CENTER OF EXCELLENCE FOR OPEN SCIENCE

Open Access

Email: CEMCC@ceospublishers.com

CEOS Emergency Medicine and Critical Care

Research Article

**Received Date:** January 02, 2024

**Accepted Date:** February 02, 2024

**Published Date:** February 05, 2024

## *Corresponding Author

Fangyi Zhou, Teaching and Research Section of Clinical Nursing, Xiangya Hospital of Central South University, Changsha, Hunan, People's Republic of China, Tel: 13974894183; E-mail: 403638@csu.edu.cn

## Citation

Pan Su,Shichang Sun, Lingxia Luo, Jing Li, Fangyi Zhou (2024) Construction and Application of Nursing Programs for Elderly PatientswWith Severe COVID-19. CEOS Emerg. Med. Crit. Care 1(1); 101



# Construction and Application of Nursing Programs for Elderly Patients with Severe COVID-19

**Pan Su[1], Shichang Sun[2], Lingxia Luo[3], Jing Li[3] and Fangyi Zhou[3,*]**

[1]XiangYa Nursing School of Central South University, Nursing Psychological Research Center of XiangYa Nursing School, China

[2]Emergency department of Xiangya Hospital, Central South University, Changsha, China

[3]Teaching and Research Section of Clinical Nursing, Xiangya Hospital of Central South University, Changsha, Hunan, People's Republic of China

## Abstract

**Objective:** To construct the nursing program for elderly patients with severe COVID-19, and analyze its application effect. **Methods:** Based on COVID-19 Diagnosis and Treatment Protocol (Trial Ninth Edition) and previous epidemic prevention experience, the research team adopted the brainstorming method to preliminatively formulate the nursing plan for elderly patients with severe COVID-19. Subjects meeting the inclusion criteria were managed in strict accordance with the care plan for elderly patients with severe COVID-19. Qualified rate of hospitalization of patients with nursing intervention (qualified rate of basic nursing, special nursing qualification rate, daily disinfection measures the percent of pass, the qualified rate of water in and out records, body fluids, percent of pass of vinasse, percent of pass, the qualified rate of prone position ventilation airway management, protection measures), the incidence of adverse events (the incidence of pressure ulcers, incidence of unplanned extubation, drug exosmosis rate), and security Changes in outcome measures (aspiration, fall, fall, cross-infection) and quality of routine disinfection were analyzed. **Results:** During the implementation of the nursing program, all nursing indicators were up to standard, and the incidence of adverse events and safety events was low. The qualified rate of nursing measures was 90.22%～98.41%, and the incidence of pressure ulceration, drug exosmosis and aspiration were 3.17%, 4.76% and 1.59%, respectively. The incidence of unplanned extubation, fall, falling bed, cross infection and occupational exposure were 0.00%.**Conclusion:** The nursing program for elderly patients with severe COVID-19 can standardize the nursing of elderly patients, improve the quality of clinical nursing, improve patient outcomes, and provide a basis for the management of elderly patients with severe COVID-19.

**Keywords:** COVID-19; Severe disease; Old age; Nursing

## Introduction

Since the onset of COVID-19 (Coronavirus disease 2019, COVID-19), the rapid spread of the epidemic has led to a global pandemic. The novel coronavirus variant has strong infectivity, concealment, fast transmission speed and general susceptibility, and has been included in the management of class B infectious diseases [1-2]. Elderly people with more basic diseases are prone to progress after infection to severe and critical strain, with high severe disease rate and case fatality rate, and high difficulty in nursing care [3-4]. How to make every effort to treat the elderly patients with severe COVID-19, improve the treatment rate and reduce the fatality rate from the perspective of nursing has become the main task at present, and the formulation of accurate nursing plan is an important premise to ensure the completion of the nursing treatment task. At present, the study of severe will be coronavirus infection with elderly patients care plan is relatively rare, the team began in early December 2022, in the clinical line in the new crown infection treatment, according to the new crown prevention and control experience and the COVID-19 treatment plan (trial version 9), combined with "will be coronavirus infection diagnosis and treatment plan (trial version 10)"[5], The nursing program for elderly patients with severe and COVID-19 has been gradually formulated, and the application effect of the nursing program has been evaluated, which is reported as follows:

## Construction of the Nursing Plan for Elderly Patients with Severe COVID-19

### Establish a Research Team

The research team consists of 12 research members, including 7 senior titles, 3 intermediate titles, 1 junior student and 1 master student. They are composed of 3 experts in the field of COVID-19 prevention and control medicine, 3 experts in the field of critical care medicine, 1 respiratory therapist, 1 evidence-based nursing expert, 1 scientific research nurse, 2 clinical nurses and 1 graduate student. Experts, respiratory therapists and research nurses are mainly responsible for the development of nursing programs; clinical nurses are responsible for the training, quality control and implementation of the program; research nurses are responsible for the overall progress control and liaison consultation; graduate students are responsible for the collection of clinical data and outcome indicators. The research team organizes regular group meetings to implement the progress of the project, and the members work closely and cooperate with each other.

### Formulate Nursing Plans for Elderly Patients with Severe COVID-19

This study will be based on the new crown experience and the COVID-19 treatment plan (trial version 9) guidance, combined with the will be coronavirus infection diagnosis and treatment plan (trial version 10), from severe will be coronavirus infection patients specific nursing measures, nurse responsibility and nursing process of severe will be coronavirus infection elderly patients nursing plan.

### Special Nursing Measures

**(1) Airway management:** 1. For patients with oxygen delivery, assisted ventilation of oropharyngeal ventilation, high flow oxygen inhalation and other direct contact with indoor air, wear masks whenever possible to prevent the risk of aerosol transmission; 2. For patients with endotracheal intubation or tracheotomy, strengthen airway humidification, it is recommended to use closed sputum suction device, and actively perform airway clearance treatment such as vibration sputum discharge, position drainage, high-frequency thoracic shock [6]; 3. When inhaling sputum, avoid the face facing the patient's airway, and can stand on the side or behind the patient. 4. After sputum aspiration, the patient's bed unit and the surrounding environment should be disinfected. 5. Strict management of airbag pressure, need to regularly detect the airbag pressure, on the premise of avoiding airway compression damage, as far as possible to avoid air leakage, gastric tube, nasal gut tube difficult, can be appropriate to consider the use of guide wire, as far as possible not to relax the airbag, to avoid novel coronavirus in the way of aerosol transmission [7]. 6. If patients with invasive ventilator assisted breathing need to go out for the examination, the patient should first be given pure oxygen inhalation, and the ventilator should be disconnected from the patient after the transfer ventilator is fully

prepared, and connected with the transfer ventilator in time. Similar steps should be followed after the examination and returning to the ward [8].

**(2) The Treatment of Body Liquid Waste Liquid:** 1. strict ventilator condensate, ventilator condensate can dump after the small yellow garbage bag and bag mouth, throw in the yellow garbage bag, the technique should be gentle in the process of dumping, avoid liquid leakage, splash, or dumping in closed waste liquid collection bucket, collection barrels domestic demand into a certain amount of chlorine disinfectant [9]; 2. The patient's urine and drainage fluid can be dumped into a covered container, and then dumped into the waste disposal room. Finally, the container containing pollutants should be disinfected and cleaned. 3. The disposal process of feces is similar to urine, with disposable bedpan or nursing mat with double yellow garbage bags and tightened according to the "new crown" medical waste; 4. Blood, sputum, vomit, stool and urine should be treated immediately; 5. CRRT waste liquid should be dumped in the waste disposal room, and key parts should be sterilized after dumping.

**(3) Nutrition Support:** Most elderly new crown patients with poor chewing function, low digestion and absorption function, should avoid as far as possible to provide patients with some raw, cold, hard food, prevent cough after eating, reduce the risk of coronavirus to aerosol transmission, can according to the be fond of patients to provide some nutritious liquid or semi-liquid diet. In the process of diet, patients should be assisted to eat to avoid fatigue, choking and reflux. When the general diet cannot meet the daily nutrition and energy goals, medical nutrition preparations should be given by oral use or nasogastric / nasenteral tubes. Pay attention to the appropriate temperature of nutritional preparations, indigestion patients according to the principle of a small amount of multiple meals [10].

**(4) Latent Ventilation Treatment:** According to the COVID-19 Diagnosis and Treatment Plan (Trial Version 9) and the COVID-19 Diagnosis and Treatment Plan (Trial Version 10), for patients with indications and no contraindications, active prone ventilation treatment should be encouraged, and the ventilation treatment time in prone position should be more than 12 hours per day. Medical staff should master the operation process of prone ventilation treatment, and do a good job of pipeline care, skin care, complication treatment, timely and accurately record the time of patient prone ventilation. For patients who do not need prone ventilation, pulmonary rehabilitation training should be strengthened for abdominal deep breathing and lip contraction training.

**(5) Control the Infusion Speed and Quantity, Strict Record out Water:** The elderly cardiopulmonary function is poor, and there are a variety of basic diseases, after infection will be coronavirus, may aggravate the original disease, further weaken the cardiopulmonary function, so must strictly control infusion speed and quantity, avoid infusion speed or infusion cause excessive acute heart failure, and so on and so forth. The infusion speed can be controlled by the use of infusion pump to monitor the amount of water, such as every hour, per shift, every 24h. If the fluid volume is unbalanced, inform the doctor and handle accordingly.

**(6) Effective Communication:** Most elderly COVID-19 patients in ICU cannot clearly express their demands, or even lack communication skills [11], Clinical nurses need to consider using a variety of ways to improve communication efficiency with patients, such as choose body language, painting, icon and so on way to communicate with patients, encourage patients 'families to communicate with patients, when necessary to invite patients' families to enter ICU communication to assist, in order to improve the efficiency of nurses and communication, security treatment nursing measures to implement and meet the needs of patients.

**(7) Psychological Nursing:** elderly patients in ICU are prone to fear, anxiety and other emotions, and the emergence of negative emotions may cause low compliance, or even rejection of treatment or nursing [12]. Therefore, it is necessary to strengthen the psychological care of patients, encourage and support patients more, relieve the psychological pressure of patients, and help patients to establish the confidence to overcome the disease. For sober patients, they are encouraged to express their ideas, wishes and needs, make a good bridge and link between patients and their families and doctors, and en-

courage their family members to participate in the treatment and rehabilitation of patients.

**(8) Daily Disinfection:** COVID-19 patients are concentrated in a closed environment, resulting in increased concentration of novel coronavirus in the ambient air, which may prolong the course of COVID-19 patients and increase the risk of COVID-19 infection among medical staff [13], Therefore, as far as possible to ensure the ventilation of the ward, and need to strictly implement the daily disinfection system. Disinfection mainly includes wipe, spraying, etc., disinfectant mainly include chlorine disinfectant, 75% alcohol, 84 disinfectant, 3% hydrogen peroxide, 500mg / L chlorine dioxide, disinfection paper towels, disinfection scope mainly includes PPE room, clean area corridor, ward, office, one, two between the air, environment, surface and surface disinfection, especially pay attention to disinfection bedside table, caller button, bed bar, chair, sink, cabinet, shaking machine, ward door handle, corridor handrails and other high frequency contact table. At the same time, it is also necessary to strengthen the disinfection of the patient's excrement, secretions, vomit, food and tableware.

**(9) Other Nursing:** In addition to the above nursing measures, it is also necessary to strengthen the basic nursing, VTE nursing, catheter care, analgesia, sedative care, health education, medication guidance and discharge guidance for the elderly COVID-19 patients.

## Nursing Responsibilities and Process of Each Class

For the new ICU nurses, the tube bed nurses work for 4 hours, 09:00-13:00,13:00-17:00,17:00-21:00,21:00-01:00,01:00-05:00, 05:00-09:00. The specific nursing responsibilities and procedures of each shift are shown in Table 1.

**Table 1:** Nursing responsibilities and processes of each class

| classes | Nursing responsibilities and processes |
|---|---|
| 09:00—13:00 | |
| 1 | Carefully perform the bedside shift, master the patient's condition, treatment and nursing situation, and adjust the alarm parameters; Implement basic nursing (oral nursing, perineal nursing, etc.); |
| 2 | Follow the doctor to make ward rounds to understand the patient's condition and treatment dynamics; |
| 3 | Implement the medical advice (temporary or long-term), replace the infusion tee, and do a good job of static therapy pathway management; |
| 4 | Turn over every 2 hours or perform special position treatment according to medical advice; |
| 5 | 10:00 Measure the body temperature and draw the body temperature sheet; |
| 6 | Closely observe the changes of the condition, report to the doctor in time, and handle and record them well; |
| 7 | Dumping urine before work from 8:00~13:00, and record the ultrafilate volume and prone position length of the class; |
| 8 | Clean up the treatment car and treatment plate before leaving work, check all disposable items and disinfection items on the treatment car, and supplement them complete; |
| 9 | Improve the writing of electronic nursing records, bedside conditions and handover sheets. |
| 13:00—17:00 | |
| 1 | Carefully perform the bedside shift, master the patient's condition + status quo + treatment and nursing situation, and adjust the alarm parameters; |
| 2 | Implement basic nursing (oral nursing, perineal nursing, etc.); |

| | |
|---|---|
| 3 | Perform medical orders (temporary or long-term); |
| 4 | Turn over every 2 hours or perform special position treatment according to medical advice; |
| 5 | 14:00 Measure the body temperature and draw the body temperature sheet; |
| 6 | Closely observe the changes of the condition, report to the doctor in time, and handle and record them well; |
| 7 | Dumping urine before work and record the urine volume for 4 hours, count the ultrafilate volume and the length of prone position and record, |
| 8 | Clean up the treatment car and treatment plate before leaving work, check all disposable items and disinfection items on the treatment car, and supplement them complete; |
| 9 | Improve the writing of electronic nursing records, bedside conditions and handover sheets. |
| 17:00-21:00 | |
| 1 | Carefully perform the bedside shift, master the patient's condition + status quo + treatment and nursing situation, and adjust the alarm parameters. |
| 2 | Implement the bed wipe bath (use cleaning wipes); |
| 3 | Perform medical orders (temporary or long-term); |
| 4 | Turn over every 2 hours or perform special position treatment according to medical advice; |
| 5 | 18:00 Measure the body temperature and draw the body temperature sheet; |
| 6 | Closely observe the changes of the condition, report to the doctor in time, and handle and record them well; |
| 7 | Dumping urine before work and record the urine volume for 4 hours, count the ultrafilate volume and the length of prone position and record, |
| 8 | Clean up the treatment car and treatment plate before leaving work, check all disposable items and disinfection items on the treatment car, and supplement them complete; |
| 9 | Write the electronic nursing records, bedside conditions and handover sheets; |
| 10 | Clean up medical waste (1 / 2 is full, 2 / 3 is full). |
| 21:00-01:00 | |
| 1 | Carefully perform the bedside shift, master the patient's condition + status quo + treatment and nursing situation, and adjust the alarm parameters. |
| 2 | Perform medical orders (temporary or long-term); |
| 3 | Replace the normal saline of the closed suction tube and flushing tube (daily); replace the drainage bag (precision every 7 days, ordinary every day); |
| 4 | Turn over every 2 hours or perform special position treatment according to medical advice; |
| 5 | 22:00 Measure the body temperature and draw the body temperature sheet; |
| 6 | Closely observe the changes of the condition, report to the doctor in time, and handle and record them well; |
| 7 | Dumping urine before work to record the urine volume for 4 hours, count the ultrafilate volume and the length of prone position in the class; |
| 8 | Clean up the treatment car and treatment plate before leaving work, check all disposable items and disinfection items on the treatment car, and supplement them complete; |

| | |
|---|---|
| 9 | Write the electronic nursing records, bedside conditions and handover sheets; |
| 10 | Clean up medical waste (1 / 2 is full, 2 / 3 is full). |
| 01:00-05:00 | |
| 1 | Carefully perform the bedside shift, master the patient's condition + status quo + treatment and nursing situation, and adjust the alarm parameters; |
| 2 | Perform medical orders (temporary or long-term); |
| 3 | Replace the invasive blood pressure kit (72, hourly change) and the flushing pipe NS (daily); replace the bedside NS and water for injection, and prepare the suction tube (q.d); |
| 4 | Turn over every 2 hours or perform special position treatment according to medical advice; |
| 5 | 02:00 Measure the body temperature and draw the body temperature sheet; |
| 6 | Closely observe the changes of the condition, report to the doctor in time, and handle and record them well; |
| 7 | Dumping urine before work to record the urine volume for 4 hours, count the ultrafilate volume and the length of prone position in the class; |
| 8 | Clean up the treatment car and treatment plate before leaving work, check all disposable items and disinfection items on the treatment car, and supplement them complete; |
| 9 | Write the electronic nursing records, bedside conditions and handover sheets; |
| 10 | Clean up medical waste (1 / 2 full, 2 / 3 full). |
| 05:00-09:00 | |
| 1 | Carefully perform the bedside shift, master the patient's condition + status quo + treatment and nursing situation, and adjust the alarm parameters. |
| 2 | Perform medical orders (temporary or long-term); |
| 3 | Turn over every 2 hours or perform special position treatment according to medical advice; |
| 4 | 06:00 Measure the body temperature and draw the body temperature sheet; |
| 5 | Closely observe the changes of the condition, report to the doctor in time, and handle and record them well; |
| 6 | Summarize the 24-hour output volume (8-8 intake: including venous volume and gastrointestinal volume; 8-8 output: including urine volume, stool, Drainage, etc.); count and record the total duration of the 24-hour prone position; |
| 7 | Clean up the treatment car and treatment plate before leaving work, check all disposable items and disinfection items on the treatment car, and supplement them with complete supplies; |
| 8 | Write the electronic nursing records, bedside conditions and handover sheets; |
| 9 | Make the morning shift of medical care, report the patient's diagnosis, 24-hour condition and treatment and nursing situation. |
| Special precautions | |
| 1 | The bed nurse entered the ward 15min in advance; |
| 2 | If there is any skin problem, take photos and send the work group (the patient information should be noted in the photo), and hand over the shift in detail; |
| 3 | Patients using the ventilator must be handed over the relevant parameters of the ventilator in detail; |

| | |
|---|---|
| 4 | If the patient can eat independently, remind the doctor to prescribe complementary food and medical advice; |
| 5 | The amount of infusion or enteral nutrient solution for the pump is only the amount of the class; |
| 6 | Detailed handover of special drugs should be certain; |
| 7 | If the staff on duty find that the materials are insufficient, register in time and inform the responsible teacher; |

## Clinical Application of Nursing Program for Elderly Patients with Severe COVID-19

### Study Subjects

This study will include severe novel coronavirus infected patients admitted to the intensive care unit (Intensive care unit, ICU) of a designated COVID-19 treatment hospital in Shanghai. Period is from 18 April 2022 to 7 May 2022. Inclusion criteria: 1) age> 60 years; 2) signed informed consent from the patient or family members.

#### Study Methods

The study subjects meeting the inclusion criteria were managed in strict accordance with the nursing plan of elderly patients with severe COVID-19, and the effect of the nursing program was evaluated through various effect evaluation indicators. In order to ensure the homogeneity of the quality of the care, by three critical medical care experts using tencent meeting, face-to-face, operation demonstration form of medical team all nurses nursing training, training content will be severe coronavirus infection elderly care content, only to pass the examination of nurses to formally participate in the new crown of patients.

#### Effect Evaluation Indicators and Data Collection Methods

Mainly from the nursing measures qualified rate (basic nursing qualified rate, super nursing qualified rate, daily disinfection measures qualified rate, access water records qualified rate, body liquid waste liquid pass rate, airway management of pass rate, prone ventilation qualified rate), protective measures qualified rate, adverse event incidence (incidence of pressure ulcers, unplanned tube rate, drug extravasation), safety events (aspiration, fall, falling bed, cross infection, occupational exposure) to evaluate nursing plan. The study members checked and recorded the evaluation indicators according to the self-made checklist.

### Statistical Methods

Data entry and statistical analysis were performed using the SPSS22.0 software. Measurement data are described by mean, and counting data are described by frequency and percentage.

### Results

#### General Data of the Patients

During the study period, a total of 32 elderly positive patients with severe COVID-19 were admitted, including 28 women and 4 men with an average age (86.8 ± 8.76) years. In addition to COVID-19, the patients mainly included respiratory failure, coronary heart disease, hypertension, diabetes, bronchial asthma, cerebral infarction, and renal failure, etc.

#### Qualified Rate of Nursing Measures

During the study, except prone ventilation was checked and recorded for 92 times (for some prone patients), the remaining evaluation indexes were checked and recorded for 126 times, including qualified rate, passing rate, prone ventilation were 95.24%, 93.65%, 96.83%, 90.48%, 95.24%, 94.44%, 90.22% and 98.41%, respectively. Specific results are shown in Table 2.

**Table 2:** Qualified rate of each index during the implementation of the nursing program

| Project | General case times | Qualified number of times | Percent of pass |
|---|---|---|---|
| basic nursing | 126 | 120 | 95.24% |
| Special care | 126 | 118 | 93.65% |
| Daily disinfection measures for the implementation of the implementation | 126 | 122 | 96.83% |
| Record of water entry and exit | 126 | 114 | 90.48% |
| Body fluid waste liquid treatment | 126 | 126 | 95.24% |
| Airway management | 126 | 119 | 94.44% |
| Ventilation in prone position | 92 | 92 | 90.22% |
| preventive measure | 126 | 124 | 98.41% |

### Rate of Adverse Events and Safety Events

During the study period, the rates of pressure ulcer, unplanned extubation and drug extravasation were 3.17%, 0.00% and 4.76%, respectively, and aspiration, fall, bed fall, cross-infection and occupational exposure were 1.59%, 0.00%, 0.00%, 0.00% and 0.00%, respectively. The specific results are shown in Table 3.

**Table 3:** Incidence of adverse events and safety events during the implementation of the nurse protocol

| Project | General case times | The occurrence of cases | Percent |
|---|---|---|---|
| Pressure injury | 126 | 4 | 3.17% |
| Unplanned extubation | 126 | 0 | 0.00% |
| Drug extravasation | 126 | 6 | 4.76% |
| aspiration | 126 | 2 | 1.59% |
| fall | 126 | 0 | 0.00% |
| Pendant bed | 126 | 0 | 0.00% |
| cross infection | 126 | 0 | 0.00% |
| occupational exposure | 126 | 0 | 0.00% |

## Discussion

During the study, COVID-19 designated treatment hospital intensive care unit patients treated all elderly patients, and more respiratory system, cardiovascular system, digestive system and other basic diseases, treated patients, mostly for patients with coma, endotracheal intubation, the vast majority of different degree of disability, wasting, lack of nutrition, even into the stress injury. The existence of these problems undoubtedly increases the difficulty of clinical care [14], How to ensure the nursing quality of the elderly patients under the premise of self-protection and safety is a problem that our nursing team needs to focus on to solve during the support period.

The research team gradually develop and improve the intensive care unit after the COVID-19 care for elderly patients, the results show that during the implementation of the nursing plan, the qualified rate of nursing indicators are more

than 90%, the incidence of adverse events and safety events are low, no unplanned extubation, fall, fall into bed, that the nursing plan can adapt to the current clinical nursing needs. However, it should still be noted that the qualified rate of prone ventilation in the nursing index is 90.22%. The reason may be that it requires many people to assist patients in prone position, and nurses need a lot of physical energy to help patients on the basis of tertiary protection, which has some inconvenience. Another indicator, the record qualified rate of water in and out of water is only 90.48%. The reason may be that the nursing record system of the hospital is different from the original hospital of nurses, and it still needs some time to adapt in the follow-up work. The highest incidence of adverse events was drug extravasation, which may be due to the poor vascular conditions of the elderly patients and the neglect of observation of nursing staff due to heavy clinical tasks. The second place in the incidence of adverse events was stress injury. Through subsequent tracking analysis, it was found that most such adverse events occurred in the head and face of patients with long prone ventilation, especially the lip, which was mostly caused by continuous compression of endotracheal intubation.

Considering the above several obvious problems, it is not difficult to see that the nursing work in the prone position ventilation treatment of more problems, is the difficulty in the current clinical nursing work [15,16]. However, prone ventilation treatment is of great significance in shortening the course of patients and improving the treatment effect of patients. How to further standardize the prone ventilation operation of patients from the perspective of nursing and reduce the complications of prone ventilation treatment is what needs to be focused on in our next clinical work. Targeted improvement measures are also needed to further improve the care quality of elderly patients with severe COVID-19.

In general, this nursing program can standardize the care of patients in the intensive care units of designated hospitals for COVID-19, improve the quality of clinical care, and provide a reference for the nursing management of the intensive care units of designated hospitals for COVID-19.

## References

1. Ahn DG, Shin HJ, Kim MH, et al. (2019) Current Status of Epidemiology, Diagnosis, Therapeutics, and Vaccines for Novel Coronavirus Disease 2019 (COVID-19). J Microbiol Biotechnol 30: 313-24.

2. Pan Jingjing, Wang Yingying, Wang Wenhua, et al. (2022) Together by the Omicjon mutant BA.2.2 Epidemiological characteristics of COVID-19 in Henan Province J. China Public Health, 2022: 1-5.

3. Haifeng, Li Yafei, Pan Jing Jing, and so on. (2022) Analysis of clinical symptoms and severity of different novel coronavirus strains in elderly population aged 60 years J. China Public Health, 2022: 1-7.

4. Shao W, Zhang W, Fang X, et al. (2022) Challenges of SARS-CoV-2 Omicron Variant and appropriate countermeasures. J Microbiol Immunol Infect. 26: S1684-182.

5. Notice of the COVID-19 (2022) Diagnosis and Treatment Program of the Office of the National Administration of Traditional Chinese Medicine (Trial Version 10th Edition) on Issuing the Diagnosis and Treatment Program of the COVID-19 (Trial Version 10th Edition) J. Jiangsu Traditional Chinese Medicine, 54: 2-6.

6. Gao Min, Shi Zeya, Han Xiaotong, et al. (2020) Infection prevention and control management of ventilator use in patients with suspected and confirmed COVID-19 J. Chinese Journal of Nursing 55: 779-81.

7. Wu Shuping, Luo Shuping, Yuan Xina, et al. (2020) Implementation of standardized management of artificial airway in patients with critical COVID-19 J. PLA Journal of Nursing, 37: 72-5.

8. Mo Hongping, Wang Xin, Zhou Yi, et al. (2021) Protection measures of occupational exposure for medical personnel under the background of mechanical ventilation treatment for patients with respiratory infectious diseases J. Nursing Management in China, 21: 1387-91.

9. Wan Fang (2021) Nursing experience of preventing aerosol transmission during invasive mechanical ventilation in COVID-19 patients J. Contemporary Nurses (previous journal) 28: 108-10.

10. Guo Yulian, Cao Yingjuan, Wang Jing, et al. (2021) Clinical care of elderly critical COVID-19 J. Journal of Qilu Nursing, 27: 152-5.

11. Xu Yongneng, Peng Min, Zhao Xueqin, et al. (2020) Prevention and control of elderly wards, nursing emergency management of COVID-19 J. Chinese Journal of Nursing 55: 201-3.

12. Li Suhong, Li Yinghua, Tan Qinghua, et al. (2020) The impact of nursing intervention on the psychology of patients with suspected COVID-19 J. Chinese Journal of Nursing 55: 592-4.

13. Yang Jiping, Zhou Yifeng, Shi Zeya, et al. (2020) Construction and application of infection control strategies in the operating room during the Novel Coronavirus outbreak J. Chinese Nursing Journal 55: 339-42.

14. Wang Zhongwei, Wang Hua, Yin Qian, et al. (2021) Analysis of high-risk factors for COVID-19 among the elderly J. Journal of Wuhan University (Medical edition), 42 : 714-7.

15. Moore Z, Patton D, Avsar P, et al. (2020) Prevention of pressure ulcers among individuals cared for in the prone position: lessons for the COVID-19 emergency.J Wound Care 29: 312-20.

16. Pan Chun, Zhang Wei, Du Bin, et al. (2020) Salvage treatment of COVID-19: urgent implementation of prone ventilation J. Chinese Journal of Internal Medicine 59: 670-2.

CEOS CENTER OF EXCELLENCE FOR OPEN SCIENCE

CEOS is an growing Open Access Publisher with diverse peer reviewed journals supported by Aca demic Editors, Scholars, Physicians, Instructors,

**CEOS Publishers** follow strict ethical standards for publication to ensure high quality scientific studies, credit for the research participants. Any ethical issues will be scrutinized carefully to maintain the integrity of literature.


**CEOS Publishers** believes scientific integrity and intellectual honesty are essential in all scholarly work. As an upcoming publisher, our commitment is to protect the integrity of the scholarly publications, for which we take the necessary steps in all aspects of publishing ethics.

All the articles published in **CEOS Publisher** journals are licensed under Creative CommonsCC BY 4.0 license, means anyone can use, read and dow-nload the article for free. However, the authors reserve the copyright for the published manuscript.