Chest pains with pre-hospital confirmed COVID-19

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Category
Corona/Medical

Topic
Use of viral protective equipment in a clinical, pre-hospital treatment situation (dependent upon skills training in practical use of equipment before simulation).

Learning goals
Correct transmission prevention in accordance with procedure prior to, during and after patient treatment. [1, 2]
The patient's medical condition is treated in accordance with applicable protocol.

Chain of events
An XX-year-old patient is sitting at home in isolation because of confirmed Covid-19 virus four days ago. They don't have serious symptoms. Just slight fever and coughing.

The patient experienced squeezing chest pains when they were carrying washing upstairs at home.

The pains did not cease when they sat down. After 15 minutes, the patient called emergency services and an ambulance was dispatched.

Patient description
Corona infected patient. Fever and slight cough. Squeezing chest pains. Pale, clammy and anxious.

Information to participants
Code red. XX-year-old woman/man with chest pains. The patient was confirmed with Corona virus 4 days ago.

Simulation info

TYPE	Living stand-in
EQUIPMENT	Protective equipment (in accordance with the plan) - LP15 (monitor/defibrillator)
EXTRA EQUIPMENT	
MEDICATION	Medication as appropriate, based on experience and local protocol.

Primary indications

AIRWAY	Open, occasional coughing
BREATHING	RR 20
CIRCULATION	Pale, clammy, P 80
DISABILITY	Conscious and anxious
OTHER INDICATORS	

Changes in chain of events
Primary focus on protection/transmission prevention.

Expected/recommended treatment

Correct clothing with gloves, clinical mask and protective goggles. Clinical mask and gloves on the patient.

Suggestions for help/advice

The disease is transmitted during a cold or flu by droplets. The infection is transferred from the airways of an infected person in three ways: Ref. 2,3,4.

- Through the air when the infected person sneezes or coughs, so that the virus can be breathed in, or by coming into contact with the mucous membranes of the eyes, nose or mouth of those standing nearby (within 1-1.5 m)
- Through direct contact with the infected person via the hands
- Through indirect contact when the virus has been transferred to inventory or objects through sneezing/coughing, or by the infected person touching an object and others coming into contact with that object

No reliable information exists concerning incubation periods (the period of time from when someone becomes infected to when symptoms manifest). The WHO estimates (as per 19.02.2020) that the incubation period is 5-6 days, but this can vary from 0-14 days.

SUSPECTED CORONA VIRUS (COVID-19) INFECTION:

Ref: 1.
All patients, regardless of circumstances, must be asked whether they or others in their social circle are infected/in isolation or in quarantine because of risk of infection.
Patients with acute airway infection with at least one of the following: coughing, shortness of breath, fever, who during the last 14 days before the manifestation of symptoms, fulfill one of the following criteria:

- Have been in areas with sustained infection. Click here for the latest information. See also information on the latest infection situation in Norway, below
- Have been in close contact (see below) with a confirmed case of Covid-19 infection
- Have cared for/treated a patient, handled samples from, or in some way had similar close contact with a person who has been confirmed as having Covid-19, without having used the recommended protective equipment

All patients with symptoms must have a surgical mask applied, regardless of whether they are suspected of having Corona-19 or not. (Consider the need for further protective measures in each individual case).
"Close contact" is defined as persons who in the last 14 days:

- Have cared for/treated a patient, handled samples from, or in a similar way had close physical contact with a person who is confirmed as having Covid-19, without having used the recommended protective equipment
- Have been in close face-to-face contact with (less than 1 meter) a person confirmed as having Covid-19
- Have sat in the immediate vicinity of a person on a flight (2 rows of chairs), confirmed as having Covid-19, including other close contact on flights.
- Have lived in the same household as a person confirmed as having Covid-19

Available protective equipment in ambulances

- Viral unit packed according to plan (used in special circumstances, see description of protective equipment below):
- Unit/bag with general equipment for use in Covid-19 cases, e.g. 2 x regular protective gowns, 2 x white protective suits, 2 x visors, 5 x surgical masks, 2 x P3 masks, roll of yellow bin bags, sufficient quantity of disinfectant, e.g. antibac, surface disinfectant, cloths or wipes.

Before ambulance transport of patients with suspected/confirmed Corona infection, it is an advantage to remove or cover up all unnecessary equipment with plastic to ease cleaning and disinfection afterwards. Also cover the hatch to the driver's cabin so that this remains uncontaminated.

- If there is a free reserve ambulance available, the stations should have this ready prepared with plastic to receive Covid-19 red assignments at short notice.
- Code red assignments must not wait until a vehicle is dressed internally with plastic, although protective equipment worn by personnel must always be prioritised before assignments.

THE PATIENT

If the situation allows, limiting transmission from the patient coughing and touching surfaces is desirable:

- The patient is given a surgical mask.
- Ensure the patient has clean hands. First choice is hand disinfectant, or to put on gloves if possible.
- The patient's personal effects are placed in a yellow bin bag during transport.

PERSONNEL

1. Who are in close proximity to the patient (1.5 - 2 metres)
2. Who will enter a room/dwelling where the patient has been
3. Will be using protective equipment:

PERSON RESPONSIBLE FOR THE PATIENT (SITTING IN THE BACK OF THE AMBULANCE WITH THE PATIENT):

- Protective coveralls, normal white coveralls. In situations with a lot of moisture and spillages, consider using a yellow protective suit from the virology unit.
- Respirative protection, normally a clinical mask. In situations with an increased risk of transmission* consider using a P3 mask.
- Eye protection, normally a visor. In situations with an increased risk of transmission* consider using protective goggles (look similar to skiing goggles) from the virology unit.
- Gloves, ideally several layers making it easy to change if necessary.

DRIVER – CONSIDER THE NEED FOR PROTECTIVE EQUIPMENT:

- If you are not entering a room/dwelling where the patient/other infected persons have been and keep a distance of 1.5 – 2 metres away, protective equipment is normally not required.
- For simple assistance, a normal protective gown, surgical mask, visor and gloves are sufficient.
- For assistance with difficult moving of patients and situations with increased risk of transmission* protective equipment as used by the person responsible for the patient, should be used. See above.
- The driver takes care of the protective equipment before sitting in the driver's cab. Remember hand disinfectant.

** Increased risk of transmission situations are ones where there is an increased risk of spraying and aerosol*

formation, e.g. inhalation treatment and overpressure treatment with C-PAP or bag-mask ventilation.

- Protective goggles from the virology unit are essentially multi-use and should normally be disinfected and re-used (e.g. hung up in the ambulance during disinfection with DeconX, or alternatively washed with Virkon or surgical spirit). Protective plastic oversocks are not normally necessary with Corona virus.

FOLLOWING TRANSPORT:
Complete disinfection of the ambulance in the normal way:

- Ambulances that have had to complete assignments without the time to cover the ambulance interior with plastic must first be prioritised for DeconX disinfection at the Stavanger ambulance station.
- Vehicles that are covered beforehand should prioritise regular disinfection with Virkon or disinfection spirit.

Or:

- Used single-use protective equipment should be placed in yellow bin bags and disposed of in a hazardous waste container.
- See special procedure for disinfection and handling of oxygen cylinders that can be decontaminated.
- Soiled clothing should be changed and washed with ambulance clothing as quickly as possible. Otherwise/ normally, ambulance clothing can be washed at the end of the shift. All washing of ambulance clothing must be done in the service's washing machines with chemical disinfection.

Bliksund action manual - ambulance

Specific actions during ambulance transport of an infected patient.

- Evaluate use of barriers on stretchers (e.g. MediWrap)
- Change gloves and disinfect the hands after every direct contact with the patient

Infection type	**MRSA**
Form of transmission	By contact. Antibiotic resistant
Action patient	Regular surgical mask and gloves
Action personnel	Regular surgical and gloves. In the event of spillage and/or ongoing diarrhoea/vomiting a yellow protective gown should also be used.
Desinfectant	Virkon

Infection type	**Meningitis**
Form of transmission	By contact and droplets
Action patient	Regular surgical mask
Action personnel	Regular surgical mask, gloves
Disinfection	Virkon

Infection type	**Tuberculosis**
Form of transmission	Airborne. During longer periods of transport, superfluous equipment should be removed or covered
Action patient	Regular surgical mask
Action personnel	Surgical mask class FFP3, full coverall protective suit, gloves

Disinfection	PeraSafe

Infection type	**Norovirus/gastroenteritis**
Form of transmission	Contact or droplet
Action patient	Regular surgical mask
Action personnel	Regular surgical mask and gloves. In the event of spillage and/or ongoing diarrhoea / vomiting a yellow protective gown should also be used.
Disinfection	Virkon

Infection type	**Clostridium difficile**
Form of transmission	By contact. Often green diarrhoea, often in connection with antibiotic treatment.
Action patient	Regular surgical mask and gloves.
Action personnel	Regular surgical mask and gloves. In the event of spillage and/or ongoing diarrhoea / vomiting a yellow protective gown should also be used.
Disinfection	PeraSafe (Virkon can also be used if PeraSafe is not available).

Infection type	**ESBL, VRE**
Form of transmission	By contact. Often found in the intestines. Antibiotic resistant.
Action patient	In the case of ESBL in the airways, the patient must wear a regular surgical mask.
Action personnel	Use gloves. In the case of EBSL in the lungs, use also a surgical mask and yellow protective gown. In the case of spillages and or/ongoing diarrhoea/vomiting, a yellow protective gown must also be used.
Disinfection	Virkon

- All visible contamination must be removed before disinfection.
- Contact points should be disinfected with the correct disinfectant with an active effectiveness of at least 10 minutes. Afterwards, any necessary cleaning can be done with normal soap and water, which will also remove the disinfectant.
- In the case of simple local disinfections, the disinfectant can also be removed using a clean cloth and clean water.

References

Bliksund action manual - ambulance (Helse Stavanger - Tiltaksbok Ambulanse)
FHI. Folkehelseintituttet: https://www.fhi.no/sv/forebygging-i-helsetjenesten/smittevern-i-institusjoner/
European Centre for Disease Prevention and Control: https://www.ecdc.europa.eu/en/novel-coronavirus-china
World Health Organization: https://www.who.int/health-topics/coronavirus