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# EVIDENCE SEARCH REPORT

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| **RESEARCH QUESTION:** | What approaches are effective to limit the spread of COVID-19 infection for healthcare workers in health facilities and how does it impact their mental health? | **UNIQUE IDENTIFIER:** EOC033002-01 ESR |

**RESOURCES USED:**

- MEDLINE
- PubMed
- Google
- COVID-19 resource pages

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|---|---|
| **LIMITS/EXCLUSIONS/INCLUSIONS:** English, 2015-current | **REFERENCE INTERVIEW COMPLETED:** March 30, 2020 |
| **DATE:** March 30, 2020 | |
| **LIBRARIAN:** Brianna Howell-Spooner | **REQUESTOR:** Jennifer Hiebert |

**TEAM:** EOC

**SEARCH ALERTS CREATED: NO**

**Cite As:** Howell-Spooner, B. What approaches are effective to limit the spread of COVID-19 infection for healthcare workers in health facilities and how does it impact their mental health? 2020 Mar 30; Document no.: EOC033002-01 ESR. In: COVID-19 Rapid Evidence Reviews [Internet]. SK: SK COVID Evidence Support Team, c2020. 20 p. (CEST evidence search report)

## LIBRARIAN NOTES/COMMENTS

Hello Jennifer,
Here are the results of your evidence search on decreasing the nexus of COVID-19 in hospitals and healthcare worker infection/spread for the EOC.
I've divided the articles into two sections: Infection spread containment and mental health. The numbering is continuous because it helps the library technicians find the article you are asking for if you request one of the articles be sent to you.
Please let me know if you have any questions or if there is anything else you may need.

Thanks,
Brianna

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All requests are kept confidential.
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## SEARCH RESULTS

**To obtain the full-text articles or to request offsite access, email library@saskhealthauthority.ca.**

## SUMMARIES, GUIDELINES & OTHER RESOURCES

**Facility and Staff Management**

- **CDC**
  - Interim Guidance for Healthcare Facilities: Preparing for Community Transmission of COVID-19 in the United States [updated 2020, Feb 29] available from https://www.cdc.gov/coronavirus/2019-ncov/healthcare-facilities/guidance-hcf.html
- **World Health Organization**
  - E-Course: Severe Acute Respiratory Infection (SARI) Treatment Facility Design [updated 2020, March 27] available from https://openwho.org/courses/SARI-facilities
  - Operational Considerations for Case Management of COVID-19 in Health Facility and Community [updated 2020, March 19] available from https://www.who.int/publications-detail/operational-considerations-for-case-management-of-covid-19-in-health-facility-and-community

**HWC Mental Health**

- **BC Centre for Disease Control**
  - Supporting the Psychological Well-being of Health Care Providers During the Novel Coronavirus (COVID-19) Pandemic [updated 2020, March 16] available from http://www.bccdc.ca/Health-Professionals-Site/Documents/COVID19-Psychosocial-Supports-HCW.pdf
- **World Health Organization**
  - Mental Health and Psychological Considerations During the COVID-19 Outbreak [updated 2020, March 18] available from https://www.who.int/docs/default-source/coronaviruse/mental-health-considerations.pdf
- **U.S. Department of Veterans Affairs**
  - Managing Healthcare Workers' Stress Associated with the COVID-19 Virus Outbreak [updated 2020, March 25] available from https://www.ptsd.va.gov/covid/COVID_healthcare_workers.asp

## ARTICLES FROM THE LIBRARY DATABASES

**Note: References are sorted by year descending (newest to oldest)**

### Infection Spread Containment

1. **Agarwal A, Nagi N, Chatterjee P, et al. Guidance for building a dedicated health facility to contain the spread of the 2019 novel coronavirus outbreak. *Indian J Med Res*. 2020;16:16.**

Preparedness for the ongoing coronavirus disease 2019 (COVID-19) and its spread in India calls for setting up of adequately equipped and dedicated health facilities to manage sick patients while protecting healthcare workers and the environment. In the wake of other emerging dangerous pathogens in recent times, such as Ebola, Nipah and Zika, it is important that such facilities are kept ready during the inter-epidemic period for training of health professionals and for managing cases of multi-drug resistant and difficult-to-treat pathogens. While endemic potential of such critically ill patients is not yet known, the health system should have surge capacity for such critical care units and preferably each tertiary government

hospital should have at least one such facility. This article describes elements of design of such unit (e.g., space, infection control, waste disposal, safety of healthcare workers, partners to be involved in design and plan) which can be adapted to the context of either a new construction or makeshift construction on top of an existing structure. In view of a potential epidemic of COVID-19, specific requirements to handle it are also given.

**DATABASE:** MEDLINE **#**32202258

2. **Asperges E, Novati S, Muzzi A, et al. Rapid response to COVID-19 outbreak in Northern Italy: how to convert a classic infectious disease ward into a COVID-19 response centre. *J Hosp Infect*. 2020. DOI:** 10.1016/j.jhin.2020.03.020

**ACCESS ARTICLE URL:** https://doi.org/10.1016/j.jhin.2020.03.020

3. **Bearman G, Pryor R, Albert H, et al. Novel coronavirus and hospital infection prevention: Preparing for the impromptu speech. *Infect Control Hosp Epidemiol*. 2020:1-2.**

**DATABASE:** MEDLINE **#**32122422

4. **Bowdle A, Munoz-Price LS. Preventing Infection of Patients and Healthcare Workers Should Be the New Normal in the Era of Novel Coronavirus Epidemics. *Anesthesiology*. 2020;19:19.**

**DATABASE:** MEDLINE **#**32195701

5. **Cao Y, Li Q, Chen J, et al. Hospital Emergency Management Plan During the COVID-19 Epidemic. *Acad Emerg Med*. 2020;n/a(n/a). DOI:** 10.1111/acem.13951

ABSTRACT The confirmed and suspected cases of the 2019 novel coronavirus disease (COVID-19) have increased not only in Wuhan, Hubei Province but also China and the world. Enormous demand for handling the COVID-19 outbreak challenged both the healthcare personnel and medical supply system. In West China Hospital, Emergency Department (ED) undertook the mission of clinical reception, primary diagnosis, and interim treatment for the suspected cases of COVID-19.

**ACCESS ARTICLE URL:** https://doi.org/10.1111/acem.13951

6. **Cheng VCC, Wong SC, Chen JHK, et al. Escalating infection control response to the rapidly evolving epidemiology of the Coronavirus disease 2019 (COVID-19) due to SARS-CoV-2 in Hong Kong. *Infect Control Hosp Epidemiol*. 2020:1-24.**

BACKGROUND: To describe the infection control preparedness for Coronavirus Disease (COVID-19) due to SARS-CoV-2 [previously known as 2019-novel coronavirus] in the first 42 days after announcement of a cluster of pneumonia in China, on 31 December 2019 (day 1) in Hong Kong.

METHODS: A bundle approach of active and enhanced laboratory surveillance, early airborne infection isolation, rapid molecular diagnostic testing, and contact tracing for healthcare workers (HCWs) with unprotected exposure in the hospitals was implemented. Epidemiological characteristics of confirmed cases, environmental and air samples were collected and analyzed.

RESULTS: From day 1 to day 42, forty-two (3.3%) of 1275 patients fulfilling active (n=29) and enhanced laboratory surveillance (n=13) confirmed to have SARS-CoV-2 infection. The number of locally acquired

case significantly increased from 1 (7.7%) of 13 [day 22 to day 32] to 27 (93.1%) of 29 confirmed case [day 33 to day 42] (p<0.001). Twenty-eight patients (66.6%) came from 8 family clusters. Eleven (2.7%) of 413 HCWs caring these confirmed cases were found to have unprotected exposure requiring quarantine for 14 days. None of them was infected and nosocomial transmission of SARS-CoV-2 was not observed. Environmental surveillance performed in a patient with viral load of 3.3x106 copies/ml (pooled nasopharyngeal/ throat swab) and 5.9x106 copies/ml (saliva) respectively. SARS-CoV-2 revealed in 1 (7.7%) of 13 environmental samples, but not in 8 air samples collected at a distance of 10 cm from patient's chin with or without wearing a surgical mask.

CONCLUSION: Appropriate hospital infection control measures could prevent nosocomial transmission of SARS-CoV-2.

**DATABASE:** MEDLINE **#**32131908

7. **Glauser W. Proposed protocol to keep COVID-19 out of hospitals. *CMAJ Canadian Medical Association Journal*. 2020;192(10):E264-E5.**

**DATABASE:** MEDLINE **#**32152059
**ACCESS ARTICLE URL:**
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7062433/pdf/192e264.pdf

8. **Huh S. How to train the health personnel for protecting themselves from novel coronavirus (COVID-19) infection during their patient or suspected case care. *Journal of Educational Evaluation for Health Professions*. 2020;17:10.**

**DATABASE:** MEDLINE **#**32150796

9. **Jin YH, Cai L, Cheng ZS, et al. A rapid advice guideline for the diagnosis and treatment of 2019 novel coronavirus (2019-nCoV) infected pneumonia (standard version). *Military Medical Research*. 2020;7(1):4.**

In December 2019, a new type viral pneumonia cases occurred in Wuhan, Hubei Province; and then named "2019 novel coronavirus (2019-nCoV)" by the World Health Organization (WHO) on 12 January 2020. For it is a never been experienced respiratory disease before and with infection ability widely and quickly, it attracted the world's attention but without treatment and control manual. For the request from frontline clinicians and public health professionals of 2019-nCoV infected pneumonia management, an evidence-based guideline urgently needs to be developed. Therefore, we drafted this guideline according to the rapid advice guidelines methodology and general rules of WHO guideline development; we also added the first-hand management data of Zhongnan Hospital of Wuhan University. This guideline includes the guideline methodology, epidemiological characteristics, disease screening and population prevention, diagnosis, treatment and control (including traditional Chinese Medicine), nosocomial infection prevention and control, and disease nursing of the 2019-nCoV. Moreover, we also provide a whole process of a successful treatment case of the severe 2019-nCoV infected pneumonia and experience and lessons of hospital rescue for 2019-nCoV infections. This rapid advice guideline is suitable for the first frontline doctors and nurses, managers of hospitals and healthcare sections, community residents, public health persons, relevant researchers, and all person who are interested in the 2019-nCoV.

**DATABASE:** MEDLINE **#**32029004

**ACCESS ARTICLE URL:**
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7003341/pdf/40779_2020_Article_233.pdf

10. **Liao X, Wang B, Kang Y. Novel coronavirus infection during the 2019-2020 epidemic: preparing intensive care units-the experience in Sichuan Province, China. *Intensive Care Med*. 2020;46(2):357-60.**

Up to 31 January 2020, there have been 9811 officially reported confirmed cases of 2019-novel coronavirus (nCoV) infection in China since the epidemic began in December 2019 (updated data available at https://gisanddata.maps.arcgis.com/apps/opsdashboard/index.html#/bda7594740fd40299423467b48e9ecf6).

With the rapid transmission, the epidemic has spread throughout the country, and 177 cases have been reported in Sichuan Province. As nCoV infection is a highly contagious disease with high mortality (3–15%) [1,2,3] and West China Hospital (WCH) is the largest hospital in the southwest of China and the referral medical center in Sichuan Province, it is our responsibility to prepare for admission of additional critically ill patients as a matter of emergency. We have held several expert meetings and have reviewed the related literature to develop a plan to respond to the epidemic [4, 5]. The purpose of the plan is to enable us to provide the maximum level of care to critically ill patients while ensuring the protection of medical staff.

**DATABASE:** MEDLINE **#**32025779

11. **Lu D, Wang H, Yu R, et al. Integrated infection control strategy to minimize nosocomial infection of coronavirus disease 2019 among ENT healthcare workers. *J Hosp Infect*. 2020;27:27.**

Coronavirus disease 2019 (COVID-19) is caused by a novel coronavirus (2019-nCoV). The most common symptoms are fever and dry cough; a minority of patients report other symptoms such as headache, sore throat, and sneeze [1,2]. COVID-19 has rapidly spread from Wuhan, throughout China and into other countries. The virus-specific nucleic acid sequences have been detected in lung fluid, throat, oropharyngeal and nasopharyngeal swab samples [3]. Due to lack of sufficient awareness of the COVID-19 in the early stages of the epidemic, some healthcare workers (HCWs) have been infected [4,5]. Patients with symptoms of COVID-19 may present to ear, nose, and throat (ENT) departments. Moreover diagnostic and therapeutic procedures in ENT departments involve direct contact with patients' upper respiratory tract mucosa, and/or induce patients to cough or sneeze. Thus there is an especially high risk to HCWs and other patients in ENT departments.

**DATABASE:** MEDLINE **#**32114056

12. **Ma X, Li S, Yu S, et al. Emergency Management of the Prevention and Control of Novel Coronavirus Pneumonia in Specialized Branches of Hospital. *Acad Emerg Med*. 2020;n/a(n/a). DOI:** 10.1111/acem.13958

In December 2019, an epidemic of novel coronavirus pneumonia (NCP) broke out in Wuhan, Hubei Province. The outbreak was severe and coincided with the Spring Festival travel season. On January 15, 2020, the West China Hospital of Sichuan University, a large hospital in China, held a seminar on prevention and control in accordance with the requirements of the National Health Commission on Prevention and Control. On January 16, the emergency plan for the prevention and treatment of NCP in West China Hospital of Sichuan University was formulated for the first time. The president of the university was named secretary of the “Respiratory Infectious Disease Prevention and Control Leading Group” and medical treatment expert group. Wenjiang District Hospital of West China Hospital, a branch of West China Hospital of Sichuan University, is located in Wenjiang district of Chengdu, 23 kilometers away from the

main hospital district. It mainly focuses on specialties, such as rehabilitative medicine, lung cancer, and sports medicine. It does not have a separate emergency department and fever clinic but implements integrated and unified management with the main hospital area. In the face of such an unusual and unpredictable epidemic, how to ensure smooth government order, effective measures, and prevention and control to prevent outbreaks in the subdivision area of hospitals is a new test for specialized subdivision areas of hospitals. The following sections present the emergency management experience of Wenjiang Hospital in West China in the prevention and control of the NCP epidemic.

**ACCESS ARTICLE URL:** https://doi.org/10.1111/acem.13958

13. **Madad S, Moskovitz J, Boyce MR, et al. Ready or Not, Patients Will Present: Improving Urban Pandemic Preparedness. *Disaster Med Public Health Prep*. 2020:1-4. DOI:** 10.1017/dmp.2020.7

Over the past century, society has achieved great gains in medicine, public health, and health-care infrastructure, particularly in the areas of vaccines, antibiotics, sanitation, intensive care and medical technology. Still, despite these developments, infectious diseases are emerging at unprecedented rates around the globe. Large urban centers are particularly vulnerable to communicable disease events, and must have well-prepared response systems, including on the front-line level. In November 2018, the United States' largest municipal health-care delivery system, New York City Health + Hospitals, hosted a half-day executive-level pandemic response workshop, which sought to illustrate the complexity of preparing for, responding to, and recovering from modern-day infectious diseases impacting urban environments. Attendees were subjected to a condensed, plausible, pandemic influenza scenario and asked to simulate the high-level strategic decisions made by leaders by internal (eg, Chief Medical Officer, Chief Nursing Officer, and Legal Affairs) and external (eg, city, state, and federal public health and emergency management entities) partners across an integrated system of acute, postacute, and ambulatory sites, challenging players to question their assumptions about managing the consequences of a highly pathogenic pandemic.

**DATABASE:** Cambridge Core

14. **Malhotra N, Gupta N, Ish S, et al. COVID-19 in intensive care. Some necessary steps for health care workers. *Monaldi Archives for Chest Disease*. 2020;90(1):25.**

Due to the nature of their profession, health care personnel (HCP) have always been easy targets for transmission of communicable diseases like COVID-19. Shielding HCPs is of consequential significance in ensuring continued health care for the whole population in addition to reducing further spread. Close contact, repeated contact and prolonged contact are unavoidable in the intensive care (IC) environment. It is not uncommon for IC-HCPs to get carried away during an emergent situation, such as that posed by a suddenly deteriorating patient, and forgo the protective barriers that protect them from contracting a communicable infection. Some notable precautionary measures are mentioned below. This is by no means an exhaustive list.

**DATABASE:** MEDLINE #32210421

15. **Marchand-Senecal X, Kozak R, Mubareka S, et al. Diagnosis and Management of First Case of COVID-19 in Canada: Lessons applied from SARS. *Clin Infect Dis*. 2020;09:09.**

We report diagnosis and management of the first laboratory-confirmed case of coronavirus disease 2019 (COVID-19) hospitalized in Toronto, Canada. No healthcare-associated transmission occurred. In the face

of a potential pandemic of COVID-19, we suggest sustainable and scalable control measures developed based on lessons learned from SARS.

**DATABASE:** MEDLINE #32147731

16. **Ng Y, Li Z, Chua YX, et al. Evaluation of the Effectiveness of Surveillance and Containment Measures for the First 100 Patients with COVID-19 in Singapore - January 2-February 29, 2020. *MMWR - Morbidity & Mortality Weekly Report*. 2020;69(11):307-11.**

Coronavirus disease 2019 (COVID-19) was first reported in Wuhan, China, in December 2019, and has since spread globally, resulting in >95,000 confirmed COVID-19 cases worldwide by March 5, 2020 (1). Singapore adopted a multipronged surveillance strategy that included applying the case definition at medical consults, tracing contacts of patients with laboratory-confirmed COVID-19, enhancing surveillance among different patient groups (all patients with pneumonia, hospitalized patients in intensive care units [ICUs] with possible infectious diseases, primary care patients with influenza-like illness, and deaths from possible infectious etiologies), and allowing clinician discretion (i.e., option to order a test based on clinical suspicion, even if the case definition was not met) to identify COVID-19 patients. Containment measures, including patient isolation and quarantine, active monitoring of contacts, border controls, and community education and precautions, were performed to minimize disease spread. As of March 5, 2020, a total of 117 COVID-19 cases had been identified in Singapore. This report analyzes the first 100 COVID-19 patients in Singapore to determine the effectiveness of the surveillance and containment measures. COVID-19 patients were classified by the primary means by which they were detected. Application of the case definition and contact tracing identified 73 patients, 16 were detected by enhanced surveillance, and 11 were identified by laboratory testing based on providers' clinical discretion. Effectiveness of these measures was assessed by calculating the 7-day moving average of the interval from symptom onset to isolation in hospital or quarantine, which indicated significant decreasing trends for both local and imported COVID-19 cases. Rapid identification and isolation of cases, quarantine of close contacts, and active monitoring of other contacts have been effective in suppressing expansion of the outbreak and have implications for other countries experiencing outbreaks.

**DATABASE:** MEDLINE #32191691
**ACCESS ARTICLE URL:**
https://www.cdc.gov/mmwr/volumes/69/wr/mm6911e1.htm?s_cid=mm6911e1_w

17. **Popescu S. Roadblocks to Infection Prevention Efforts in Healthcare SARS-CoV-2/COVID-19 Response. *Disaster Med Public Health Prep*. 2020:1-7. DOI:** 10.1017/dmp.2020.55

The outbreak of a novel coronavirus, COVID-19, is challenging international public health and healthcare efforts. As hospitals work to acquire enough personal protective equipment and brace for potential cases, the role of infection prevention efforts and programs has become increasingly important. Lessons from the 2003 SARS-CoV outbreak in Toronto and 2015 MERS-CoV outbreak in South Korea have unveiled the critical role that hospitals play in outbreaks, especially of novel coronaviruses. Their ability to amplify the spread of disease can rapidly fuel transmission of the disease and often those failures in infection prevention and general hospital practices contribute to such events. While efforts to enhance infection prevention measures and hospital readiness are underway in the United States, it is important to understand why these programs were not able to maintain continued, sustainable levels of readiness. History has shown that infection prevention programs are primarily responsible for preparing hospitals and responding to biological events but face under-staffing and focused efforts defined by administrators. The current U.S. healthcare system though, is built upon a series of priorities that often

view biopreparedness as a costly endeavor. Awareness of these competing priorities and the challenges infection prevention programs face when working to maintain biopreparedness is critical in adequately addressing this critical infrastructure in the face of an international outbreak.

**DATABASE:** Cambridge Core

18. **Salathe M, Althaus CL, Neher R, et al. COVID-19 epidemic in Switzerland: on the importance of testing, contact tracing and isolation. *Swiss Med Wkly*. 2020;150:w20225.**

Switzerland is among the countries with the highest number of coronavirus disease-2019 (COVID-19) cases per capita in the world. There are likely many people with undetected SARS-CoV-2 infection because testing efforts are currently not detecting all infected people, including some with clinical disease compatible with COVID-19. Testing on its own will not stop the spread of SARS-CoV-2. Testing is part of a strategy. The World Health Organization recommends a combination of measures: rapid diagnosis and immediate isolation of cases, rigorous tracking and precautionary self-isolation of close contacts. In this article, we explain why the testing strategy in Switzerland should be strengthened urgently, as a core component of a combination approach to control COVID-19.

**DATABASE:** MEDLINE **#**32191813

19. **Satheesan MK, Mui KW, Wong LT. A numerical study of ventilation strategies for infection risk mitigation in general inpatient wards. *Building Simulation*. 2020:1-10.**

Aerial dispersion of human exhaled microbial contaminants and subsequent contamination of surfaces is a potential route for infection transmission in hospitals. Most general hospital wards have ventilation systems that drive air and thus contaminants from the patient areas towards the corridors. This study investigates the transport mechanism and deposition patterns of Middle East Respiratory Syndrome Coronavirus (MERS-CoV) within a typical six bedded general inpatient ward cubicle through numerical simulation. It demonstrates that both air change and exhaust airflow rates have significant effects on not only the airflow but also the particle distribution within a mechanically ventilated space. Moreover, the location of an infected patient within the ward cubicle is crucial in determining the extent of infection risk to other ward occupants. Hence, it is recommended to provide exhaust grilles in close proximity to a patient, preferably above each patient's bed. To achieve infection prevention and control, high exhaust airflow rate is also suggested. Regardless of the ventilation design, all patients and any surfaces within a ward cubicle should be regularly and thoroughly cleaned and disinfected to remove microbial contamination. The outcome of this study can serve as a source of reference for hospital management to better ventilation design strategies for mitigating the risk of infection.

**DATABASE:** MEDLINE **#**32211123

20. **Schwartz J, King CC, Yen MY. Protecting Health Care Workers during the COVID-19 Coronavirus Outbreak -Lessons from Taiwan's SARS response. *Clin Infect Dis*. 2020;12:12.**

During major epidemic outbreaks, demand for health care workers grows even as the extreme pressures they face cause declining availability. We draw on Taiwan's SARS experience to argue that a modified form of Traffic Control Bundling protects health care worker safety and by extension strengthens overall COVID-19 epidemic control.

**DATABASE:** MEDLINE **#**32166318

**LIBRARIAN'S NOTE**: They are using the term "bundling" as another way to refer to cohorting for staffing or patient isolation

21. **Yen MY, Schwartz J, Chen SY, et al. Interrupting COVID-19 transmission by implementing enhanced traffic control bundling: Implications for global prevention and control efforts. *Journal of Microbiology, Immunology & Infection*. 2020;14:14.**

We argue that enhanced Traffic Control Bundling (eTCB) can interrupt the community-hospital-community transmission cycle, thereby limiting COVID-19's impact. Enhanced TCB is an expansion of the traditional TCB that proved highly effective during Taiwan's 2003 SARS outbreak. TCB's success derived from ensuring that Health Care Workers (HCWs) and patients were protected from fomite, contact and droplet transmission within hospitals. Although TCB proved successful during SARS, achieving a similar level of success with the COVID-19 outbreak requires adapting TCB to the unique manifestations of this new disease. These manifestations include asymptomatic infection, a hyper-affinity to ACE2 receptors resulting in high transmissibility, false negatives, and an incubation period of up to 22 days. Enhanced TCB incorporates the necessary adaptations. In particular, eTCB includes expanding the TCB transition zone to incorporate a new sector - the quarantine ward. This ward houses patients exhibiting atypical manifestations or awaiting definitive diagnosis. A second adaptation involves enhancing the checkpoint hand disinfection and gowning up with Personal Protective Equipment deployed in traditional TCB. Under eTCB, checkpoint hand disinfection and donning of face masks are now required of all visitors who seek to enter hospitals. These enhancements ensure that transmissions by droplets, fomites and contact are disrupted both within hospitals and between hospitals and the broader community. Evidencing eTCB effectiveness is Taiwan's success to date in containing and controlling the community-hospital-community transmission cycle.

**DATABASE:** MEDLINE **#**32205090

**LIBRARIAN'S NOTE**: They are using the term "bundling" as another way to refer to cohorting for staffing or patient isolation

22. **Zhang Z, Liu S, Xiang M, et al. Protecting healthcare personnel from 2019-nCoV infection risks: lessons and suggestions. *Fronteras en Medicina*. 2020;23:23.**

The outbreak of a novel Coronavirus disease (COVID-19, caused by the 2019-nCoV infection) in December 2019 is one of the most severe public health emergencies since the founding of People's Republic of China in 1949. Healthcare personnel (HCP) nationwide are facing heavy workloads and high risk of infection, especially those who care for patients at the epicenter of the outbreak, Hubei Province. Sadly, as of February 20, 2020, over two thousand COVID-19 cases are confirmed among HCP from 476 hospitals nationwide, with nearly 90% of them from Hubei Province. Based on literature search and interviews with some HCP working at Wuhan, capital city of Hubei, we have summarized some of the effective measures taken to reduce infection among HCP, and also made suggestions for improving occupational safety during an infectious disease outbreak. The experience and lessons learned should be a valuable asset for international health community to contain the ongoing COVID-19 epidemic around the world.

**DATABASE:** MEDLINE **#**32212058

23. **Zhou P, Huang Z, Xiao Y, et al. Protecting Chinese Healthcare Workers While Combating the 2019 Novel Coronavirus. *Infect Control Hosp Epidemiol*. 2020:1-4.**

Hospital-associated transmission is an important route of spreading the 2019 novel coronavirus (2019-nCoV) infection and pneumonia (Corona Virus Disease 2019, COVID-19) [1]. Healthcare workers (HCWs) are at high risk while combating COVID-19 at the very frontline, and nosocomial outbreaks among HCWs are not unusual in similar settings; the 2003 severe acute respiratory syndrome (SARS) outbreak led to over 966 HCW infections with 1.4% deaths in mainland China [2]. As of 11 February 2020, 3019 HCWs might

have been infected with 2019-nCov in China, 1716 HCW cases were confirmed by nucleic acid testing[3], and at least 6 HCWs died, including the famous whistleblower Dr Li Wenliang. In view of this severe situation, we are recommending urgent interventions to help to protect HCWs.

**DATABASE:** MEDLINE **#**32131906

24. **Al-Tawfiq JA, Auwaerter PG. Healthcare-associated infections: the hallmark of Middle East respiratory syndrome coronavirus with review of the literature. *J Hosp Infect*. 2019;101(1):20-9.**

Middle East respiratory syndrome coronavirus (MERS-CoV) is capable of causing acute respiratory illness. Laboratory-confirmed MERS-CoV cases may be asymptomatic, have mild disease, or have a life-threatening infection with a high case fatality rate. There are three patterns of transmission: sporadic community cases from presumed non-human exposure, family clusters arising from contact with an infected family index case, and healthcare-acquired infections among patients and from patients to healthcare workers. Healthcare-acquired MERS infection has become a well-known characteristic of the disease and a leading means of spread. The main factors contributing to healthcare-associated outbreaks include delayed recognition, inadequate infection control measures, inadequate triaging and isolation of suspected MERS or other respiratory illness patients, crowding, and patients remaining in the emergency department for many days. A review of the literature suggests that effective control of hospital outbreaks was accomplished in most instances by the application of proper infection control procedures. Prompt recognition, isolation and management of suspected cases are key factors for prevention of the spread of MERS. Repeated assessments of infection control and monitoring of corrective measures contribute to changing the course of an outbreak. Limiting the number of contacts and hospital visits are also important factors to decrease the spread of infection.

**DATABASE:** MEDLINE **#**29864486

25. **Judson SD, Munster VJ. Nosocomial Transmission of Emerging Viruses via Aerosol-Generating Medical Procedures. *Viruses*. 2019;11(10):12.**

Recent nosocomial transmission events of emerging and re-emerging viruses, including Ebola virus, Middle East respiratory syndrome coronavirus, Nipah virus, and Crimean-Congo hemorrhagic fever orthonairovirus, have highlighted the risk of nosocomial transmission of emerging viruses in health-care settings. In particular, concerns and precautions have increased regarding the use of aerosol-generating medical procedures when treating patients with such viral infections. In spite of increasing associations between aerosol-generating medical procedures and the nosocomial transmission of viruses, we still have a poor understanding of the risks of specific procedures and viruses. In order to identify which aerosol-generating medical procedures and emerging viruses pose a high risk to health-care workers, we explore the mechanisms of aerosol-generating medical procedures, as well as the transmission pathways and characteristics of highly pathogenic viruses associated with nosocomial transmission. We then propose how research, both in clinical and experimental settings, could advance current infection control guidelines.

**DATABASE:** MEDLINE **#**31614743
**ACCESS ARTICLE URL:**
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6832307/pdf/viruses-11-00940.pdf

26. **Ki HK, Han SK, Son JS, et al. Risk of transmission via medical employees and importance of routine infection-prevention policy in a nosocomial outbreak of Middle East respiratory syndrome (MERS): a descriptive analysis from a tertiary care hospital in South Korea. *BMC Pulm Med*. 2019;19(1):190.**

BACKGROUND: In 2015, South Korea experienced an outbreak of Middle East respiratory syndrome (MERS), and our hospital experienced a nosocomial MERS infection. We performed a comprehensive analysis to identify the MERS transmission route and the ability of our routine infection-prevention policy to control this outbreak.

METHODS: This is a case-cohort study of retrospectively analysed data from medical charts, closed-circuit television, personal interviews and a national database. We analysed data of people at risk of MERS transmission including 228 in the emergency department (ED) and 218 in general wards (GW). Data of personnel location and movement, personal protection equipment and hand hygiene was recorded. Transmission risk was determined as the extent of exposure to the index patient: 1) high risk: staying within 2 m; 2) intermediate risk: staying in the same room at same time; and 3) low risk: only staying in the same department without contact.

RESULTS: The index patient was an old patient admitted to our hospital. 11 transmissions from the index patient were identified; 4 were infected in our hospital. Personnel in the ED exhibited higher rates of compliance with routine infection-prevention methods as observed objectively: 93% wore a surgical mask and 95.6% washed their hands. Only 1.8% of personnel were observed to wear a surgical mask in the GW. ED had a higher percentage of high-risk individuals compared with the GW (14.5% vs. 2.8%), but the attack rate was higher in the GW (16.7%; l/6) than in the ED (3%; 1/33). There were no transmissions in the intermediate- and low-risk groups in the ED. Otherwise 2 patients were infected in the GW among the low-risk group. MERS were transmitted to them indirectly by staff who cared for the index patient.

CONCLUSIONS: Our study provide compelling evidence that routine infection-prevention policies can greatly reduce nosocomial transmission of MERS. Conventional isolation is established mainly from contact tracing of patients during a MERS outbreak. But it should be extended to all people treated by any medical employee who has contact with MERS patients.

TRIAL REGISTRATION: NCT02605109 , date of registration: 11th November 2015.

**DATABASE:** MEDLINE **#**31666061

**ACCESS ARTICLE URL:**

https://link.springer.com/content/pdf/10.1186/s12890-019-0940-5.pdf

27. **Wilson P, Zumla A. Transmission and prevention of acute viral respiratory tract infections in hospitals. *Curr Opin Pulm Med*. 2019;25(3):220-4.**

PURPOSE OF REVIEW: Transmission of acute respiratory tract viral infections in healthcare environments is a major problem worldwide. We review recent literature of viruses imported to hospitals from the local community and from abroad, their modes of transmission and measures required to reduce and contain them.

RECENT FINDINGS: Common causes of outbreaks include influenza viruses, respiratory syncytial virus, adenovirus, and coronaviruses. Major lethal outbreaks of viral respiratory infections in hospitals have been caused by coronaviruses imported from abroad by travelers.

SUMMARY: Although viruses circulating in the local community are common causes of hospital outbreaks, major outbreaks have been caused by the coronaviruses imported from abroad by travelers. A high degree of clinical awareness and rapid enforcement of infection control measures are required to prevent transmission and spread.

**DATABASE:** MEDLINE **#**30730312

28. **Ratnapalan S, Martimianakis MA, Cohen-Silver JH, et al. Pandemic Management in a Pediatric Hospital. *Clin Pediatr (Phila)*. 2013;52(4):322-8. DOI:** 10.1177/0009922812474890

OBJECTIVES. To describe our experiences in the management of the second wave of influenza A H1N1 (pH1N1) pandemic in a tertiary-care children?s hospital.

METHODS. An autoethnographic study of the pandemic planning and management committee members involved in managing the second wave of pH1N1 was conducted.

RESULTS. Staffing, surge capacity, communications and emergency operations planning by adding leaders of frontline workers and other key operational roles to the incident management team, and creating a tactical response team emerged as important factors in pandemic management in our hospital. The emergency department visits increased by 50%, necessitating increased staffing of the emergency department. Communications using existing chains of command had to be used to reach frontline staff during the pandemic.

CONCLUSIONS. Incident management teams managing pandemics and other disasters have to be dynamic and create tactical teams to ensure implementation and facilitate bidirectional communication with frontline workers.

**ACCESS ARTICLE URL:** https://doi.org/10.1177/0009922812474890

## Mental Health – Burnout and Protection

29. **Adams JG, Walls RM. Supporting the Health Care Workforce During the COVID-19 Global Epidemic. *JAMA*. 2020. DOI:** 10.1001/jama.2020.3972

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) continues to spread internationally. Worldwide, more than 100 000 cases of coronavirus disease 2019 (COVID-19, the disease caused by SARS-CoV-2) and more than 3500 deaths have been reported. COVID-19 is thought to have higher mortality than seasonal influenza, even as wide variation is reported. While the World Health Organization (WHO) estimates global mortality at 3.4%, South Korea has noted mortality of about 0.6%.Vaccine development and research into medical treatment for COVID-19 are under way, but are many months away. Meanwhile, the pressure on the global health care workforce continues to intensify. This pressure takes 2 forms. The first is the potentially overwhelming burden of illnesses that stresses health system capacity and the second is the adverse effects on health care workers, including the risk of infection.

**ACCESS ARTICLE URL:** https://doi.org/10.1001/jama.2020.3972

30. **Chen Q, Liang M, Li Y, et al. Mental health care for medical staff in China during the COVID-19 outbreak. *The Lancet Psychiatry*. 2020;7(4):e15-e6.**

In December, 2019, an outbreak of a novel coronavirus pneumonia occurred in Wuhan (Hubei, China), and subsequently attracted worldwide attention.1 By Feb 9, 2020, there were 37 294 confirmed and 28 942 suspected cases of 2019 coronavirus disease (COVID-19) in China.2 Facing this large-scale infectious public health event, medical staff are under both physical and psychological pressure.3 To better fight the COVID-19 outbreak, as the largest top-class tertiary hospital in Hunan Province, the Second Xiangya Hospital of Central South University undertakes a considerable part of the investigation of suspected patients. The hospital has set up a 24-h fever clinic, two mild suspected infection patient screening wards, and one severe suspected infection patient screening ward. In addition to the original medical staff at the infectious disease department, volunteer medical staff have been recruited from multiple other departments.

The Second Xiangya Hospital—workplace of the chairman of the Psychological Rescue Branch of the Chinese Medical Rescue Association—and the Institute of Mental Health, the Medical Psychology Research Center of the Second Xiangya Hospital, and the Chinese Medical and Psychological Disease Clinical

Medicine Research Center responded rapidly to the psychological pressures on staff. A detailed psychological intervention plan was developed, which mainly covered the following three areas: building a psychological intervention medical team, which provided online courses to guide medical staff to deal with common psychological problems; a psychological assistance hotline team, which provided guidance and supervision to solve psychological problems; and psychological interventions, which provided various group activities to release stress. However, the implementation of psychological intervention services encountered obstacles, as medical staff were reluctant to participate in the group or individual psychology interventions provided to them. Moreover, individual nurses showed excitability, irritability, unwillingness to rest, and signs of psychological distress, but refused any psychological help and stated that they did not have any problems. In a 30-min interview survey with 13 medical staff at The Second Xiangya Hospital, several reasons were discovered for this refusal of help. First, getting infected was not an immediate worry to staff—they did not worry about this once they began work. Second, they did not want their families to worry about them and were afraid of bringing the virus to their home. Third, staff did not know how to deal with patients when they were unwilling to be quarantined at the hospital or did not cooperate with medical measures because of panic or a lack of knowledge about the disease. Additionally, staff worried about the shortage of protective equipment and feelings of incapability when faced with critically ill patients. Many staff mentioned that they did not need a psychologist, but needed more rest without interruption and enough protective supplies. Finally, they suggested training on psychological skills to deal with patients' anxiety, panic, and other emotional problems and, if possible, for mental health staff to be on hand to directly help these patients.

**DATABASE:** MEDLINE **#**32085839

31. **Dewey C, Hingle S, Goelz E, et al. Supporting Clinicians During the COVID-19 Pandemic. *Ann Intern Med*. 2020. DOI:** 10.7326/M20-1033

The coronavirus disease 2019 (COVID-19) pandemic has upended clinicians' sense of order and control. Such disruption may lead to substantial stress in the short term and higher risk for burnout over the long term. While natural disasters, such as Hurricane Katrina, demonstrated the effectiveness of short-term emergency planning (1), the COVID-19 pandemic poses unique long-term stressors and risks to clinicians' physical, mental, spiritual, and emotional well-being. Leaders and front-line clinicians need to proactively protect the well-being of themselves and their colleagues to avoid adverse outcomes for clinicians and adverse effects on quality of patient care (2). We provide practical suggestions to encourage a culture that will sustain the clinician workforce during the pandemic. Regardless of practice location or size, everyone must commit to supporting the well-being of those involved in patient care.

**ACCESS ARTICLE URL:** https://doi.org/10.7326/M20-1033

32. **Greenberg N, Docherty M, Gnanapragasam S, et al. Managing mental health challenges faced by healthcare workers during covid-19 pandemic. *BMJ*. 2020;368:m1211. DOI:** 10.1136/bmj.m1211

Neil Greenberg and colleagues set out measures that healthcare managers need to put in place to protect the mental health of healthcare staff having to make morally challenging decisions. The covid-19 pandemic is likely to put healthcare professionals across the world in an unprecedented situation, having to make impossible decisions and work under extreme pressures. These decisions may include how to allocate scant resources to equally needy patients, how to balance their own physical and mental healthcare needs with those of patients, how to align their desire and duty to patients with those to family and friends, and how to provide care for all severely unwell patients with constrained or inadequate resources. This may cause some to experience moral injury or mental health problems. Moral injury, a term that originated in the military, can be defined as the psychological distress that results from

actions, or the lack of them, which violate someone's moral or ethical code. Unlike formal mental health conditions such as depression or post-traumatic stress disorder, moral injury is not a mental illness. But those who develop moral injuries are likely to experience negative thoughts about themselves or others (for example, "I am a terrible person" or "My bosses don't care about people's lives") as well as intense feelings of shame, guilt, or disgust. These symptoms can contribute to the development of mental health difficulties, including depression, post-traumatic stress disorder, and even suicidal ideation.2 Equally, some people who have to contend with significant challenges, moral or traumatic, experience a degree of post-traumatic growth,3 a term used to describe a bolstering of psychological resilience, esteem, outlook, and values after exposure to highly challenging situations. Whether someone develops a psychological injury or experiences psychological growth is likely to be influenced by the way that they are supported.

**ACCESS ARTICLE URL:** http://www.bmj.com/content/368/bmj.m1211.abstract

33. **Ho CS, Chee CY, Ho RC. Mental Health Strategies to Combat the Psychological Impact of COVID-19 Beyond Paranoia and Panic. *Ann Acad Med Singapore*. 2020;49(1):1-3.**

"Medical responders, such as first responders, including paramedics and ambulance personnel, and healthcare workers (HCWs), have also been found to display heightened stress, become emotionally affected and traumatized, and have higher levels of depression and anxiety. This is expected as the anxiety and fear of getting infected is much higher with the risk of exposure. There may also be a fear of transmission to their loved ones and children. The balance between professional duty, altruism and personal fear for oneself and others can often cause conflict and dissonance in many HCWs."

**DATABASE:** MEDLINE

**LIBRARIAN'S Note:** Article has relevant points for mental health care of workers, it just buries the lead.

34. **Lai J, Ma S, Wang Y, et al. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. *JAMA Network Open*. 2020;3(3):e203976.**

IMPORTANCE: Health care workers exposed to coronavirus disease 2019 (COVID-19) could be psychologically stressed.

OBJECTIVE: To assess the magnitude of mental health outcomes and associated factors among health care workers treating patients exposed to COVID-19 in China.

DESIGN, SETTINGS, AND PARTICIPANTS: This cross-sectional, survey-based, region-stratified study collected demographic data and mental health measurements from 1257 health care workers in 34 hospitals from January 29, 2020, to February 3, 2020, in China. Health care workers in hospitals equipped with fever clinics or wards for patients with COVID-19 were eligible.

MAIN OUTCOMES AND MEASURES: The degree of symptoms of depression, anxiety, insomnia, and distress was assessed by the Chinese versions of the 9-item Patient Health Questionnaire, the 7-item Generalized Anxiety Disorder scale, the 7-item Insomnia Severity Index, and the 22-item Impact of Event Scale-Revised, respectively. Multivariable logistic regression analysis was performed to identify factors associated with mental health outcomes.

RESULTS: A total of 1257 of 1830 contacted individuals completed the survey, with a participation rate of 68.7%. A total of 813 (64.7%) were aged 26 to 40 years, and 964 (76.7%) were women. Of all participants, 764 (60.8%) were nurses, and 493 (39.2%) were physicians; 760 (60.5%) worked in hospitals in Wuhan, and 522 (41.5%) were frontline health care workers. A considerable proportion of participants reported symptoms of depression (634 [50.4%]), anxiety (560 [44.6%]), insomnia (427 [34.0%]), and distress (899

[71.5%]). Nurses, women, frontline health care workers, and those working in Wuhan, China, reported more severe degrees of all measurements of mental health symptoms than other health care workers (eg, median [IQR] Patient Health Questionnaire scores among physicians vs nurses: 4.0 [1.0-7.0] vs 5.0 [2.0-8.0]; P = .007; median [interquartile range {IQR}] Generalized Anxiety Disorder scale scores among men vs women: 2.0 [0-6.0] vs 4.0 [1.0-7.0]; P < .001; median [IQR] Insomnia Severity Index scores among frontline vs second-line workers: 6.0 [2.0-11.0] vs 4.0 [1.0-8.0]; P < .001; median [IQR] Impact of Event Scale-Revised scores among those in Wuhan vs those in Hubei outside Wuhan and those outside Hubei: 21.0 [8.5-34.5] vs 18.0 [6.0-28.0] in Hubei outside Wuhan and 15.0 [4.0-26.0] outside Hubei; P < .001). Multivariable logistic regression analysis showed participants from outside Hubei province were associated with lower risk of experiencing symptoms of distress compared with those in Wuhan (odds ratio [OR], 0.62; 95% CI, 0.43-0.88; P = .008). Frontline health care workers engaged in direct diagnosis, treatment, and care of patients with COVID-19 were associated with a higher risk of symptoms of depression (OR, 1.52; 95% CI, 1.11-2.09; P = .01), anxiety (OR, 1.57; 95% CI, 1.22-2.02; P < .001), insomnia (OR, 2.97; 95% CI, 1.92-4.60; P < .001), and distress (OR, 1.60; 95% CI, 1.25-2.04; P < .001).

CONCLUSIONS AND RELEVANCE: In this survey of heath care workers in hospitals equipped with fever clinics or wards for patients with COVID-19 in Wuhan and other regions in China, participants reported experiencing psychological burden, especially nurses, women, those in Wuhan, and frontline health care workers directly engaged in the diagnosis, treatment, and care for patients with COVID-19.

**DATABASE:** MEDLINE **#**32202646
**ACCESS ARTICLE URL:**
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2763229

35. **Li Z, Ge J, Yang M, et al. Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control. *Brain Behav Immun*. 2020;10:10.**

Since December 2019, more than 79,000 people have been diagnosed with infection of the Corona Virus Disease 2019 (COVID-19). A large number of medical staff was sent to Wuhan city and Hubei province to aid COVID-19 control. Psychological stress, especially vicarious traumatization caused by the COVID-19 pandemic, should not be ignored. To address this concern, the study employed a total of 214 general public and 526 nurses (i.e., 234 front-line nurses and 292 non-front-line nurses) to evaluate vicarious traumatization scores via a mobile app-based questionnaire. Front-line nurses are engaged in the process of providing care for patients with COVID-19. The results showed that the vicarious traumatization scores for front-line nurses including scores for physiological and psychological responses, were significantly lower than those of non-front-line nurses (P < 0.001). Interestingly, the vicarious traumatization scores of the general public were significantly higher than those of the front-line nurses (P < 0.001); however, no statistical difference was observed compared to the scores of non-front-line nurses (P > 0.05). Therefore, increased attention should be paid to the psychological problems of the medical staff, especially non-front-line nurses, and general public under the situation of the spread and control of COVID-19. Early strategies that aim to prevent and treat vicarious traumatization in medical staff and general public are extremely necessary.

**DATABASE:** MEDLINE **#**32169498

36. **Lima CKT, Carvalho PMM, Lima I, et al. The emotional impact of Coronavirus 2019-nCoV (new Coronavirus disease). *Psychiatry Res*. 2020;287:112915.**

BACKGROUND: A novel form of Coronavirus (2019-nCoV) in Wuhan has created a confused and rapidly evolving situation. In this situational framework, patients and front-line healthcare workers are vulnerable.

METHOD: Studies were identified using large-circulation international journals found in two electronic databases: Scopus and Embase.

RESULTS: Populations of patients that may require tailored interventions are older adults and international migrant workers. Older adults with psychiatric conditions may be experiencing further distress. The COVID-19 epidemic has underscored potential gaps in mental health services during emergencies.

CONCLUSIONS: Most health professionals working in isolation units and hospitals do not receive any training for providing mental health care. Fear seems more certainly a consequence of mass quarantine.

**DATABASE:** MEDLINE **#**32199182

37. **Xiang YT, Yang Y, Li W, et al. Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *The Lancet Psychiatry*. 2020;7(3):228-9.**

The 2019 novel coronavirus (2019-nCoV) pneumonia, believed to have originated in a wet market in Wuhan, Hubei province, China at the end of 2019, has gained intense attention nationwide and globally. To lower the risk of further disease transmission, the authority in Wuhan suspended public transport indefinitely from Jan 23, 2020; similar measures were adopted soon in many other cities in China. As of Jan 25, 2020, 30 Chinese provinces, municipalities, and autonomous regions covering over 1·3 billion people have initiated first-level responses to major public health emergencies. A range of measures has been urgently adopted,1, 2 such as early identification and isolation of suspected and diagnosed cases, contact tracing and monitoring, collection of clinical data and biological samples from patients, dissemination of regional and national diagnostic criteria and expert treatment consensus, establishment of isolation units and hospitals, and prompt provision of medical supplies and external expert teams to Hubei province.

The emergence of the 2019-nCoV pneumonia has parallels with the 2003 outbreak of severe acute respiratory syndrome (SARS), which was caused by another coronavirus that killed 349 of 5327 patients with confirmed infection in China.3 Although the diseases have different clinical presentations,1, 4 the infectious cause, epidemiological features, fast transmission pattern, and insufficient preparedness of health authorities to address the outbreaks are similar. So far, mental health care for the patients and health professionals directly affected by the 2019-nCoV epidemic has been under-addressed, although the National Health Commission of China released the notification of basic principles for emergency psychological crisis interventions for the 2019-nCoV pneumonia on Jan 26, 2020.5 This notification contained a reference to mental health problems and interventions that occurred during the 2003 SARS outbreak, and mentioned that mental health care should be provided for patients with 2019-nCoV pneumonitis, close contacts, suspected cases who are isolated at home, patients in fever clinics, families and friends of affected people, health professionals caring for infected patients, and the public who are in need. To date, epidemiological data on the mental health problems and psychiatric morbidity of those suspected or diagnosed with the 2019-nCoV and their treating health professionals have not been available; therefore how best to respond to challenges during the outbreak is unknown. The observations of mental health consequences and measures taken during the 2003 SARS outbreak could help inform health authorities and the public to provide mental health interventions to those who are in need.

**DATABASE:** MEDLINE **#**32032543

38. **Xiao H, Zhang Y, Kong D, et al. The Effects of Social Support on Sleep Quality of Medical Staff Treating Patients with Coronavirus Disease 2019 (COVID-19) in January and February 2020 in China. *Med Sci Monit*. 2020;26:e923549.**

BACKGROUND Coronavirus disease 2019 (COVID-19), formerly known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and 2019 novel coronavirus (2019-nCoV), was first identified in December 2019 in Wuhan City, China. Structural equation modeling (SEM) is a multivariate analysis method to determine the structural relationship between measured variables. This observational study aimed to use SEM to determine the effects of social support on sleep quality and function of medical staff who treated patients with COVID-19 in January and February 2020 in Wuhan, China.

MATERIAL AND METHODS A one-month cross-sectional observational study included 180 medical staff who treated patients with COVID-19 infection. Levels of anxiety, self-efficacy, stress, sleep quality, and social support were measured using the and the Self-Rating Anxiety Scale (SAS), the General Self-Efficacy Scale (GSES), the Stanford Acute Stress Reaction (SASR) questionnaire, the Pittsburgh Sleep Quality Index (PSQI), and the Social Support Rate Scale (SSRS), respectively. Pearson's correlation analysis and SEM identified the interactions between these factors.

RESULTS Levels of social support for medical staff were significantly associated with self-efficacy and sleep quality and negatively associated with the degree of anxiety and stress. Levels of anxiety were significantly associated with the levels of stress, which negatively impacted self-efficacy and sleep quality. Anxiety, stress, and self-efficacy were mediating variables associated with social support and sleep quality.

CONCLUSIONS SEM showed that medical staff in China who were treating patients with COVID-19 infection during January and February 2020 had levels of anxiety, stress, and self-efficacy that were dependent on sleep quality and social support.

**DATABASE:** MEDLINE **#**32132521
**ACCESS ARTICLE URL:**
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7075079/pdf/medscimonit-26-e923549.pdf

39. **Kim JS, Choi JS. Factors Influencing Emergency Nurses' Burnout During an Outbreak of Middle East Respiratory Syndrome Coronavirus in Korea. *Asian Nurs Res (Korean Soc Nurs Sci)*. 2016;10(4):295-9.**

PURPOSE: Emergency department (ED) nurses suffer from persistent stress after experiencing the traumatic event of exposure to Middle East respiratory syndrome coronavirus (MERS-CoV), which can subsequently lead to burnout. This study aimed to assess ED nurses' burnout level during an outbreak of MERS-CoV and to identify influencing factors in order to provide basic information for lowering and preventing the level of burnout.

METHODS: Study participants were ED nurses working in eight hospitals designated for treating MERS-CoV-infected patients in Korea. We performed multiple regression analysis to explore the factors influencing burnout.

RESULTS: The ED nurses' burnout was affected by job stress (beta=0.59, p<.001), poor hospital resources for the treatment of MERS-CoV (beta = -0.19, p<.001) and poor support from family and friends (beta = -0.14, p<.05). These three variables explained 47.3% of the variance in burnout.

CONCLUSIONS: ED nurses taking care of MERS-CoV-infected patients should be aware that burnout is higher for nurses in their divisions than nurses in other hospital departments and that job stress is the biggest influential factor of burnout. To be ready for the outbreak of emerging contagious diseases such as MERS-CoV, efforts and preparations should be made to reduce burnout. Job stress should be managed and resolved. Working conditions for mitigating job stress and systematic stress management programs should be provided, and hospital resources for the treatment of MERS-CoV need to be reinforced. Moreover, promoting support from family and friends is required.

**DATABASE:** MEDLINE **#**28057317

## SEARCH STRATEGIES

MEDLINE

| # | Searches | Results |
|---|---|---|
| 1 | coronavirus/ or exp betacoronavirus/ or coronavirus infections/ | 9994 |
| 2 | (coronavirus* or corona virus* or coronovirus* or coronaviral or (wuhan adj1 virus) or (wuhan adj1 viral) or cov or covid or WN-CoV or ncov or 2019ncov or ncov2019 or ncovid or ncovid2019 or 2019ncovid or covid-19 or covid19 or covid 19 or corvid 19 or HCov-19 or HCov-2019 or hcov19 or hcov2019 or severe acute respiratory syndrome coronavirus 2 or severe acute respiratory syndrome corona virus 2 or SARS Coronavirus 2 or SARS Corona virus 2 or SARS-COV-2 or SARSCOV2 or SARSCOV 2 or SARS2 or SARS-2 or coronavirus disease 2019 or corona virus disease 2019 or 2019 novel coronavirus infection* or 2019 novel coronavirus disease or 2019-nCoV infection* or coronavirus disease-19 or new coronavirus or novel corona virus).mp,kf,hw,rn,in. | 16144 |
| 3 | 1 or 2 | 17601 |
| 4 | exp "health care facilities, manpower, and services"/ | 2865764 |
| 5 | (health workforce or health care worker? or healthcare worker? or health-care worker? or health care provider? or healthcare provider? or health-care provider? or medical care provider? or healthcare employee? or health personnel or medical personnel or medical staff or hospitalist? or physician? or doctor? or pathologist? or primary care phsycian? or GP or PCP or pulmonologist? or general practitioner? or general practice physician? or nursing staff or nurse? or hospital personnel or hospital staff or respiratory therapist? or hospital* or health facilit* or medical centre* or medical center* or intensive care unit? or intensive care ward? or intensive care department? or ICU or hospitalization? or critical care or intensive care or (patient* adj1 (room* or bed? or ward? or unit?))).tw,kf. | 2143459 |
| 6 | 4 or 5 | 4077958 |
| 7 | safety management/ or universal precautions/ or infection control/ or patient isolation/ or quarantine/ or disease transmission, infectious/ or infectious disease transmission, professional-to-patient/ or infectious disease transmission, patient-to-professional/ or exp "personnel staffing and scheduling"/ | 100785 |
| 8 | (cohorting or work stream* or traffic control bundle? or bundling or (dedicated adj1 (staff or team?)) or ((patient or staff or nurse* or doctor* or physician* or therapist* or worker*) adj1 cohort*) or safety management or universal precautions or handwashing or hand washing or hand-washing or respiratory hygiene or infection control or infection control* or patient isolation or ((disease or infection* or infectious or pathogen or virus) adj2 (transmission or infection or spread)) or patient-professional infection transmission? or patient-to-professional transmission? or patient-professional transmission? or patient-professional pathogen transmission? or patient-professional infection transmission? or patient-to-professional disease transmission? or patient-to-professional transmission? or patient-professional transmission? or patient- | 1154407 |

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| | professional disease transmission? or patient-professional pathogen transmission? or shift work schedule or shift work or rotating shift? or work schedule tolerance? or workload? or work load? or staff workload? or staff work load? or employee workload? or employee work load?).tw,kf. | |
| 9 | 7 or 8 | 1226960 |
| 10 | exp mental fatigue/ or exp occupational stress/ | 14355 |
| 11 | (((occupational or workplace or professional or job-related or job or work or work-related or career) adj2 (burnout or stress*)) or burnout or fatigue or vicarious trauma* or secondary trauma* or secondary traumatic stress*).tw,kf. | 112882 |
| 12 | 10 or 11 | 118344 |
| 13 | medical records/ or electronic health records/ or medical informatics applications/ | 86196 |
| 14 | (charting or ((patient or medical) adj1 chart*) or electronic medical record* or electronic health record* or EHR or EMR or computeri?ed medical record* or computeri?ed health record* or medical informatics application*).tw,kf. | 49792 |
| 15 | 13 or 14 | 124183 |
| 16 | exp "activities of daily living"/ | 100206 |
| 17 | (home life or daily living or self care or self-care or family life or social participation or leisure or family time or social isolation or physical isolation or household).tw,kf. | 139892 |
| 18 | 16 or 17 | 213473 |
| 19 | occupational exposure/ or cross infection/ or health planning/ or exp health facility planning/ | 138040 |
| 20 | (cross infection? or cross-infection? or nosocomial infection? or occupational exposure? or hospital exposure? or work exposure? or health planning or health facility planning or hospital planning).tw,kf. | 43216 |
| 21 | 19 or 20 | 157782 |
| 22 | 3 and 6 and 9 | 1259 |
| 23 | limit 22 to (english language and yr="2019 -Current") | 228 |
| 24 | limit 23 to "review articles" | 26 |
| 25 | 23 not 24 | 202 |
| 26 | limit 25 to humans | 68 |
| 27 | 25 not 26 | 134 |
| 28 | 3 and 6 and 9 and 12 | 23 |
| 29 | limit 28 to (english language and yr="2019 -Current") | 13 |
| 30 | 3 and 9 and 12 | 33 |

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| 31 | 30 not 29 | 20 |
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| 33 | limit 32 to (english language and yr="2019 -Current") | 19 |
| 34 | mental health/ | 36888 |
| 35 | (mental adj1 (health or wellness)).tw,kf. | 146737 |
| 36 | 34 or 35 | 160760 |
| 37 | 3 and 6 and 36 | 17 |
| 38 | 3 and 6 and 15 | 12 |
| 39 | limit 38 to (english language and yr="2019 -Current") | 4 |
| 40 | 3 and 15 | 24 |
| 41 | limit 40 to (english language and yr="2019 -Current") | 10 |
| 42 | 3 and 6 and 18 | 41 |
| 43 | limit 42 to (english language and yr="2019 -Current") | 5 |
| 44 | 3 and 18 | 97 |
| 45 | limit 44 to (english language and yr="2015 -Current") | 41 |
| 46 | 3 and 9 and 18 | 61 |
| 47 | limit 46 to (english language and yr="2019 -Current") | 5 |
| 48 | 3 and 6 and 9 and 21 | 187 |
| 49 | limit 48 to (english language and yr="2019 -Current") | 21 |
| 50 | 3 and 6 and 21 | 225 |
| 51 | limit 50 to (english language and yr="2019 -Current") | 23 |

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