CLIA-certified provider, OR
- Detection of SARS-CoV-2 genomic sequence, OR
- Detection of specific antigen in a post-mortem obtained respiratory swab or clinical specimen using a diagnostic test performed by a CLIA-certified provider, OR
- Detection of SARS-CoV-2 nucleocapsid and spike protein receptor binding domain (RBD) specific antibodies in serum, plasma, or whole blood by a CLIA-certified provider.

Epidemiologic Linkage Criteria for Reporting

A person meeting the clinical reporting criteria with one or more of the following exposures in the 14 days before onset of symptoms:

- Close Contact with a confirmed or probable case of COVID-19 disease; OR
- Member of an exposed risk cohort as defined by public health authorities during an outbreak or during high community transmission.

Vital Records Criteria for Reporting

A person whose death certificate lists COVID-19 disease or SARS-CoV-2 or an equivalent term as an underlying cause of death or a significant condition contributing to death.

Other Criteria for Reporting

Autopsy findings consistent with pneumonia or acute respiratory distress syndrome without an identifiable cause.

Disease-Specific Data Elements to Be Included in the Initial Report

In addition to patient demographics, the following disease-specific data elements are expected to be included in all reports to public health agencies:

Laboratory Information:

- Specimen type
- Collection date
- Laboratory test performed
- Results

Clinical Information:

- Description of clinical symptoms and signs of illness, or if asymptomatic
- Date of illness onset
- Hospitalization
- Underlying diseases or co-infections
- COVID-19 vaccination history

Epidemiologic Information:

- Known contact or linkage to COVID-19 cases
- Member of a risk cohort as defined by public health authorities during an outbreak

Case Definition for COVID-19 Case Classification

Narrative: Description of criteria to determine how a case of COVID-19 should be classified.

This CSTE case definition is intended solely for public health surveillance purposes and does not recommend criteria for clinical partners to utilize in diagnosing patients with potential COVID-19 disease or potential SARS-CoV-2 infection.

Clinical Criteria

In the absence of a more likely diagnosis:

- Acute onset or worsening of at least two of the following symptoms or signs:
    - Fever (measured or subjective),
    - Chills,
    - Rigors,
    - Myalgia,
    - Headache,
    - Sore throat,
    - Nausea or vomiting,
    - Diarrhea,
    - Fatigue,
    - Congestion or runny nose.

OR

- Acute onset or worsening of any one of the following symptoms or signs:
    - Cough,
    - Shortness of breath,
    - Difficulty breathing,
    - Olfactory disorder,
    - Ttaste disorder,
    - Confusion or change in mental status,
    - Persistent pain or pressure in the chest,
    - Pale, gray, or blue-colored skin, lips, or nail beds, depending on skin tone,
    - Inability to wake or stay awake.

OR

- Severe respiratory illness with at least one of the following:
    - Clinical or radiographic evidence of pneumonia,
    - Acute respiratory distress syndrome (ARDS).

Laboratory Criteria

Laboratory evidence using a method approved or authorized by the FDA or designated authority.

Confirmatory laboratory evidence:

- Detection of SARS-CoV-2 RNA in a post-mortem respiratory swab or clinical specimen using a diagnostic molecular amplification test performed by a CLIA-certified provider, OR
- Detection of SARS-CoV-2 by genomic sequencing.

Presumptive laboratory evidence:

- Detection of SARS-CoV-2 by antigen in a post-mortem obtained respiratory swab or clinical specimen using a diagnostic test performed by a CLIA-certified provider.

Supportive laboratory evidence:
- Detection of antibody in serum, plasma, or whole blood specific to natural infection with SARS-CoV-2 (antibody to nucleocapsid protein), OR
- Detection of specific antigen by immunocytochemistry in an autopsy specimen, OR
- Detection of SARS-CoV-2 RNA or specific antigen using a test performed without CLIA oversight (e.g., at-home or over-the-counter test kits).

Epidemiologic Linkage
One or more of the following exposures in the 14 days before onset of symptoms:
- Close contact with a confirmed or probable case of COVID-19 disease; OR
- Member of an exposed risk cohort as defined by public health authorities during an outbreak or during high community transmission.

Vital Records Criteria
A death certificate that lists COVID-19 disease or SARS-CoV-2 or an equivalent terms as an underlying cause of death or a significant condition contributing to death.

Case Classifications
Confirmed:
- Meets confirmatory laboratory evidence.

Probable:
- Meets clinical criteria **AND** epidemiologic linkage with no confirmatory or presumptive laboratory evidence for SARS-CoV-2, OR
- Meets presumptive laboratory evidence, OR
- Meets vital records criteria with no confirmatory laboratory evidence for SARS-CoV-2.

Suspect:
- Meets supportive laboratory evidence with no prior history of being a confirmed or probable case.

Note: Suspect cases are not required or recommended to be investigated by the local health department.

Criteria to distinguish a new case of COVID-19
The following should be enumerated as a new case:

- SARS-CoV-2 sequencing results from the new positive specimen and a positive specimen from the most recent previous case demonstrate a different lineage, OR
- Person was most recently enumerated as a confirmed or probable case with onset date (if available) or first positive specimen collection date for that classification >90 days prior, OR
- Person was previously reported but not enumerated as a confirmed or probable case (i.e., suspect), but now meets the criteria for a confirmed or probable case.

NOTE: Some individuals, e.g., severely immunocompromised persons, can shed SARS-CoV-2 detected by molecular amplification tests >90 days after infection. For severely immunocompromised individuals, clinical judgement should be used to determine if a repeat positive test is likely to result from long term shedding and therefore not be enumerated as a new case. CDC defines severe immunocompromise as certain conditions, such as being on chemotherapy for cancer, untreated HIV infection with CD4 T lymphocyte count <200, combined primary immunodeficiency disorder, and receipt of prednisone >20mg/day for more than 14 days.

Persons who meet one of the above criteria would be considered a new case of COVID-19. These cases should be considered infectious and remain isolated until they meet criteria for discontinuation of isolation. Contact tracing and public health action is warranted.

Entering a Reinfection Case into ChexOut

When a lab is received that meets the criteria for re-infection, a new case must be created.

1. Go to Incoming Files tab and click “+ New Incoming File”.
2. Click “Edit” in patient Details, enter patient info and then click close.
3. Press “Create Investigation” at the top right and assign appropriate LHD and investigator.
4. Once the new case is opened, assign the cases status based on the new lab result (confirmed or probable).
5. Click “Edit” in patient Details, then click “Search person” and find the matching person in results field on the right and click the “Use this Person” button to merge the second investigation with the original patient profile.
    a. Note: DO NOT click “Merge to this Investigation”- this will merge the reinfection with the original case.
6. Send an email request to State surveillance staff with patient and lab info for any ELR to be re-sent and attached to the new investigation.

This will result in 2 COVID case investigations being a part of the same person record and will allow for documentation of reinfection.

Appendix A-2: Antigen Test Interpretation for Asymptomatic and/or Not Exposed Individuals

Antigen Test Interpretation For Asymptomatic and/or Not Exposed Individuals

The individual being tested is <u>NOT</u> experiencing symptoms; or a close contact of a confirmed/probable case; or associated with an ongoing outbreak.

Antigen Result	Subsequent PCR[1]	Follow-Up Testing	Public Health Action
Positive	Not Performed	Consider PCR testing if COVID-19 community activity is low/moderate[2].	**Low/Moderate Community Activity[2]:** Probable case unless PCR testing is conducted within 2 days and is negative[1].
		No additional testing is recommended if COVID-19 community activity is high[3].	**High Community Activity[3]:** Probable case. Isolate/exclude from work; no additional testing is recommended.
Positive	Positive	**No**	Confirmed case. Isolate/exclude from work; no additional testing is recommended.
Positive	Negative (collected within 2 days of POC antigen +)	No	Not a case.
Negative	Positive	No	Confirmed case. Isolate/exclude from work; no additional testing is recommended.
Negative	Negative	No	Not a Case.

1. When confirming a POC antigen test result with a PCR test, it is important that the time interval between the two sample collections is less than 2 days, and there have not been any opportunities for new exposures between the two tests.
2. Low/moderate community activity is defined as an infection (incidence) rate 8% or less. Infection (incidence) rates for counties can be found at: https://dhhr.wv.gov/COVID-19/Pages/default.aspx.
3. High community activity is defined as an infection (incidence) rate greater than 8%. Infection (incidence) rates for counties can be found at: https://dhhr.wv.gov/COVID-19/Pages/default.aspx.

Appendix B: Isolation Note

STATE OF WEST VIRGINIA
DEPARTMENT OF HEALTH AND HUMAN RESOURCES
Bureau for Public Health
Commissioner's Office

Bill J. Crouch
Cabinet Secretary

Ayne Amjad, MD, MPH
Commissioner & State Health Officer

Coronavirus Disease 2019 (COVID-19) Isolation Note

Self-isolation for persons with confirmed or suspected COVID-19: In order to prevent spread of COVID-19, those with suspected or laboratory confirmed COVID-19 should remain in isolation prior to returning to work/school or regular activities until the following three criteria are met.
The individual is now:

- At least 10 days from symptom onset, AND
- Has been fever free for at least 24 hours without the use of fever reducing medications, AND
- Symptoms have improved
- Persons infected with SARS-CoV-2 who never develop COVID-19 symptoms may discontinue self-isolation 10 days after the date of their first positive test.

Individuals awaiting test results should be managed as if they have COVID-19 until results are obtained.
Quarantine for persons exposed to confirmed or suspected COVID-19: Individuals who have been identified as being exposed to COVID-19 as a close contact are asked to quarantine themselves for 14 days from the last date of exposure prior to returning to work/school or regular activities as this provides the lowest risk of transmission to family members, coworkers, and others. However, if an individual is unable to quarantine for that length of time, acceptable options to quarantine are available. If a shortened quarantine period is used, contacts should continue to self-monitor for symptoms and wear a face mask through day 14.

This isolation/quarantine note confirms that the person named below has been told to stay home from work or school in alignment with guidelines set by the Centers for Disease Control and Prevention (CDC) to prevent transmission of COVID-19 in West Virginia communities because the individual:

☐ **Is providing care for a person with suspected or confirmed case of COVID-19**
☐ **Has a presumptive or confirmed diagnosis of COVID-19**
☐ **Has had a potential exposure and awaiting test results for COVID-19**
☐ **Has been identified as a close contact of a suspected or confirmed case of COVID-19:**
  ☐ Will quarantine for 14 days from last exposure prior to returning to work/school.
  ☐ Will quarantine for 10* days from last exposure if no symptoms have been identified.
  ☐ Will quarantine for 7* days from last exposure and will produce a negative test (PCR or antigen) result no sooner than day 6 of quarantine prior to returning to work/school.

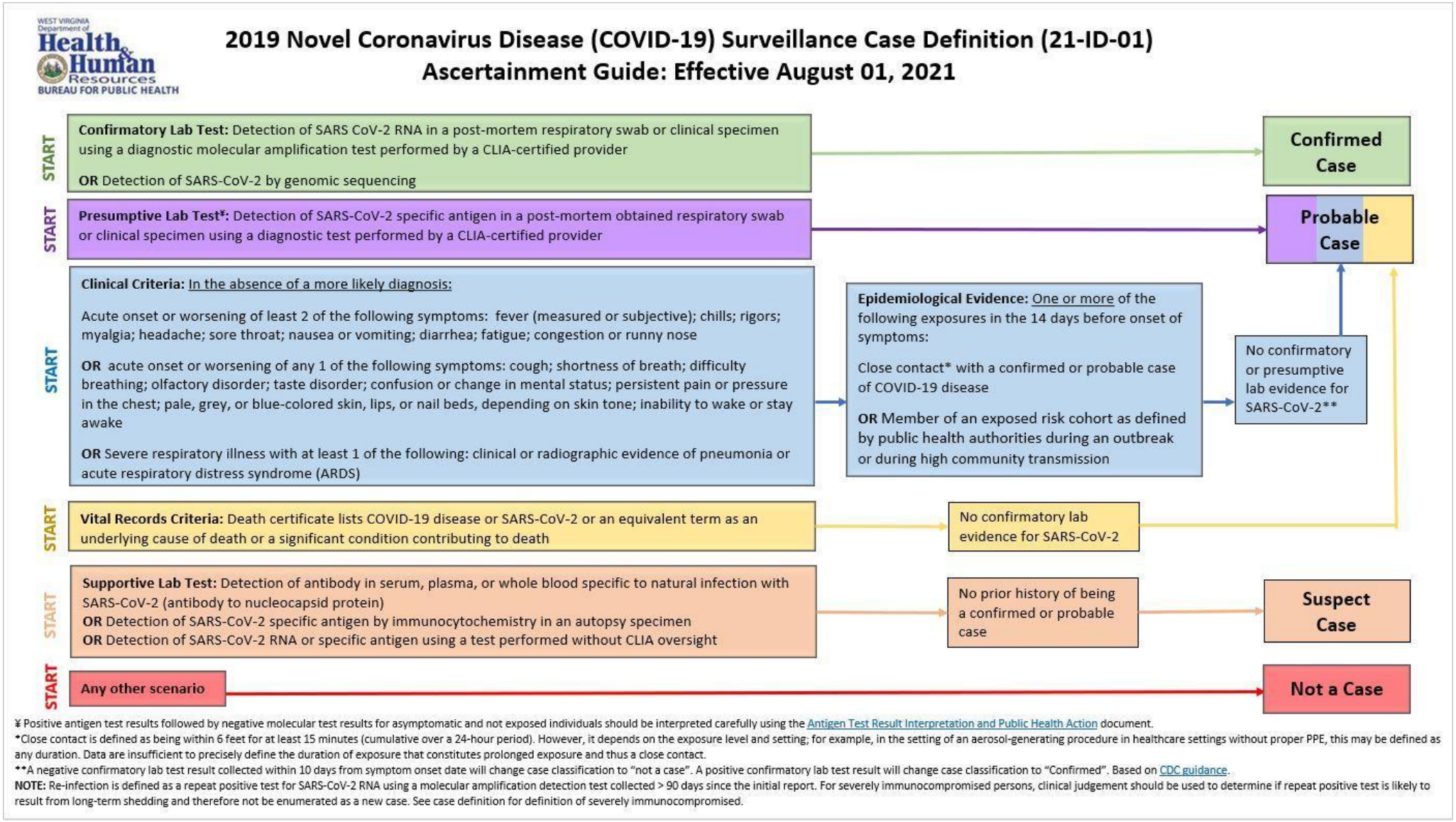
*If person develops symptoms within the 14-day exposure period, isolate and contact public health to report change in clinical status.
Start Date: End Date:

Name:

Date of Birth:

Physician/HealthCare Provider Name/ Signature

Appendix C-1: Case Ascertainment Flow Chart



¥ Positive antigen test results followed by negative molecular test results for asymptomatic and not exposed individuals should be interpreted carefully using the Antigen Test Result Interpretation and Public Health Action document.
*Close contact is defined as being within 6 feet for at least 15 minutes (cumulative over a 24-hour period). However, it depends on the exposure level and setting; for example, in the setting of an aerosol-generating procedure in healthcare settings without proper PPE, this may be defined as any duration. Data are insufficient to precisely define the duration of exposure that constitutes prolonged exposure and thus a close contact.
**A negative confirmatory lab test result collected within 10 days from symptom onset date will change case classification to "not a case". A positive confirmatory lab test result will change case classification to "Confirmed". Based on CDC guidance.
NOTE: Re-infection is defined as a repeat positive test for SARS-CoV-2 RNA using a molecular amplification detection test collected > 90 days since the initial report. For severely immunocompromised persons, clinical judgement should be used to determine if repeat positive test is likely to result from long-term shedding and therefore not be enumerated as a new case. See case definition for definition of severely immunocompromised.

Appendix C-2: Releasing Contacts from Quarantine

On December 2, 2020, the Centers for Disease Control and Prevention released guidance for acceptable alternatives to the 14-day quarantine period for individuals who might have been exposed to COVID-19.
NOTE: Contacts who can maintain a 14-day quarantine should do so.

Releasing Individuals from Quarantine

Duration of quarantine applies from the last date of exposure to an infectious case (Day 0).

Option 1: Quarantine period can end after Day 14 without testing. **Post-quarantine transmission risk: 0%-3%**	• Day 0-14 quarantine for close contacts can end if no symptoms develop during daily self-monitoring. • Persons quarantined for 14 days without testing. • This option maximally reduces risk of post-quarantine transmission and is the strategy with the greatest collective experience at present. • This is recommended in settings where there are high-risk individuals and closed congregate settings.
Option 2: Quarantine period can end after Day 10 without testing and if no symptoms have been identified during daily self-monitoring. **Post-quarantine transmission risk: 1%-10%**	• Day 0-10 quarantine for close contacts can end if no symptoms develop during daily self-monitoring without testing. • Self-monitoring and mask wearing should be continued through Day 14. • If an individual develops symptoms within the 14-day quarantine period, immediately isolate and contact the local health department to report change in clinical status. • Persons should be educated on correct and consistent mask use, social distancing, cough hygiene, environmental cleaning and disinfection, avoiding crowds, ensuring adequate indoor ventilation and self-monitoring for symptoms.
Option 3: Quarantine period can end after Day 7 if someone tests negative (PCR or antigen test) and if no symptoms have been identified during daily self-monitoring. **Post-quarantine transmission risk: 5%-12%**	• Day 0-7 quarantine for close contact can end if COVID-19 test is negative and if no symptoms develop during daily self-monitoring. • Specimen may be collected and tested within 48 hours before the time of planned quarantine discontinuation. • Self-monitoring and mask wearing should be continued through Day 14. • If an individual develops symptoms within the 14-day quarantine period, immediately isolate and contact public health to report change in clinical status. • Persons should be educated on correct and consistent mask use, social distancing, cough hygiene, environmental cleaning and disinfection, avoiding crowds, ensuring adequate indoor ventilation and self-monitoring for symptoms.

Exceptions

A 14-day quarantine period should remain in effect for individuals living in high-risk congregate settings or among individuals who are unable to wear a mask correctly and consistently. These settings include:

- Residents in nursing homes, assisted living facilities, or other long-term care facilities.
- Inmates in correctional facilities.

Household Contacts

A household contact is an individual who shares any living spaces with someone diagnosed with COVID-19. This includes bedrooms, bathrooms, living rooms, kitchens, etc. Household contacts must be quarantined after exposure to a case, regardless of whether the case is symptomatic.

When does quarantine start?

Household contacts must quarantine as long as they are exposed to the case, and for a 7- to 14-day period beyond their last exposure.

If the contact can separate from the case within the home, then they are no longer exposed. Separation requirements:

- The case must never be in the same room as household members.
- The case cannot share plates, cups, dishes or phones with household members.
- The case should have their own bathroom. If that isn't possible, the household must conduct daily cleaning.

If the contact cannot separate from the case within the home, the contact must quarantine for the case's (minimum) 10- day isolation period plus an additional 7-14 days.

When does quarantine end?

Once exposure is no longer occurring (either the case has completed their 10-day isolation or the case and contact have separated within the home), then quarantine can end:

- After Day 14 as recommended by DHHR and CDC.
- After Day 10 (returning to regular activities on Day 11) without testing if the contact does not have symptoms.
- After Day 7 (returning to regular activities on Day 8) if the contact does not have symptoms and if they test negative by PCR or antigen test starting at Day 5 or later.

Contacts should continue to self-monitor for symptoms and wear a face mask through Day 14. Mask wearing is especially important through Day 14 and should continue beyond the quarantine period.

If a household contact develops symptoms of COVID-19, they become a case. They should begin isolation as a case and consider getting tested.

Non-Household Contacts

Non-household contacts must be quarantined after exposure* to a case, regardless of whether the case was symptomatic. DHHR and CDC recommend a 14-day quarantine. Acceptable alternatives to a 14-day quarantine include:

- After Day 10 (returning to regular activities on Day 11) without testing if the contact does not have symptoms.

- After Day 7 (returning to regular activities on Day 8) if the contact does not have symptoms and if they test negative by PCR or antigen test starting at Day 5 or later.

Contacts should continue to self-monitor for symptoms and wear a face mask through Day 14. Mask wearing is especially important through Day 14 and should continue beyond the quarantine period.

*Exposure means contact with a case during the time period beginning two days prior to the case's symptom onset (or specimen collection date if case never experiences symptoms) through the end of the case's isolation period.

Questions and concerns can also be directed to the 24/7, toll-free COVID-19 information hotline:
1-800-887-4304

Appendix D: COVID-19 Associated Death Reporting Standard Operating Procedure

INSTRUCTIONS FOR REPORTING A DEATH ASSOCIATED WITH COVID-19

FACILITY/PROVIDER RESPONSIBILITIES:

Coronavirus Disease 2019 (COVID-19) is immediately reportable to the local health department (LHD) per the West Virginia Reportable Disease Rule 64 CSR-7. Complete the COVID-19 Death Report Form and send to the LHD serving the patient's county of residence immediately.

LOCAL HEALTH DEPARTMENT RESPONSIBILITIES:

COVID-19 associated deaths should be reported to the West Virginia Department of Health and Human Resources (DHHR), Division of Infectious Disease Epidemiology (DIDE) immediately upon LHD notification. LHDs should take the following steps to ensure complete and timely COVID-19 associated Death Report Forms are submitted to DIDE:

1. Assist the reporting facility/provider in completing the COVID-19 Death Report Form as needed.
2. **Report the death to DIDE via ChexOut** by completing the following steps:
    a. **Confirm the decedent has a case investigation opened in ChexOut**. If the decedent does not have a case investigation, open a case as required prior to a reporting a COVID-19 associated death.
    b. **Confirm the decedent's case investigation has an associated SARS-CoV-2 positive laboratory result entered**. If there is not an electronic laboratory report, request the reporting facility/provider send the positive laboratory report to the LHD and manually enter the laboratory result into the West Virginia Electronic Disease Surveillance System (WVEDSS) upon receipt.
        i. If the decedent did not undergo laboratory testing but COVID-19 will be listed on the death certificate, it should be reported as a probable COVID-19 death.
    c. If the case is associated with an outbreak, go to the *Outbreaks* section and **confirm the associated outbreak number and place have been entered.**
    d. In the *Clinical Course and Medical History* section, **go to the Death field, select "Yes" from the drop-down menu AND enter the date of death.**
    e. **Upload the completed Death Report Form in ChexOut**. To do this, in the *Notes and Attachments* section, click on +New/Note/File, enter "Death Report Form" in the subject line field, and select the Death Report file to upload. When finished uploading, click *Close* and ChexOut will automatically save your entry. **DO NOT fax the form.**
3. **The death DOES NOT need to be reported via telephone to the DIDE Epi on Call.**

STATE HEALTH DEPARTMENT RESPONSIBILITIES:

DHHR staff will ensure the following steps are taken for COVID-19 associated deaths:

1. A report will be pulled daily from ChexOut to identify deaths entered the previous day.
2. Staff will utilize the daily report to verify deaths in the surveillance system and mark deaths for certification and reporting the following day.
3. Certified deaths identified by the daily report will be reported via the DHHR COVID-19 Dashboard.
4. The Office of Epidemiology and Prevention Service (OEPS) COVID-19 Data Management Branch is responsible for performing daily validation of COVID-19 associated deaths before posting updated counts on the DHHR COVID-19 Dashboard.
5. DHHR's Office of the Chief Medical Examiner should notify DIDE in the event of a deceased person with known COVID-19 is identified by calling (304) 558-5358, ext. 2.

PROVIDER INFORMATION

Physician Name: Facility Name:

Physician Phone #: Date of Report:

PATIENT INFORMATION

Patient Name (Last, First, Middle Initial): Date of Birth: Age:

Sex: Male ☐ Female

Address:

City: State: Zip:

Occupation: Patient currently resides in:

☐ Healthcare worker ☐ Nursing home/long-term care facility

☐ Teacher ☐ Private residence

☐ EMT ☐ Shelter

☐ Other: _____ ☐ School/University dorm

☐ Other: _____

CLINICAL INFORMATION

Date of Onset: Hospitalized: ☐ Yes ☐ No

Date of Admission:

Date of Death: Medical Record Number:

Did the patient have any of the following signs and symptoms? (check all that apply)

☐ None ☐ Cough ☐ Shortness of breath ☐ Fever ☐ Muscle aches ☐ Diarrhea

☐ Chills ☐ Headache ☐ Abdominal pain ☐ Unknown ☐ Other:_____

Pre-existing medical conditions (check all that apply):

☐ None ☐ Unknown ☐ Pregnancy ☐ Diabetes ☐ Hypertension ☐ Cardiovascular disease

☐ Chronic pulmonary disease ☐ Asthma ☐ Chronic renal disease ☐ Chronic liver disease

☐ Immunocompromised ☐ Other: _____

LABORATORY INFORMATION

Date of Collection: Result: Lab: Type (NP, BAL, etc.):

EPIDEMIOLOGICAL RISK FACTORS

☐ Close contact with laboratory confirmed cases

☐ Travel history to affected geographic areas (specify):

☐ Facility outbreak related (Outbreak #_____)

☐ No identifiable source

Appendix F: List of Resources

FDA Guidance for COVID-19 Molecular/Antigen/Antibody Testing:
https://www.fda.gov/consumers/consumer-updates/coronavirus-testing-basics

CDC Guidance for Cleaning and Disinfecting Public Spaces, Workplaces, Businesses, Schools, and Homes:
https://www.cdc.gov/coronavirus/2019-ncov/community/pdf/Reopening_America_Guidance.pdf

CDC Guidance for Events and Gatherings – Readiness and Planning Tool and Checklist:
https://www.cdc.gov/coronavirus/2019-ncov/downloads/community/COVID19-events-gatherings-readiness-and-planning-tool.pdf

CDC Infographic for Precautions and Infection Prevention Measures:
https://www.cdc.gov/coronavirus/2019-ncov/downloads/stop-the-spread-of-germs.pdf

CDC Infographic 10 Things You Can Do to Manage Your COVID-19 Symptoms at Home:
https://www.cdc.gov/coronavirus/2019-ncov/downloads/10Things.pdf

CDC Guidance How to Make a 0.1% Chlorine Solution to Disinfect Surface in Healthcare Settings:
https://www.cdc.gov/coronavirus/2019-ncov/downloads/make-chlorine-solution.pdf

CDC Guidance Back to College Tips to Protect Yourself Infographic:
https://www.cdc.gov/coronavirus/2019-ncov/downloads/College-Poster-COVID-Tips-for-Students.pdf

CDC Guidance Isolation vs Quarantine Guidelines:
https://www.cdc.gov/coronavirus/2019-ncov/your-health/quarantine-isolation.html

CDC Guidance One-Stop-Shop Toolkits Links to Various Topics and Guidance for Each:
https://www.cdc.gov/coronavirus/2019-ncov/communication/toolkits/index.html

CDC Guidance for Coaches Infographic:
https://www.cdc.gov/coronavirus/2019-ncov/downloads/community/checklist-for-coaches-covid19.pdf

CDC Guidance Prevent the Spread of COVID-19 if You Are Sick Infographic:
https://www.cdc.gov/coronavirus/2019-ncov/downloads/sick-with-2019-nCoV-fact-sheet.pdf