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Healthcare organization management — Pandemic response (respiratory) — Drive-through screening station

Management des organisations de soins de santé — Réponse en cas de pandémie (respiratoire) — Station de dépistage au volant

Contents

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 304, *Healthcare organization management*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

Pandemics demand swift, decisive and sustained action by governments and public health authorities. Actions that have proved effective are widespread testing, contact tracing and rigorous treating. For testing, drive-through screening stations (DTSS) can be used to test thousands of people each day. A DTSS can screen large numbers of people for the presence of a disease, with those testing positive told to self-isolate or referred for treatment, and those who had been in contact with an infected person told to self-quarantine. People presenting for screening at a DTSS remain in their car, which acts as a protective barrier for healthcare workers. The standard protocol for operating a DTSS can include processes such as a medical interview, examination and specimen collection through the car window. The use of DTSS can reduce the risk of transmission of the disease (including in hospital waiting rooms), relieve pressure on hospitals (which otherwise can be inundated with requests for testing), and free hospital resources for treating people the disease (including those that are otherwise necessary to disinfect areas used for specimen-taking).

This document was developed based on experience gained from, and procedures implemented to deal with, the COVID-19 pandemic, which was characterized as a pandemic by the World Health Organization (WHO) in March 2020. South Korea, in particular, used DTSS to control the spread of the virus without shutting down the country and without imposing extreme restrictions on people's movement.

Healthcare organization management — Pandemic response (respiratory) — Drive-through screening station

1 Scope

This document specifies the operation of a drive-through screening station (DTSS) for mass testing as part of pandemic response management.

NOTE COVID-19 is an exemplary disease for which such a station is developed.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
confirmed case
person confirmed to be infected with the pathogen of the infectious disease according to the testing criteria for diagnosis, irrespective of clinical signs and symptoms

3.2
coronavirus
virus that is part of a large family of viruses that can cause illness in animals or humans

Note 1 to entry: In humans, several coronaviruses are known to cause respiratory infections ranging from the common cold to more severe diseases such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). The coronavirus discovered in 2019 causes the coronavirus disease *COVID-19* (3.3).

[SOURCE: WHO, 2020[11]]

3.3
COVID-19
infectious disease caused by the *coronavirus* (3.2) discovered in 2019

Note 1 to entry: This virus and disease were unknown before the outbreak began in Wuhan, China, in December 2019.

[SOURCE: WHO, 2020[11]]

3.4
drive-through screening station
DTSS
drive-thru screening station
temporary testing facility where a test subject goes through screening processes such as a medical interview, examination and specimen collection through a car window without leaving the car

Note 1 to entry: The drive-through model provides a one-stop service of registration – examination – specimen collection – disinfection and education, all carried out while the person stays in the car. It is a screening station specialized in large-scale sample collection and exclusively dedicated to the function of specimen collection.

[SOURCE: CDSCHQ, 2020, modified[10]]

3.5
Level D
work uniform affording minimal protection which is used for nuisance contamination only.

[SOURCE: US Department of Labor[12]]

3.6
personal protective equipment
PPE
device or appliance designed to be worn or held by an individual for protection against one or more health and safety hazards

EXAMPLE   Clothing, gloves, helmets, footwear, face protection.

[SOURCE: ISO 15384:2018, 3.12, modified — The example has been added.]

4   Overview of DTSS

4.1   General

The typical process of a DTSS is shown in Figure 1. An infectious agent can be transmitted by direct contact, droplet spread or airborne. Therefore, effective ways to minimize contact between test subjects and testers are indispensable. The DTSS mitigates contact between test subjects and healthcare workers. Test reservations are available through mobile apps, which minimizes on-site waiting time. A mobile preliminary questionnaire allows for obtaining sufficient information in advance, enabling the medical staff to conduct necessary tests quickly. The DTSS model is applicable to any endemic or pandemic in that it helps expand testing capabilities massively at once. Annex A provides typical approaches to implementing a DTSS (see A.1), the South Korean implementation of DTSS (see A.2) and examples of implementations from other countries (see A.3).
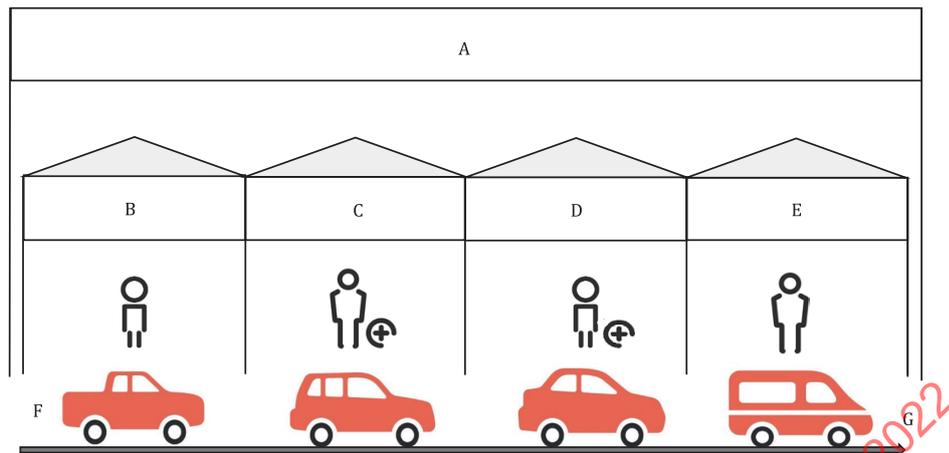
Key

A   DTSS
B   registration
C   examination
D   specimen collection

E   education
F   entrance
G   exit

Figure 1 — Typical process of DTSS

4.2 Purpose

4.2.1 Early diagnosis

The purpose of the DTSS is to rapidly identify and isolate infected people, such as in a pandemic in its early stages. Global challenges arise from novel infectious diseases and in the absence of any vaccines or treatments. It is vitally important to test as many suspected cases as possible to respond to the pandemic quickly.

4.2.2 Minimizing contact

The DTSS mitigates contact among test subjects and healthcare workers. Avoiding direct contact is a top priority when there can be a large number of potentially infected test subjects due to population high density or the potential risk of close contact, or both. People are very likely to wait for testing in indoor testing facilities, increasing the risk of contagion among healthcare workers and test subjects.

4.2.3 Saving time

In contrast to other testing approaches, the DTSS is dedicated to sampling within 5 min to 10 min per person. For a disease where the percentage of asymptomatic and pre-symptomatic test subjects is high, it is impossible to identify subjects without testing. For massive testing, it is necessary to minimize the testing time for each person. Prior to DTSS, the time taken for disinfection after each testing was 30 min to 60 min. In contrast, at least six tests per hour are possible in the DTSS.

4.3   Planning

4.3.1   General

DTSS installation and operation should consider provisions for various uses of space (e.g. well-ventilated, proximity to a hospital, designated area where protective equipment is stored and distributed), including:

a)   establishing the station's operating rules, such as infection control;

b)   providing required equipment and supplies;

c)   pre-operations: task instructions for healthcare workers and other personnel;

d)   during operations: documenting the roles and tasks of staff;

e)   specification of a standardized interview and testing process.

A lack of resources, including PPE and medical personnel, is inevitable during a pandemic. For example, the PPE can be sufficient in some areas where high-degrees of protection, even in Level D, are afforded to healthcare workers, whereas in other areas, PPE is limited to the degree that only masks and face shields are available.

In addition, a DTSS can install more than one lane, depending on the urgency and demand for testing as well as the space assigned to the DTSS. The DTSS comes in various types such as the container type and open-tent type. The choice of the DTSS should take into consideration the circumstances of the community. Thus, planning for DTSS requires flexibility, considering the specific requirements and situations of each community and country.

4.3.2   Site selection criteria

A potential site should consider multiple factors, such as weather conditions, in order to give access to other services and protect staff from severe weather. A site should have a size and space appropriate for a standard screening station. It should be:

a)   separated from residential areas as much as possible, with proper natural ventilation;

b)   accessible by residents;

c)   properly equipped with, for example, a storage warehouse, electrical installation, communication system and water supply;

d)   immediately available for use;

e)   with enough space to store medical wastes;

f)   not cumbersome to drive-through and park.

4.3.3   Site components

4.3.3.1   Personal protective equipment

PPE such as a Level D protection/mask (medical/surgical mask), face shield (e.g. goggles), disposable gown and disposable gloves should be prepared. However, levels of protection against transmission should follow national guidelines.

4.3.3.2   Supplies and utensils

It is essential to secure:

a)   a sufficient power supply for the refrigeration of specimens and laboratory supplies;

b)   printers for labelling specimens;

c)   electronic health records using computers or tablets;

d)   an adjustable temperature setting to ensure heating and cooling systems for staff, which is adjustable based on weather conditions.

4.3.3.3   Public notice

Explanations or instructional videos should be in place by way of a relatively large monitor for high visibility. A notice (e.g. banner, poster) should be put up in the screening station.

4.4   Principles

4.1   A DTSS shall target an individual who drives alone to the screening site (without family members on board).

4.2   In this model, the healthcare workers should wear PPE and perform registration, examination, specimen collection, etc. while standing inside or outside the booth. The distance between the car and the booth needs to be short enough for the purpose of easy specimen collection.

4.3   Two healthcare workers should take turns if necessary. Only one healthcare worker should occupy the booth at a time.

4.4   An appointment should be made prior to the visit to minimize waiting time.

4.5   A DTSS operating team should clearly define roles and responsibilities. Relevant personnel should be trained in advance.

4.6   A DTSS supports infection control by minimizing contact between test subjects, which lowers the risk of infection.

4.7   Personal vehicles should be used.

4.8   An isolated examination area shall be used for a suspected case to prevent the virus spreading.

4.9   When healthcare workers examine a test subject exposed to the virus, they shall comply with the general guidelines of the WHO and the Centers for Disease Control and Prevention (CDC).

4.10   The rotation of health workers should consider the amount of time they are in a standing position, as well as adequate breaks for rest, hydration and nourishment.

4.5   Staffing

The DTSS requires fewer staff than other traditional models. A DTSS can be operated by four to eight healthcare workers, which includes one to three administrative workers (e.g. registration, facility management, vehicle control), one or two doctors (examination), one or two nurses (specimen collection), and one healthcare worker or trained lay person (education). Authorized, trained and competent persons for specimen collection should be available (see Table 1).

NOTE   National or regional regulations or requirements can apply.

Table 1 — Minimum required staff

| Process	Staff	Number of staff	Role	Responsibility
Registration and interview	Administration, facility management, vehicle control	1 to 3	Test subject registration. Questionnaire (directly filled out by the driver or through questioning). Check for symptoms of fever.	Have test subjects fill out the questionnaire. (It can be omitted if an electronic questionnaire was submitted in advance via a mobile app.)
Medical examination	Physician	1 to 2	Check symptoms with questionnaire. Determine the collection method (e.g. whether to sample from the lower respiratory tract).	Questionnaire review. Triage and screening exam.
Specimen collection	Registered nurse, trained lay health workers (LHWs) or licensed practical nurses (LPNs).	1 to 2	Perform test.	In the case of sputum collection, it is recommended to close the window and check it.
Education	Registered nurses, healthcare workers, trained lay (health) workers, or licensed practicing nurses.	1	Education for infection prevention.	

5 Screening process

5.1 Reservation

An appointment should be made prior to the visit to reduce waiting time. If possible, online questionnaires or interviews can be used before the visit.

5.2 Registration

A test subject should be required to present at least one, but preferably two, pieces of unique identification as well as contact information, symptoms and a travel history. The subject shall fill out a questionnaire. It is recommended that the car ventilation mode is AC internal circulation during registration. See Figure 2.
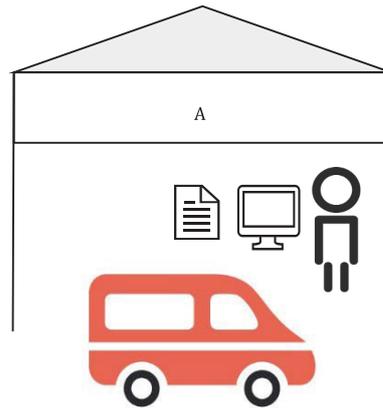
Key

A   registration

NOTE   The registration staff in charge (one person) performs the following tasks:

— coordinate DTSS patient registration;

— check ID and contact information;

— check the contact history with confirmed cases;

— check the questionnaire.

Figure 2 — Registration

5.3   Examination

Medical staff interview and exam individuals in order to determine who should be tested. They decide the test methods and types of specimen to collect at this stage. See Figure 3.
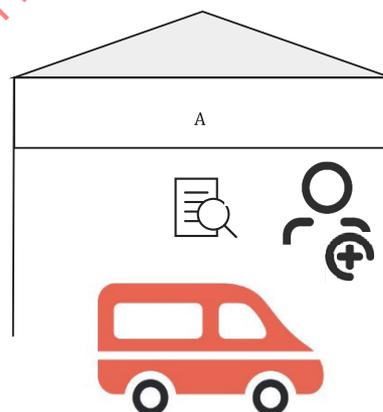
Key

A   examination
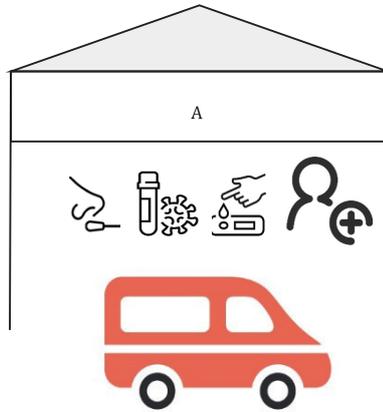
NOTE   The healthcare worker (one person) performs the following tasks:

— triage;

— medical screening exam;

— determine whether to test.

Figure 3 — Examination

5.4   Specimen collection

Specimen collection methods and guidelines vary. Healthcare workers should follow manufacturers' instructions and CDC guidelines. See Figure 4.
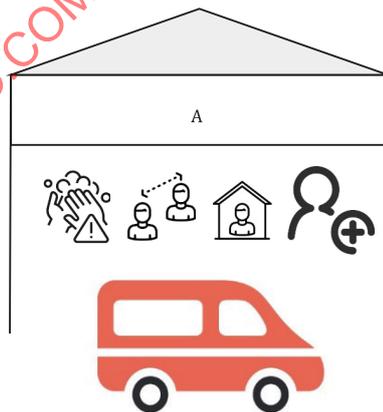
Key

A   specimen collection

NOTE   The nurse (one person) performs the following task:

— sampling.

Figure 4 — Specimen collection

5.5   Education

A test subject should be instructed to stay in self-quarantine until he/she receives the test result and to ensure that family members or other individuals do not use the same car when leaving the site. See Figure 5.

Key

A   education

NOTE   The nurse or trained lay person (one person) performs the following tasks:

— provide instructions on self-quarantine until a test result is available;

— instruct the visitor to maintain a safe distance.

Figure 5 — Education

6 Notification of test results

6.1 Test subject

The test result shall be delivered directly to the test subject.

6.2 Public health

If a person tests positive for the infectious disease, the designated local public health authority shall be notified immediately.

Annex A
(informative)

# Approaches to and examples of drive-through screening stations

A.1 Approaches to DTSS

A.1.1 General

Healthcare organizations or public health centres may consider two approaches to DTSS while considering the available resources, see A.1.2 and A.1.3.

A.1.2 Approach A — Four steps

When operating a separate booth for each of the four steps (registration → examination → specimen collection → education and disinfection), it takes approximately 2 min to 5 min at each booth to carry out the relevant tasks. This can reduce waiting time and allow for a large-scale specimen collection. Sufficient space and staff to install and operate four separate booths should be available. See Figure A.1.
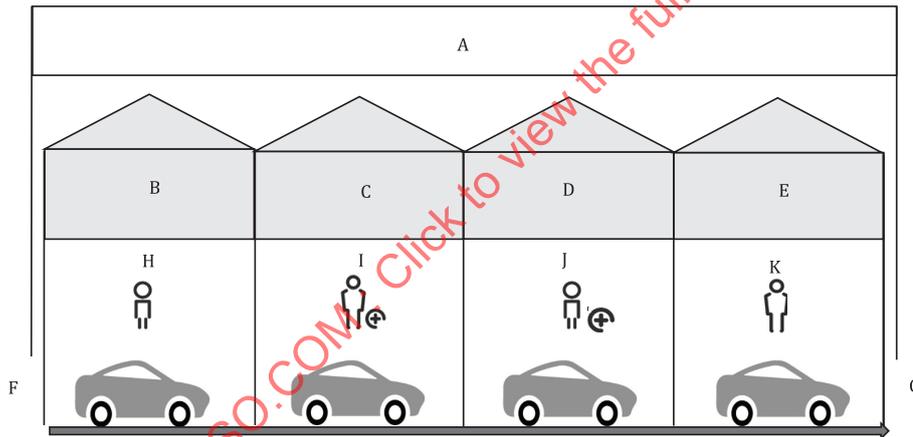
Key

A	DTSS	F	entrance
B	registration	G	exit
C	examination	H	registration staff
D	specimen collection	I, J	healthcare worker
E	education	K	nurse or trained lay person

Figure A.1 — Typical layout of DTSS Approach A

A.1.3 Approach B — Two steps

Operating a streamlined process of two steps (registration and waiting → examination, specimen collection, education and disinfection) simplifies the work and uses two booths. This enables efficient use of space and staff. One booth manages multiple steps, incurring some waiting time for individuals in cars. Advance appointment, through preferably a hotline, is highly recommended in this approach in order to streamline the work process. See Figure A.2.