

# Current separating/screening process for suspected patients with covid-19 and suggestions for differential diagnosis with others infectious diseases at Hue University of Medicine and Pharmacy Hospital, Vietnam

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## Abstract

The COVID-19 pandemic is spreading throughout almost all the countries. In the world in general and Vietnam in particular, one of the most concern in COVID-19 prevention is the control of SARS-CoV-2 transmission from unknown infected patients who hospitalized for other diseases to patients and medical staff at the hospitals. To perform a separating/screening process for suspected patients with COVID-19 right at the moment of admission showed effectiveness. This process is currently applied at Hue University of Medicine and Pharmacy Hospital. By dividing patients into "normal" and "screening" groups followed by differential diagnosis, cases that sufficient with epidemiological, clinical and laboratory factors are classified to be put into isolation monitoring and performed COVID-19 definitive diagnosis.

**Key words:** COVID-19, SARS-CoV-2

## BACKGROUND

Currently, COVID-19 pandemic is happening very complicatedly and unpredictably all over the world as well as in Vietnam [1]. The prevention, control for COVID-19 and guidance to the community should not make errors, particularly in the process of separating/screening patients entering the hospital. It is extremely important to protect people at the hospital from infected or suspected patients with COVID-19 who hospitalized for other diseases. If only one of them enters the hospital without appropriate protective measures, the consequences will be uncontrollable. Many infectious diseases have clinical signs, tests, epidemiological factors ... that are quite similar to COVID-19. The medical staffs at the Outpatient Department could classify those patients to the suspected group. This is still acceptable in the early stage since it strictly based on the principle "mistake rather than omission". However, since patients have other infectious

diseases, prompt diagnosis and treatment are also necessary. Because of the difference in treatment options and prognosis, not to mention the possibility of changing the course of underlying diseases through cross-infection caused bad consequences to the patients, it is evident that early differential diagnosis is imperative.

### 1. Current situation of separating/screening process for COVID-19 suspected patients at health facilities in Vietnam

In Vietnam, hospitals have implemented many measures to prevent and control COVID-19. In particular, the separating/screening process for patients in health facilities is extremely important to avoid increasing COVID-19 cases in hospitals or clinics without control.

At the gates of hospitals or clinics, the separating/screening process is performed with quick questioning and examination, quick classification by hypothetical situations as follows [2]:

**Table 1.** Separating/screening patients by clinical and epidemiological factors

	Fever	Respiratory symptoms	Epidemiological factors	Classification
1	No	No	No	Normal
2	Yes	No	No	Normal
3	Yes	Yes	No	Screening

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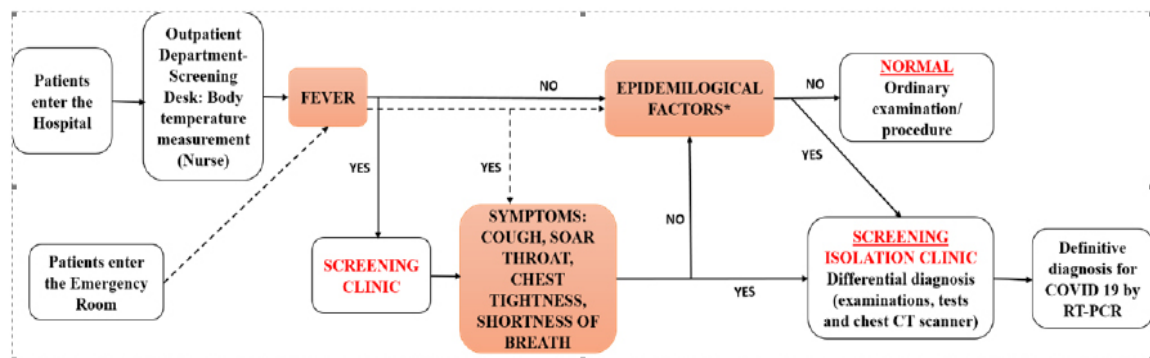
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4	Yes	No	Yes	Screening
5	Yes	Yes	Yes	Screening
6	No	No	Yes	Screening

If the patient does not cooperate, does not inform fully, with or without fever, with or without respiratory symptoms, unknown of epidemiological factors, they must be taken for screening.

Particularly in the emergency room, patients who come with any clinical situation would also be questioned and examined quickly to eliminate suspected COVID-19 cases before conducting emergency. If the patient has COVID-19-related features (clinical or epidemiological), he/she would be seen as a COVID-19 suspected case and receive emergency treatment in an isolation clinic [2-9]:

**Diagram 1.** Separating/Screening process for suspected patients with COVID-19 at Hue University of Medicine and Pharmacy Hospital



Bold line: patients enter the hospital and have medical examination at the Outpatient Department; dotted line: patients enter the Emergency Room.

**Some epidemiological factors include [1]:**

1. Contacted closely with a SARS-CoV-2 infected person within the past two weeks;
2. Have family members exposed to a SARS-CoV-2 infected person within the past two weeks;
3. Returned from countries where COVID-19 has been circulating in the past two weeks: China, Korea, Italy, Iran, Singapore, Japan, Spain, etc;
4. Have family members returned from countries where COVID-19 has been circulating in the past two weeks;
5. Contacted closely with people returning from countries where COVID-19 has been circulating in the past two weeks;
6. Returned from a province where has confirmed the presence of a COVID-19 case within the past two weeks;
7. Contacted closely with people returning from a province where has confirmed the presence of a COVID-19 case within the past two weeks;
8. Contacted directly with wild animals or live products of wild animals within the past two weeks.

This separating/screening process showed effectiveness in preventing SARS-CoV-2 infected patients from entering the hospital without appropriate preparation.

If the patients are classified as "screening", i.e the suspected group, he/she will be taken to an isolation clinic for further monitoring and diagnosis. As mentioned, several groups of bacterial and viral infections have clinical symptoms and

epidemiological factors that are quite similar to COVID-19. If we only rely on these factors, along with some tests, there will likely be confusion in classification, leading to unwanted consequences for other patients. Because the spectrum for "screening" has a quite wide range, the hospital may be overloaded since all patients in this group need to be isolated and performed tests to a definitive diagnosis for COVID-19. Therefore, after this process,

the differential diagnosis at the isolation clinic can help reduce the number of patients isolated, as well as tests for each patient.

## 2. Why do we care? Which diseases need to be differentiated and how?

COVID-19, a pandemic spread throughout the world with high incidence and death rate, is currently the most concerned disease worldwide. The transmission route of COVID-19 has now been confirmed, including airborne transmission through infected people sneezing and coughing; contact with an infected person through intimate gestures such as shaking hands, kissing; accidentally touching an object contaminated with respiratory secretions from patients, then bring it to the mouth, nose, and eyes without washing hands. Infection can happen through the gastrointestinal tract so that the caregivers can also be exposed to the virus when handling the patient's waste. In Vietnam and many

tropical countries, several infections of microbial pathogens are so common with similar symptoms, laboratory results and epidemiological features to the COVID-19. This may confuse and cause errors in separating/screening process for suspected patients with COVID-19 at hospitals as well as health facilities. This confusion can lead to wrong isolation, slow treatment, cross-infection, hospital infections, aggravate patients' illnesses, much more isolated cases... which causes severe and uncontrolled consequences for either patient, hospitals or the community. At the Outpatient Department of Hue University of Medicine and Pharmacy Hospital, more than 800 patients hospitalized each day, of which about 20 people have been classified as "screening". After differential diagnosis, only a few cases are sufficient with epidemiological, clinical and laboratory factors to be put into isolation monitoring and performed COVID-19 definitive diagnosis.

**Table 2.** Factors and signs that can be quickly differentiated

	Factors and signs	Diseases should be differentiated			
		COVID-19	Seasonal Flu	Dengue Fever	Pharyngitis
Epidemiological factors	Cold season: winter, spring.	Yes	Yes	Any	Any
	Through contact: droplets, surface ...	Yes	Yes	No	No
	Infectious patients	Elderly, with background disease	Children, pregnant women, the elderly	Children, adults	Children, teenagers
	Contact history: travel, crowds ...	Yes	Yes or No	Yes or No	Yes or No
	Returned from COVID-19 epidemic region	Yes	No	No	No
	Close contact with someone who has been in contact with a known COVID-19 infected person	Yes	No	No	No
	Close contact with confirmed COVID-19 infected people	Yes	No	No	No
Clinical signs	High heart rate	Yes	Yes	Yes	Yes or No
	Constant, high fever	Yes	Yes	Yes or No	Yes or No
	Body fatigue	Yes	Yes	Yes or No	No
	Myalgia	Yes	Yes	Yes or No	No
	Sore throat, cough, sneezing, runny nose, expectoration (respiratory symptoms)	Yes	Yes	No	Yes or No
	Shortness of breath	Yes	Yes	No	No

Laboratory results	White blood cell count increased, CRP increased, blood sedimentation rate increased	Yes	Yes	Yes	Yes
	Platelet count decreased	No	No	Yes	No
	Prolonged bleeding time, prolonged coagulation time	No	No	Yes	No
Imaging diagnosis	Chest CT scanner with pictures of interstitial pneumonia or atypical pneumonia	Yes	Yes or No	No	No

Clinical factors made the patient's admission, but epidemiologic factors play the main role in screening COVID-19-infected people. Therefore, epidemiological evaluation is a top priority. In the case of clinical signs but no epidemiological factors, chest CT scans are very valuable in screening for COVID-19 cases. According to a study by Wei-cai Dai et al in China [12], currently, 90% to 95% of the imaging diagnostic methods used in suspected patients with COVID-19 are chest CT, with a high rate of viral pneumonia detection. Other research by Yan-li and Liming Xia [13] showed that chest CT has a low omission rate of COVID-19 diagnosis (3.9%, 2/51 patients) and could be used as a standard method for rapid diagnosis of COVID-19 to optimize patient management and screening.

The process of separating/screening patients right at the moment of admission plays a very important role. Although "mistake is better than omission", it is necessary to minimize errors in this process, which easily causes unfortunate consequences for both

patients and medical facilities.

### 3. CONCLUSION

Separating/screening people who enter the hospital to avoid the virus spread by suspected patients with COVID-19 in clinics and hospitals is extremely important. However, many other infectious diseases groups also have similar clinical signs and epidemiological factors to COVID-19, which causes mistakes in the screening process and rises the number of suspected cases. Isolation, monitoring and definitive diagnostic must be performed to each suspected patient, which causes a waste of time and money, not to mention that it will slow down their main disease treatment. Therefore, it is necessary to examine and differentiate carefully in order to limit the increasing number of suspected patients.

These above suggestions are still going to be completed in an effort to build a better separating/screening process in clinics and emergency rooms during the time COVID-19 is spreading and causing disease all over the world.

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