



# Recommendations regarding the admission, infection prevention and control of pediatric patients during coronavirus disease 2019 outbreak in Shanghai China

Ying Huang<sup>1#</sup>, Feihong Luo<sup>2#</sup>, Qian Shen<sup>3#</sup>, Chuanqing Wang<sup>4#</sup>, Chongfan Zhang<sup>5</sup>, Hong Xu<sup>6</sup>

<sup>1</sup>Department of Gastroenterology, National Children's Medical Center, Children's Hospital of Fudan University, Shanghai, China; <sup>2</sup>Department of Pediatric Endocrinology and Inherited Metabolic Diseases, National Children's Medical Center, Children's Hospital of Fudan University, Shanghai, China; <sup>3</sup>Department of Nephrology, National Children's Medical Center, Children's Hospital of Fudan University, Shanghai, China; <sup>4</sup>Department of Infection Control, National Children's Medical Center, Children's Hospital of Fudan University, Shanghai, China; <sup>5</sup>Guideline Production and Evaluation Center, National Children's Medical Center, Children's Hospital of Fudan University, Shanghai, China; <sup>6</sup>Department of Nephrology/Rheumatology, National Children's Medical Center, Children's Hospital of Fudan University, Shanghai, China

#These authors contributed equally to this work.

*Correspondence to:* Chongfan Zhang. Guideline Production and Evaluation Center, National Children's Medical Center, Children's Hospital of Fudan University, 399 Wanyuan Road, Shanghai 201102, China. Email: xt211311@aliyun.com; Hong Xu. Department of Nephrology/Rheumatology, National Children's Medical Center, Children's Hospital of Fudan University, 399 Wanyuan Road, Shanghai 201102, China. Email: hxu@shmu.edu.cn.

Submitted Aug 27, 2020. Accepted for publication Mar 03, 2021.

doi: 10.21037/tp-20-271

**View this article at:** <http://dx.doi.org/10.21037/tp-20-271>

## Introduction

Since December 2019, the number of coronavirus disease 2019 (COVID-19) cases and severe cases caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in China has been increasing rapidly (1,2). A total of 80,926 confirmed and 349 suspected cases have been reported by March 10, 2020. Epidemiological data showed that all people were susceptible to SARS-CoV-2. Respiratory droplets and close contact are main means of transmission, and aerosol transmission occur in a closed environment exposed to high concentrations of aerosols (3). The clinical symptoms of COVID-19 were atypical (4-6). Provinces and municipalities in China have launched first-level response to this major public health emergency. It has been one month since the lockdown were launched in all cities in Hubei Province. The increasing number of people returning home during the Spring Festival across the country has posed a new challenge to prevention.

There are still medical demands for patients due to the diseases other than COVID-19. There is a need to attend to pediatric inpatients by caregivers. Currently, diagnosis of suspected cases is nucleic acid detection, but cannot be used

as a universal screening method. COVID-19 symptoms are atypical with infectious possibility during incubation period, it is necessary to inquire about the epidemiological history and related symptoms for the prevention and control of outbreak in children's hospitals or pediatric wards at general hospitals. In order to prevent the occurrence and spread of COVID-19 infection, Children's Hospital of Fudan University formulated this expert recommendation, "Recommendations on the admission and management of pediatric patients during COVID-19 outbreak (1st edition)" (referred to as Recommendations). This study is based on a study first published on *Chinese Journal of Evidence-based Pediatrics* in Chinese (7). We aimed to prevent transmission of COVID-19 infection.

## Target group

Pediatricians, nurses, hospital administrators, clinical assistants, children and their in-patient caregivers.

## Applicable population

Pediatric patients with specialized diseases who must be admitted to the children's hospital or general hospital for

diagnosis and treatment.

### The process of generating Recommendations

During coronavirus disease 2019 (COVID-19) outbreak, a working group to make recommendations was formed based on the needs and problems of hospitalization observation and treatment of various specialized diseases in children. This working group included nine specialties in pediatrics, clinical nutrition, nursing and hospital administration. The process was conducted as follows: (I) construct and gradually improve the catalogue of the proposed issues: application group, applicable population, general principles, process of admission during COVID-19 outbreak, assessment of epidemiological history, disease evaluation, transition room/transition ward, management rules for prevention and control of special cases, general ward and management of hospitalized children post-discharge; (II) establish the second-level catalogue of issues under the first-level ones and retrieve the current evidence on COVID-19 about the first-level and second-level catalogue of proposed issues; (III) among the drafters, Dr. Ying Huang, Dr. Feihong Luo, Dr. Qian Shen are pediatric specialists, Dr. Hong Xu is a hospital administrator and also a specialist, Dr. Chuanqing Wang is an expert in nosocomial infection, Dr. Chongfan Zhang is the methodologist. They drew up the first draft of the Recommendations respectively; (IV) formulate a discussion draft by methodologists on the clinical guideline production and evaluation; (V) conduct face-to-face discussions among the working group to form a trial version of the Recommendations; (VI) implement the trial Recommendations and get reviews from hospitalized pediatric patients to form a formal version of the Recommendations.

### General principles

In the early stage of COVID-19 outbreak, 57 out of 138 COVID-19 hospitalized patients acquired the disease from nosocomial infections (40 among medical staff and 17 among hospitalized patients) (1,2). It is suggested that during COVID-19 outbreak: (I) strictly adhere to the admission criteria by specialty; (II) shorten the length of hospitalization when possible; (III) assess the detailed epidemiological history, condition of children and their close contacts during the 14 days before admission; (IV) set up transition rooms/transition wards, implement single

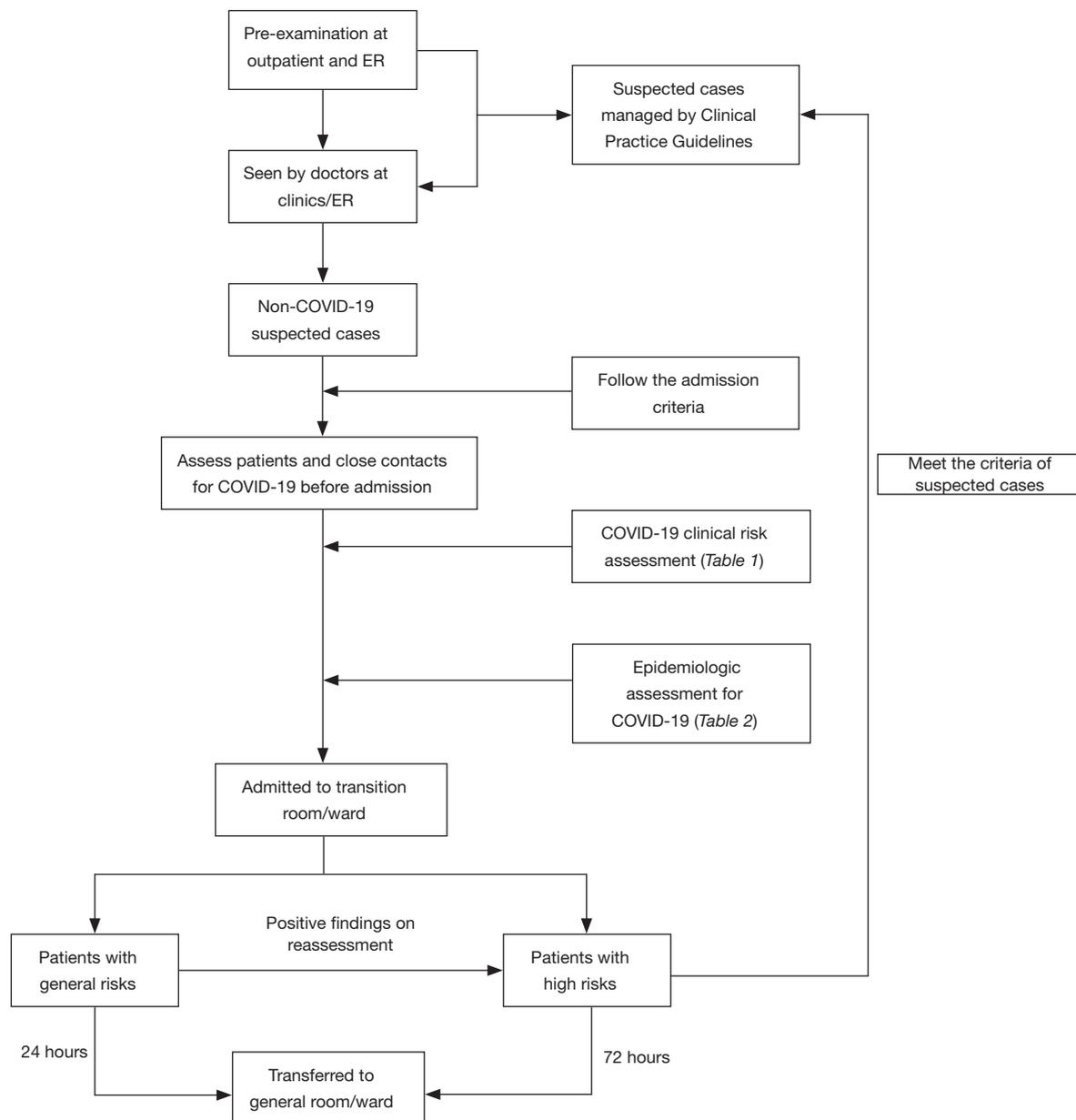
patient room and evaluate continuously.

### Process of admission during COVID-19 outbreak (Figure 1)

The National Health Commission of China issued the “Diagnosis and Treatment Program for New Coronavirus Infected Pneumonia (Sixth Trial Edition)” (2) (referred to as National Program 6) on February 18, 2020. Our hospital released the “Guideline for Rapid Screening and Clinical Practice of Suspected and Confirmed New Coronavirus Infection/Pneumonia in Children” (8) (referred to as the Clinical Practice Guidelines). The Clinical Practice Guideline suggests that the nurses and doctors at outpatient and emergency department should inquire twice about the temperature and epidemiological history of the children in the clinics. Suspected cases should be treated according to the Clinical Practice Guideline (8). Non-COVID-19 suspected children to be admitted for diagnosis and treatment should be evaluated by a specialist. Before admission, the children and their parents should be well informed regarding the risk of nosocomial infection.

The children and their close contacts could be classified into general risk and high risk based on epidemiological history, chief symptoms and signs of COVID-19. General risk is defined as negative results of two assessments. Patients with general risk are admitted to the transition room/transition ward. High risk is defined as failure to meet the diagnostic criteria for suspected cases, indicating the two assessments were in doubt. Patients with high risk are admitted to the transition room/transition ward. Children admitted to the transition room/transition ward should be assessed every day.

A study reported that the median incubation period of COVID-19 was 3.0 [0–24] days (9). Children with general risk should be observed for at least 24 hours after hospitalization. If no new positive results are found in the two assessments, they will be admitted to the general ward. If there are new findings, they would be classified as high risk or suspected cases. Children with high risk should be observed for at least 72 hours. If no new positive results are obtained, they will be admitted to the general ward. If there are new findings, the assessment period will be extended to 7 days or the patients will be identified as suspected cases. One study showed that the median time from the onset of COVID-19 to admission was 7 days (9). Anyone of the patients or their close contacts is considered to have high



**Figure 1** Flowchart of admission of pediatric patients during COVID-19 outbreak.

risk, all should be treated as with high risk.

## Disease evaluation

### Evaluation of specialized diseases

While prior admission criteria of specialized departments at each hospital could be referred to, but the absolute need for admission should be the criteria for admission

during the outbreak to reduce the possibility of COVID-19 transmission and cross infection in the hospital.

### Evaluation of the chief symptoms and signs of COVID-19

We reviewed literatures on COVID-19 in adults (10-12) and children (4,5,8,11,13), and established a form on clinical risk assessment in children before admission (Table 1). The doctor in charge of admission fills out Table 1 one-by-one in

**Table 1** Clinical risk assessment of SARS-CoV-2 infection in hospitalized children and their close contacts in the last 14 days

Assessment items	Patient	All close contacts
Symptoms	Need to evaluate	Need to evaluate
Fever		
Cough, dry cough		
Running nose, sneezing, sore throat		
Diarrhea		
Signs	Need to evaluate	Not necessary
Dyspnea		
Tachypnea		
Laboratory examinations	Need to evaluate	Not necessary
Normal or decreased in total WBC		
Lymphopenia		
Increased CRP		
Chest imaging	Need to evaluate	Not necessary
Consistent with COVID-19 changes		

WBC, white blood cell; CRP, C-reactive protein.

the outpatient and emergency department by interviewing children and their parents. The chief symptoms and signs of COVID-19, laboratory examinations and imaging examinations in the last 14 days should be evaluated. The chief symptoms of COVID-19 of their close contacts in the last 14 days should be also evaluated. The relevant medical records should be provided, if available.

### Assessment of epidemiological history

Table 2 is a risk assessment of the epidemiological history of COVID-19 infection in children and their close contacts before hospitalization, considering the transmission routes [including respiratory droplets and contact transmission, digestive tract transmission, etc. (2)] and factors that promote the spread [including close contact within families or among people who are in relatively confined spaces such as airplanes, trains, ships, etc. (11,14,15)]. The doctor in charge of admission fills out Table 2 one-by-one in the outpatient and emergency department by interviewing children and their parents. Based on the

epidemiological history, subjects can be divided into four groups: Group A are who has clear epidemiological history of being in Wuhan; Group B don't know A, so they cannot be accurately identified by Group A. Group B may have met A on planes, trains, subways, in large shopping malls, restaurants or even only in elevators; Group C are A's families, colleagues, friends and neighbors, etc., which can be identified by tracking A's activities. They could be observed in isolation for 14 days; Group D are those who stay at home. However, as long as they go out, they may encounter Group B and become Group B. Children are minors who are usually accompanied by adults at home or outside. The complex relationship among adults makes the inquiry of children's epidemiological history more complicated and important. It is necessary to ask all the close contacts who have been in contact with the child at the same time when inquiring the epidemiological history. The contents of the assessments in Table 2 were obtained from the evaluation of a real hospitalized child and his close contacts, which is a reference for assessment.

### Transition room and/or transition ward

#### Settings

In order to effectively prevent and avoid the occurrence and spread of COVID-19 infection in the inpatient wards, transition rooms were set up in each pediatric department (1/4 to 1/2 of rooms are reserved as transition rooms). Hospitalized patients with general or high risk need to be admitted to the transition room, which is managed separately. If the transition rooms of each ward are saturated, it is recommended to set up transition wards in the hospital. The location of transition wards should be far away from the entrance. An obvious warning sign should be shown in the transition room/transition ward.

#### Key points on the prevention and control of infections in ward

- (I) Two assessments should be applied for children and their close contacts during daily rounds. Meanwhile, the diagnosis and treatment of specialized diseases should be expedited.
- (II) As far as possible, the transition room/transition ward shall be staffed with fixed personnel for ward rounds and nursing.
- (III) The ward rounds are conducted in the general room

**Table 2** Risk assessment of the epidemiological history of SARS-CoV-2 infection in children and their close contacts before hospitalization with an example of a patient

Time	①Epidemiological history of SARS-CoV-2 infection (Trial Fifth Edition)		②Shopping in the supermarket/dining out		③Visit relatives and friends		④Long distance transportation		⑤Entertainment		⑥School and training		⑦Epidemic of passing by area		
	①-1	①-2	①-3	①-4	②-1	②-2	③-1	③-2	④-1	⑤-1	⑤-2	⑥-1	⑥-2	⑦-1	⑦-2
0 d	Visit our clinics with wearing facial mask on Feb 3 <sup>rd</sup>	No	No	No	No	No	No	No	Self-driving	No	No	No	No	No	No
1 d	Visit our clinics with wearing facial mask on Feb 2 <sup>nd</sup>	No	No	No	No	No	No	No	Self-driving	No	No	No	No	No	No
2 d	At home	No	No	No	No	No	No	No	No	No	No	No	No	No	No
3 d	At home	No	No	No	No	No	No	No	No	No	No	No	No	No	No
4 d	At home	No	No	No	No	No	No	No	No	No	No	No	No	No	No
5 d	At home	No	No	No	No	No	No	No	No	No	No	No	No	No	No
6 d	From Xi'an maternal grandparents' house to Shanghai on Jan 28 <sup>th</sup>	No	No	No	No	No	No	No	Airplane: flight number, and seat number (self-driving to other places)	No	No	No	No	No	No
7 d	At home	No	No	No	No	No	No	No	No	No	No	No	No	No	No
8 d	At home	No	No	No	No	No	No	No	No	No	No	No	No	No	No
9 d	At home	No	No	No	No	No	No	No	No	No	No	No	No	No	No
10 d	From Jingzhou paternal grandparents' house to Xi'an on Jan 24 <sup>th</sup>	No	No	No	No	No	No	No	Airplane: flight number, and seat number (self-driving to other places)	No	No	No	No	No	No
11 d	At home	No	No	No	No	No	No	No	No	No	No	No	No	No	No
12 d	At home	No	No	No	No	No	No	No	No	No	No	No	No	No	No
13 d	At home	No	No	No	No	No	No	No	No	No	No	No	No	No	No
14 d	At home	No	No	No	No	No	No	No	No	No	No	No	No	No	No

①-1: history of travel or residence in Wuhan, surrounding areas, or other communities with confirmed cases; ①-2: history of contact with patients with SARS-CoV-2 infection (positive nucleic acid detection); ①-3: ever contact patients with fever or respiratory symptoms from Wuhan, surrounding areas, or other communities with confirmed cases; ①-4: clustering cases; ②-1: without wearing facial masks when shopping in food markets; ②-2: eating outside/ dinner; ③-1: relatives visiting who come from communities existing confirmed cases; ③-2: relatives having fever/pulmonary infections/diarrhea/hospitalization after visit; ④-1: travel by high-speed rail/airplane/coach/ship, provide the information of flight number, train number and seat number, self-driving; ⑤-1: watch shows/movies/party; ⑤-2: do exercises in gym; ⑥-1: employ teachers or trainers for training at home; ⑥-2: training outside; ⑦-1: shopping places with confirmed cases; ⑦-2: existing confirmed cases on transportation routes.

first, then in the transition room (from children with general risk to those with high risk).

- (IV) The regular procedures of diagnosis and treatment (peripheral venous catheterization, venipuncture for blood collection, sputum suction, etc.) should be completed in the ward room. The frequency of examinations outside should be minimized when in the transition room.
- (V) The transition room/transition ward should be executed daily reporting system. All the patients, companions and staff need to be checked. Before 9 am every day, the person in charge of the ward should assign a person to report the data to hospital administrators. The data should include the numbers of hospitalizations from 8 am yesterday to 8 am today, patients with new onset fever, causes of fever, the numbers and details of patients with undiagnosed fever and pulmonary infections, etc.
- (VI) Children should have full-day meals provided by the hospital as much as possible, avoiding take-away food.
- (VII) The staff of catering service should perform hand hygiene and then distribute meals in the ward. The order of distributing meals should be firstly in the general room, then the transition room (from children with general risk to those with high risk) according to the admission number, bed number and child's name. The meals should be distributed one by one in the wards. Gathering should be avoided during distribution of meals. Hand hygiene should be performed after distribution of meals.

### **Staff management**

- (I) Strengthen the training on the prevention and control of COVID-19 infection to all staff working in the wards, including doctors, nurses, clinical assistants, and nutritional caterers. Staff should take body temperature twice a day before and after shifts. In case of abnormal body temperature, the person should seek medical care in time and take breaks at home.
- (II) Protective equipment for doctors and nurses entering the areas of medical care is required (1,8). Facial masks should be replaced every 4 hours and changed at any time when contaminated or being wet.
- (III) Strictly implement hand hygiene in accordance with WHO guidelines. Hand hygiene can be performed under running water with soap or instant hand sanitizer. When hands are contaminated obviously or having handled excreta/secretions from patients, hand hygiene should be performed under running water with soap and instant hand sanitizer afterwards.
- (IV) Assign work properly to the staff to avoid overstrain. Minimize outdoor activities during breaks. People should report their positive epidemiologic history and stay at home for observation.

### **Classification of protective rules for medical procedures (8,16)**

First level protection [1] could be performed during general nursing operations such as monitoring of vital sign, subcutaneous injection, oral administration, etc.; Peripheral venous catheterization, blood collection, urine, and stool samples using first level protection (+1); Sputum suction, bronchoscopy, gastroscopy/colonoscopy, central venous catheterization, hemodialysis (17), disposal of infectious medical waste, environmental cleaning and disinfection, etc. using first level protection (+3) or (+4) (Table 3).

### **Management of children and companions**

- (I) The training on the prevention of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection should be provided, including guidance on hand hygiene, respiratory hygiene and the cough etiquette should be provided. Children and companions need to perform hand hygiene at six time points: (i) before preparing food or eating; (ii) before touching eyes, nose or mouth; (iii) before and after changing the gauze bandage of wound; (iv) after going to the toilet; (v) after blowing nose, coughing or sneezing; (vi) after touching goods in the hospital.
- (II) The companions of patients should monitor the temperature twice per day and register basic information (name, relationship with the child, ID number, long-term residential address and contact). It is not recommended to keep accompanying if the caregiver has fever and/or respiratory symptoms. The caregiver should seek medical care in a specified hospital.
- (III) Patients and their companions should wear general

**Table 3** Personal protective equipment requirements for different protection levels [cited from *Table 1* in reference (6)]

	Basic	Level I						Level II	Level III
		0	1	+1	+2	+3	+4		
White coat	√	√	√	√	√	√	√	√	√
Medical facial masks	√	√							
Surgical masks			√	√	√	√			
Filtering facepiece respirators/fit-tested, healthcare masks (N95)							√	√	√
Cap		√	√	√	√	√	√	√	√
Goggles/face shields						√	√	√	
Full facepiece respirators/powered air-purifying respirators									√
Medical isolation gowns					√	√	√		
Hazmat suits								√	√
Shoe covers								√	√
Gloves				√	√	√	√	√	√

1. Basic level: physicians, nurses and assistants perform basic personal protection equipment (PPEs) while in non-medical areas. 2. Level I (0): physicians, nurses and assistants perform level 1 subclass 0 PPEs while in cleaning medical areas. 3. Level I [1] or (+1): physicians, nurses and assistants perform level 1 subclass 1 or (+1) while in semi-contaminated medical area. 4. Level I (+2): personnel perform level 1 subclass (+2) PPEs for delivery suspect or confirmed cases samples. 5. Level I (+3) or (+4): physicians and nurses perform level I subclass (+3) PPEs while performing general diagnostic operations on patients in transition room, and level I subclass (+4) PPEs while performing high-risk operations [intubation; tracheotomy; bronchoscope; bronchoalveolar lavage (BAL); inspection and sampling for oral, respiratory tract, eyes, gastroscopy and colonoscopy; deep vein catheterization, etc.]. 6. Level II: personnel perform level II PPEs while performing general diagnostic operations on suspected or confirmed cases or samples, and personnel perform environmental services and medical waste disposal in fever Clinic, patient rooms designated for confirmed and suspect cases. 7. Level III: physicians and nurses perform level III PPEs while performing high risk operations on confirmed and suspect cases or samples.

medical masks and should not leave the ward without permission.

- (IV) Only one companion is allowed for each patient. The companion should not be changed unless under special circumstances.
- (V) It is not allowed to visit transition room and transition ward.

#### ***The environment of wards and goods administration***

The environmental disinfection and medical waste disposal in the general outpatient and emergency department could be referred to the Clinical Practice Guidelines (8). (I) After using non-disposable equipment for medical care, wipe with disinfection paper containing 0.5% hydrogen peroxide for 1 minute. (II) Use 1,000 mg/L chlorine-containing preparation to wipe the surface of the objects for at least

10 minutes, or using 0.9–1.1% hydrogen peroxide disinfectant or disinfection paper containing 0.5% hydrogen peroxide for 1 minute. Disinfect at least once per day. Cleaning and disinfection are implemented whenever contaminated. (III) Use 1,000 mg/L chlorine-containing preparations to mop the floor for at least 10 minutes and at least once per day. Cleaning and disinfection are implemented whenever contaminated. (IV) Use ultraviolet disinfection to disinfect the air for 40 minutes or using hydrogen peroxide/chlorine preparation for atomization or gasification disinfection. Air disinfection can be used for general outpatient and emergency department. (V) Collect medical waste in line with the classification of infectious, damaging, medicinal, chemical, and pathological properties. Put them in special bags for medical waste collection or sharp boxes. Weigh each bag of medical waste and fill in detailed information on the label. Transport them to the

temporary storage place by designated people and vehicles and contact professional institutions to collect and dispose of them.

### Management rules for prevention and control of special cases

Once patients or companions are identified to have suspicious conditions to COVID-19 (clinical symptoms and signs, newly discovered epidemiological history) during the rounds, the on-duty medical staffs must report to chief of the department, the head nurse and the relevant administrative department promptly. Relevant examinations should be performed according to the condition. The multidisciplinary team of COVID-19 should be consulted to determine whether to treat the patients as suspected cases of COVID-19.

### General ward

In addition to the conventional management, general wards (one room usually with 3–5 patients) can be managed referring to general risk management of transition room/transition ward.

### Management of hospitalized children post-discharge

When hospitalized children are discharged from hospital, it is necessary to strengthen the patient education on the prevention and control of COVID-19 infection, including: (I) parents are advised to plan the route of return in advance, avoid travel to the outbreak area and without stopovers; (II) wearing a facial mask and washing hands are essential for protection on the way back; (III) the tickets should be kept for review if using public transports when they return; (IV) it is suggested to stay at home for 14 days after returning home and report relevant information to the local caregiver; (V) the contact of the inpatient ward should be included on discharge summary to facilitate the consultations of illness and emergent events post-discharge. In case of suspicious symptoms such as fever and cough, it is also feasible for caregivers to seek medical advice in time; (VI) to reduce unnecessary round trips during the outbreak, it is recommended to use online consultations and other ways to contact the doctors if the condition of patients with chronic diseases is stable post-discharge.

After implementation the recommendations, there was

none nosocomial infection among patient of staff during the outbreak at our hospital (18). Seventy-seven confirmed COVID-19 cases and 131 suspected cases had been treated at our hospital as of November 28<sup>th</sup>, 2020.

COVID-19 has been spread to other countries and regions. This “Recommendations” is applicable to other epidemic areas or other airborne diseases. However, each country has their own conditions and regulations on family companion for hospitalized children with noninfectious diseases. It is necessary to integrate specific conditions in local areas.

### Acknowledgments

The authors also thank Drs. Fang Liu, Xiaochuan Wang, Shuizhen Zhou, Libo Wang, Hongsheng Wang, Li Sun, Tian Qian, Ying Gu, Gongbao Liu, Yu Shi, Rui Wang from Children’s Hospital of Fudan University for their contribution during development of this recommendation in the original Chinese version.

*Funding:* None.

### Footnote

*Conflicts of Interest:* All authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/tp-20-271>). The authors have no conflicts of interest to declare.

*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

*Open Access Statement:* This is an Open Access article distributed in accordance with the Creative Commons Attribution-NonCommercial-NoDerivs 4.0 International License (CC BY-NC-ND 4.0), which permits the non-commercial replication and distribution of the article with the strict proviso that no changes or edits are made and the original work is properly cited (including links to both the formal publication through the relevant DOI and the license). See: <https://creativecommons.org/licenses/by-nc-nd/4.0/>.

### References

1. Zhu N, Zhang D, Wang W, et al. A Novel Coronavirus from Patients with Pneumonia in China, 2019. *N Engl J*

- Med 2020;382:727-33.
2. Chen Y, Liu Q, Guo D. Emerging coronaviruses: Genome structure, replication, and pathogenesis. *J Med Virol* 2020;92:418-23.
  3. National Health Commission of the People's Republic of China. Notice on the issuance of the diagnosis and treatment program of coronavirus disease-2019 (trial sixth edition). 2020; Available online: <http://www.gov.cn/zhengce/zhengceku/2020-02/19/content5480948.htm>
  4. Cai JH, Wang XS, Ge YL, et al. First case of 2019 novel coronavirus infection in children in Shanghai. *Zhonghua Er Ke Za Zhi* 2020;58:E002.
  5. Fang F, Luo XP. Facing the pandemic of 2019 novel coronavirus infections: the pediatric perspectives. *Zhonghua Er Ke Za Zhi* 2020;58:E001.
  6. Society of Pediatrics CMA. Recommendations for the diagnosis, prevention and control of the 2019 novel coronavirus infection in children (first interim edition). *Zhonghua Er Ke Za Zhi* 2020;58:E004.
  7. Xu H, Luo FH, Huang Y. Recommendations on the admission, infection prevention and control of pediatric patients during SARS-CoV-2 outbreak (1st edition). *Chinese Journal of Evidence-based Pediatrics* 2020. doi: 10.3969/j.issn.1673-5501.2020.01.002.
  8. Working group of Guidelines for Rapid Screening and Clinical Practice of Suspected and Confirmed New Coronavirus Infection/Pneumonia in Children. *Chinese Journal of Evidence-based Pediatrics* 2020;15:1-4.
  9. Guan WJ, Ni ZY, Hu Y, et al. Clinical characteristics of 2019 novel coronavirus infection in China. *medRxiv* 2020. doi: <https://doi.org/10.1101/2020.02.06.20020974>.
  10. Wang D, Hu B, Hu C, et al. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus-infected pneumonia in Wuhan, China. *JAMA* 2020;323:1061-9.
  11. Chan JFW, Yuan S, Kok KH, et al. A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *Lancet* 2020;395:514-23.
  12. Huang C, Wang Y, Li X, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020;395:497-506.
  13. Society of Pediatrics, Chinese Medical Association; Editorial Board, Chinese Journal of Pediatrics. Recommendations for the diagnosis, prevention and control of the 2019 novel coronavirus infection in children (first interim edition). *Zhonghua Er Ke Za Zhi* 2020;58:169-74.
  14. Bogoch II, Watts A, Thomas-Bachli A, et al. Pneumonia of unknown aetiology in Wuhan, China: potential for international spread via commercial air travel. *J Travel Med* 2020;27:taaa008.
  15. Zhao S, Zhuang Z, Ran J, et al. The association between domestic train transportation and novel coronavirus (2019-nCoV) outbreak in China from 2019 to 2020: A data-driven correlational report. *Travel Med Infect Dis* 2020;33:101568.
  16. Li L, Gong Y, Zhang L, et al. Regulation for prevention and control of healthcare associated infection of airborne transmission disease in healthcare facilities. *Chinese Journal of Infection Control* 2017;16: 490-2.
  17. Shen Q, Wang M, Li Q, et al. Recommendations for prevention and control of novel coronavirus infection in pediatric blood purification center (Trial Version 1). *Chinese Journal of Nephrology* 2020;36:85-8.
  18. Zhang XB, Hu XJ, Zhai XW, et al. Strategies for children's hospital in response to COVID-19 pandemic: perspective and practice at a designated pediatric hospital in Shanghai, China. *World J Pediatr* 2020;16:556-9.

**Cite this article as:** Huang Y, Luo F, Shen Q, Wang C, Zhang C, Xu H. Recommendations regarding the admission, infection prevention and control of pediatric patients during coronavirus disease 2019 outbreak in Shanghai China. *Transl Pediatr* 2021;10(4):692-700. doi: 10.21037/tp-20-271