

Introduction to COVID-19 source investigation and clusters

Version: October 2021

In this training, you will learn answers to:

- What is source investigation?
 - What are COVID-19 clusters?
 - How do you perform source investigation for COVID-19?
- And why they're important!

A few important definitions

- **Case:** Someone who is infected with COVID-19
- **Contact:** Someone who has been exposed to COVID-19 (and may or may not become infected from that exposure)
- **Source of exposure:** person, place, and/or event where exposure to COVID-19 occurred
- **Close contact:** Someone who has been exposed to COVID-19 for 15 minutes within 6 feet
- **Casual contacts** Someone who has likely been exposed to COVID-19 and was not clearly within 6 feet for 15 minutes, but is still at risk of infection
- **Cluster:** 2 cases from different households with a shared exposure source within 14 days of each other

What is source investigation?

Source investigation is:

- How you identify a person's source of exposure (i.e. people, places, and/or events) to a communicable disease
- A core component of case investigation



- Demographic/clinical details
- **Source investigation** ← **Focus of this training**
- Identification of close contacts

- Essential for cluster investigation and outbreak response

How are source investigation and contact tracing related?

- Source investigation tells you about where/when a case (i.e. someone with COVID-19) was exposed to the virus
 - Retrospective tracing
- Contact tracing helps you identify who that case may have exposed to the virus once the case became infectious
 - Prospective tracing
- Both can be done during the same case investigation interview
- Both can help identify more cases and more contacts
- Both are critical in breaking chains of transmission

Source of transmission: Timing

- Some contact tracing interviews only go back 48 hours, but this will not get you to where this case was infected with COVID-19
- To understand the source of transmission, you often have to go back longer – sometimes up to 14 days!

Source investigation & contact tracing timeframes

Retrospective Contact Tracing

1. Where was the case infected?



DAY -14:

The case could have been infected up to two weeks before symptoms

Prospective Contact Tracing

2. When was the case infectious?



Collection of close contacts

DAY -2:

48 hours before symptoms started

Day 0+:

Symptom onset (or test taken date for asymptomatic) and until case is isolated

Why is source investigation important?

- It tells us the types of places and events where people are getting infected
- **It is the first step in identifying clusters**
 - source investigation is an especially efficient way to find many cases and contacts at once, and to identify high-risk locations for COVID-19

CDC guidance on source investigation

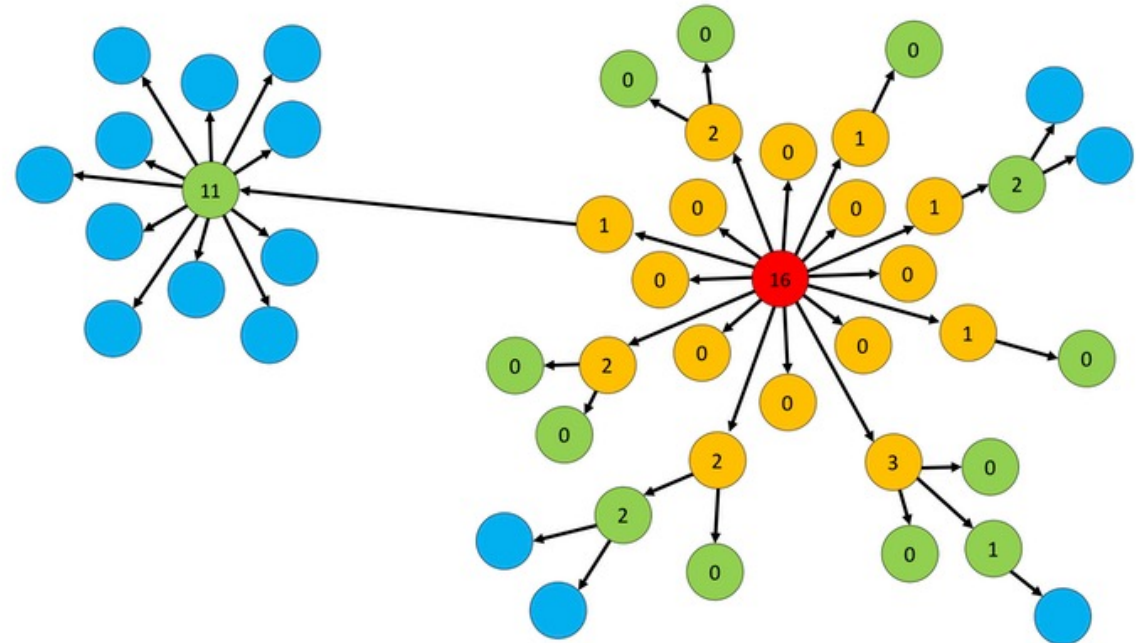
- <https://www.cdc.gov/coronavirus/2019-ncov/php/contact-tracing/contact-tracing-plan/source-investigation.html>

What are COVID-19 clusters?

COVID-19 is a clustering disease

The majority of COVID-19 cases are a part of clusters

- 2 or more cases linked by location and time
- Clusters are often location based and can occur over a long period of time
 - This makes clusters a point of public health intervention!



"Is the K number the new R number? What you need to know" The Conversation (June 26, 2020)

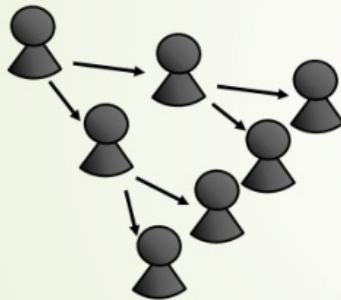
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Japan's cluster-based approach ①

- At an early stage, Japanese public health experts identified the virus' characteristic **mode of transmission**

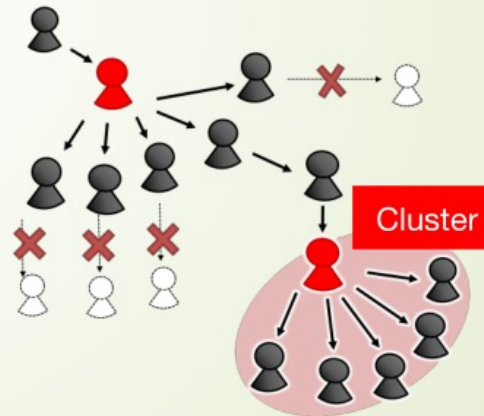
Influenza

- One infected person infects one or more people



COVID-19

- Regardless of illness severity, four out of five infected people (⚫) do not infect anyone else
- Only one in five infects someone else, and an even smaller minority infects multiple people (⚫), leading to the formation of clusters**



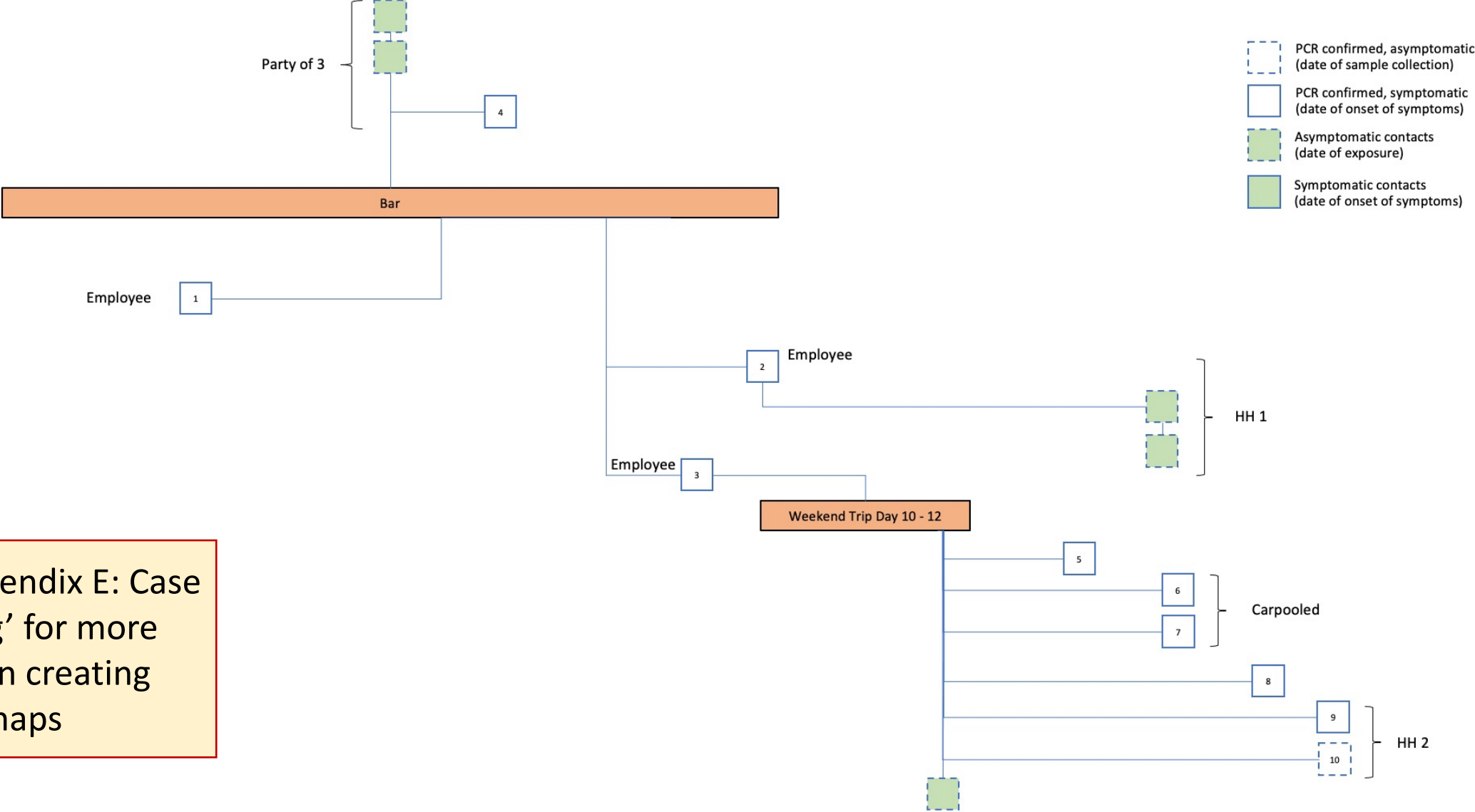
- COVID-19 spreads by forming clusters. **Preventing clusters, especially in the early phase of an outbreak, can result in suppression of the virus**

Very early on, Japan started exploring which cases were responsible for the majority of transmission

Why is cluster investigation important?

- **Identifies cases, contacts, and locations/events at high risk of COVID-19 transmission**
 - Ongoing transmission may still be occurring which can be mitigated (some clusters occur over days or weeks e.g. large workplaces, schools)
 - Future transmission can be prevented
- **Finds undiagnosed cases**
 - Can then support with testing, vaccination, and other interventions
- **Helps locate unvaccinated pockets of the population**
 - Chasing sources of transmission can lead us to people who need vaccination
- **Pulls together public health interventions**
 - Testing, tracing and notification, vaccination, treatment, sector-specific guidance, etc
 - Target them towards individuals at high risk of further exposure.

Source investigation can uncover chains of clusters

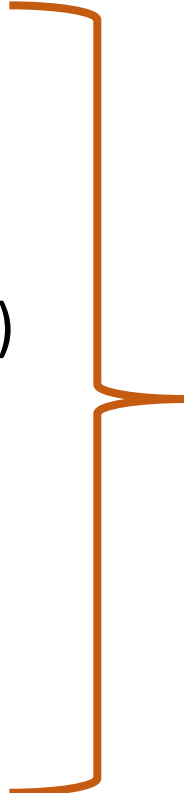


See 'Appendix E: Case Mapping' for more details on creating cluster maps



Where do COVID-19 clusters occur?

- Think of places where people gather (e.g. socially, for work, for school, for care needs, etc)
- Some examples include:
 - Workplaces
 - Private events (e.g. parties, weddings, funerals)
 - School settings (Higher ed, K-12, daycares)
 - Congregate settings (e.g. healthcare, nursing homes, prisons)
 - Places of worship
 - Athletics events
 - Restaurants, bars, clubs
 - Stores
 - Travel/transit



Need source investigation to identify these for each case

How do you perform source investigation for COVID-19?

When do you do source investigation?

- Most efficient to do during initial case investigation interview
 - Keep it conversational
 - Be patient
 - Probe gently: help them think through where they've been in the last 14 days
- Follow-up calls are useful for getting more details and clarifications

What do you ask when doing source investigation?

You are looking for:

- The person's exposure source(s)
- The date of exposure(s)
- Relevant details of the exposure location(s)/event(s)

See 'Appendix B:
Exposure
Investigation and
Documentation'
for more details

- **“How do you think you got infected?”**
- They may say “I don't know”, but don't stop there! Work with the person to think it through and figure this out.
- Examples of questions that may help:
 - “Do you know anyone who has gotten COVID in the past few weeks?” “Has anyone you know not been feeling well?”
 - “Have you been going to work in person? Do you know your co-workers? Have you heard of anyone ill there? – *get details about how many co-workers and what the workplace is like*
 - “How about social activities – have you been to any gatherings?” – *dig in to time they may have spent with family, colleagues, friends*

Think of households as a unit

- **Transmission between household members is COMMON!**
- **You are looking for: how COVID got into the household.**
- If everyone in the household tells you they got it from each other, keep digging. Not knowing how COVID entered the household will prevent finding sources of transmission or clusters.
- Examples of questions to ask (*gather relevant details as they answer*):
 - "Who in the household first got sick?"
 - "How do you think COVID may have gotten into your household?"
 - "Where do people in the household work?"
 - "Has anyone been to social events?" (e.g. family gatherings, parties, bars/clubs)

Some 'Tips & Tricks' for source investigation

- 1) Gather complete information
- 2) Reassure
- 3) Chase rumors
- 4) Try different tactics
- 5) Find common ground

1) Gather complete information

- Explore recent activities in detail
 - E.g. How many people were there? Indoors or outdoors? Was anyone not feeling well or missing work after the event? How many people did they hear were ill afterwards? Do they have a sense of whether people were vaccinated or not?
- “Casual contacts” matter, especially with the delta variant!
 - When conducting source investigation, it is not as important to identify close contacts (6ft 15 minutes) – assume anyone in the building/at the event could have been exposed.
- For social events, identify the organizer – they often know the list of people who attended

2) Reassure

- Take your time with the interview and be patient.
- Work to create a non-judgmental tone and approach: nobody should be embarrassed or worried about getting in trouble! They are helping keep communities safe by working with you.
- “Don’t feel embarrassed or shy. We are working together to make sure everyone gets the support they may need”
- “It’s very important for everyone’s safety that we help them get tested as soon as possible and help them access vaccines if they need one. Can you help us?”
- Make sure to state that you will keep their identity confidential
 - Some people may ask you to do this, particularly if calling a workplace or organization

3) Chasing rumors

- Sometimes early detection of clusters means paying attention to rumors.
 - “I heard on social media that a party my sister went to resulted in some COVID cases”
 - “The server at the restaurant mentioned they were short staffed because coworkers were at home sick”
 - “My son’s friends from his swim team tested positive for COVID”
- However, focus on the rumors that had actual COVID cases, not just any event. More generic statements might be less helpful:
 - “My boyfriend went to a large concert”
 - “My co-workers had a party last week”

4) Try different tactics

- Speak with multiple people for the same event or exposure. Memories and details can differ, so everyone may be helpful. And even finding one cooperative person can help in identifying an entire cluster.
 - Comparing notes with other case investigators and contact tracers may also help.
- Call back the next day if needed – this is often true for contact tracing interviews in general. People may be stressed or busy – sometimes it's best to give them a rest and try again a different day.
 - Or consider passing the case to a colleague if needed – don't feel bad about passing the case to someone with a different skill set!

5) Find common ground

- Meet them in the middle: you're doing a COVID-19 source investigation, they are probably worried they will get in trouble. What is one thing you can both agree on?
 - Keeping people safe and healthy is the focus here, nothing else.
- Even if people have different thoughts or beliefs from you, there is usually *something* that you both can agree on- this commonality can help you to have a productive conversation!
- Pressure and assertion are not going to get what you need- collaboration and agreement will.
- Find what brings you together and lean into that for better source investigation and outbreak response

Thanks!

(May the source be with you)