



By the end of this unit, participants will be able to describe:

- Enhanced surveillance
- How to conduct outbreak investigations in different settings



After a case of an emerging respiratory virus has been confirmed

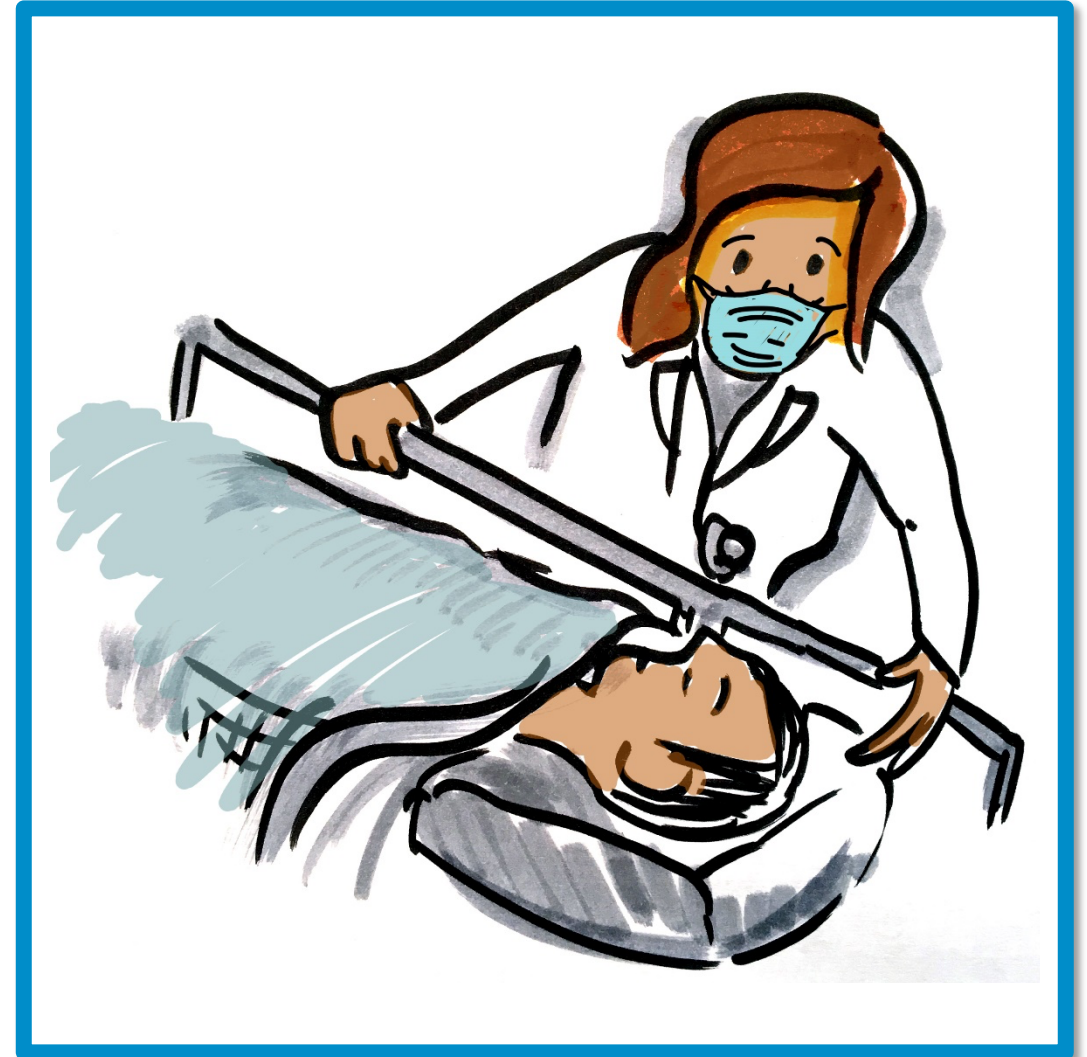
Several actions need to happen concurrently to find additional cases and to prevent further spread, including:

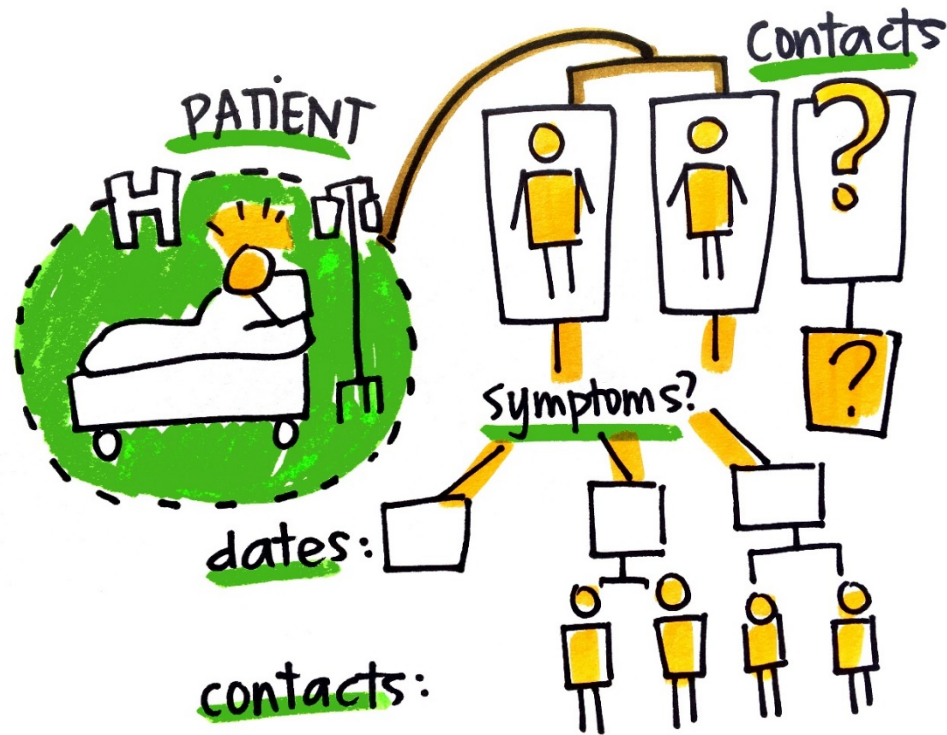
- Actively find cases
- Thorough case and outbreak investigations
- Conduct enhanced surveillance



Active case finding involves a wider search, focusing on:

- Patients and their visitors in health care facilities where the confirmed patient sought treatment
- Health care providers who cared for or cleaned the room of an infected patient
- Social, familial and work contacts of the infected patient





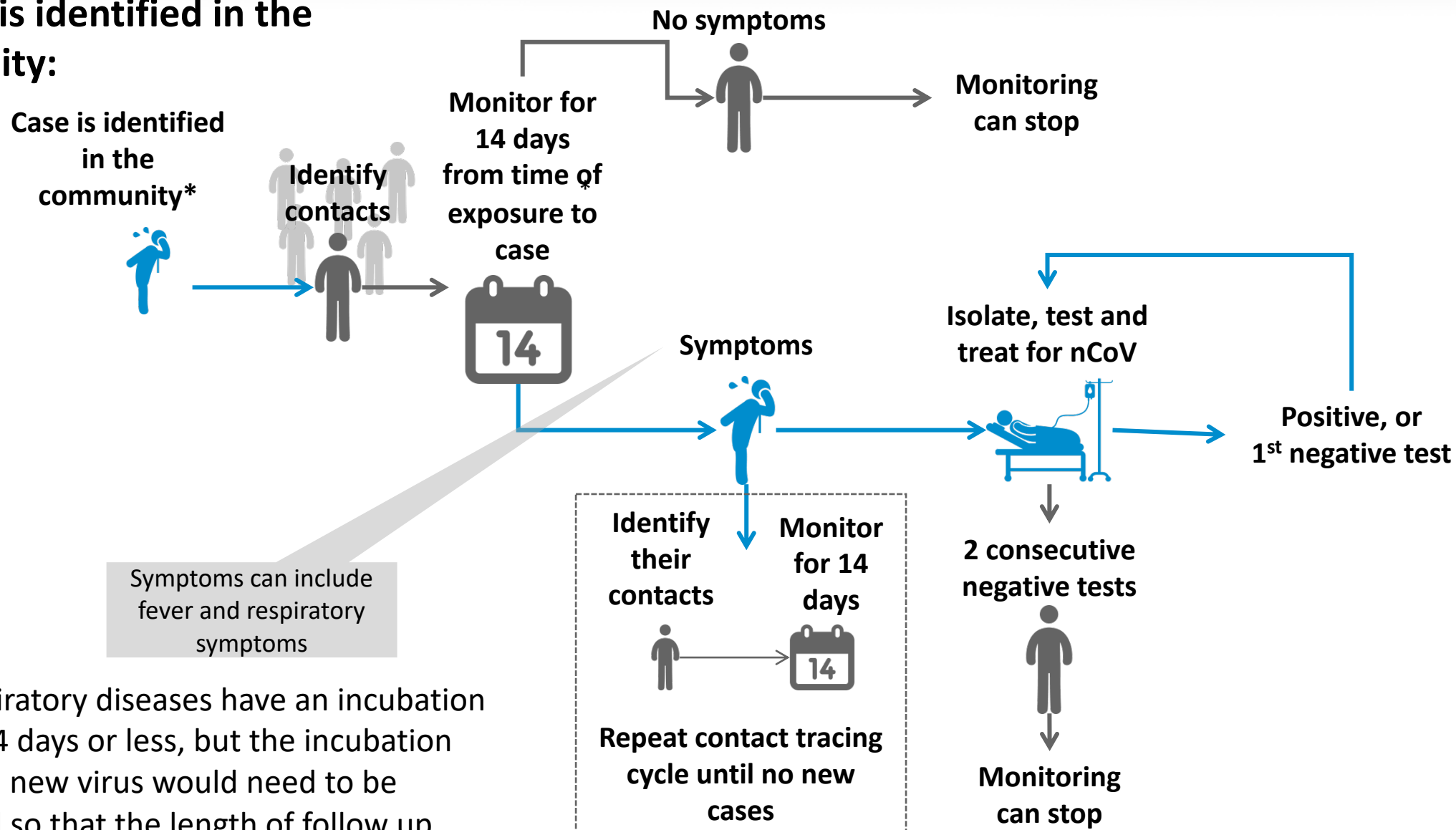
Identify contacts of the infected patient and record:

- Names, contact, demographic information
- Date of first and last exposure or date of contact with the confirmed or probable case, and
- Date of onset when fever or respiratory symptoms develop

The common **exposures** and **type of contact** with confirmed or suspected cases should be thoroughly documented for any contacts that become infected

How does contact tracing for an emerging respiratory virus work?

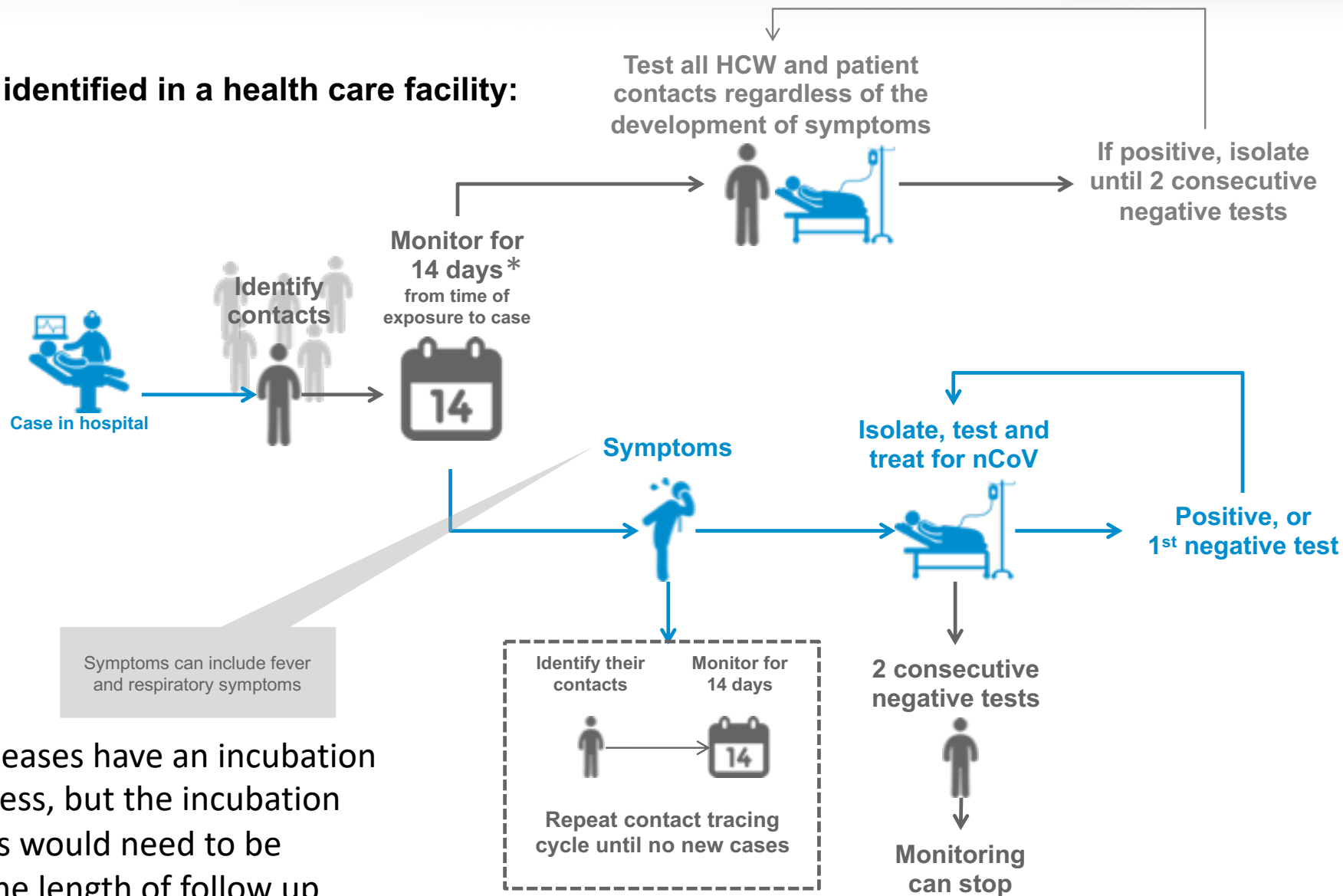
If a case is identified in the community:



*Most respiratory diseases have an incubation period of 14 days or less, but the incubation period for a new virus would need to be determined so that the length of follow up

How does contact tracing for an emerging respiratory virus work?

If a case is identified in a health care facility:



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Outbreak investigations for clusters or outbreaks of emerging respiratory viruses

Assemble a multi-disciplinary team with expertise in:

- Field epidemiology
- Clinical assessment
- Biological specimen collection
- Infection prevention and control
- Risk communication and community engagement



It is essential that animal health specialists are included in the team – if warranted.

Additional team members: logisticians, laboratory experts, data managers and environmental health specialists.

Before deploying, the team should:

- Gather preliminary background information
- Assemble the necessary materials and supplies (e.g. personal protective equipment, specimen collection and transport materials) and
- Inform relevant local public health and animal health authorities



Public Health Objectives

Identify other cases and quickly **detect** any human to-human transmission.



Prevent future cases through identification of potential human, animal and/or environmental sources of exposure, risk factors for infection, and implementation of appropriate **prevention and control measures**.

Reduce onward transmission, morbidity and mortality through rapid identification, isolation, treatment and clinical management of cases and follow-up of contacts.

Knowledge Objectives

Determine the size of the geographic area in which the virus is transmitting.



Determine key epidemiological, clinical and virological characteristics for cases including:

- clinical presentation,
- natural history,
- the mode(s) of transmission and disease diagnosis,
- incubation period, period of transmissibility and
- best practices for treatment.

Determine if the efficiency of human-to-human transmission of the virus has changed or increased.

Location of the investigation:

- Within the health care facilities where the patient visited and was treated

Objectives of your investigation:

- Identify other cases who may have been in contact with the confirmed case or their biological specimens, including other patients, HCW, visitors
- Identify how they were infected – that is, what exposures resulted in infection
- Quickly recommend measures to stop transmission



Investigators in public health and animal health should work together, with the following objectives:

- Identify the source of infection from animals
- Measure the extent of infection in people exposed to these animals
- Develop measures to prevent further human infections and to reduce transmission within animals

Field visits to investigate the occurrence of illness among animals can include:

- The patient's home and its surroundings
- Live animal markets or slaughterhouses
- Any other place the patient visited in the **14** days prior to illness onset and animals were present

General surveillance in the area under investigation should be enhanced for at least one month, focusing on:

- Setting up lab testing in the local health care facility, if feasible, or organizing rapid transfer of specimens to a laboratory with testing capacity
- Informing local clinicians of the case definition and the need for vigilance
- Surveillance for severe acute respiratory illnesses (SARI) in health care facilities in the community
- Increasing testing of SARI cases at local health care facilities
- If resources allow, testing of people with milder, influenza-like illness



Descriptive analysis of cases should be performed in terms of time, place and person:

Place: geographical location: **maps** of the locale, case patients' homes

Time: Date of onset:
graphical and/or tabular
descriptions of cases by
date of onset: **epidemic
curve**



Person: relationship
(i.e. transmission or family
trees) and demographic
characteristics
(e.g. distribution by age and
sex) should be developed

Key epidemiological data (e.g. estimation of an incubation period, description of transmission patterns, attack rates by age, occupation, exposure history etc.) and clinical data (e.g. spectrum of illness severity, proportion with pneumonia, deaths) should also be provided

Data is critical for:

- Analysis and interpretation – conduct a risk assessment
- Design and implement mitigation measures
- Share findings of outbreak investigations so that others can learn from experiences

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Further reading:

Coronaviruses

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>