**Clinical Librarian Service Search Results**

**Request:** What literature is there on the impact of covid-19 lockdown, or other similar lockdown or quarantine situations, on Emergency Department attendances?

**Summary**

From the literature, the impact of epidemics on Emergency Department attendances (EDA) for unrelated conditions is variable.

[Statistics](#_Statistics): Public Health England weekly bulletins indicate a recent sharp decline in non-covid-19 EDA (1). For trends over time, national statistics collections on outpatient (2), emergency (3), and admitted patient care (4) may be of interest. Unfortunately data for March and April is not yet available. NHS Digital may be able to provide this and can be contacted on [enquiries@nhsdigital.nhs.uk](mailto:enquiries@nhsdigital.nhs.uk) or 0300 303 5678. The Strategy Team at UHDB may be able to help with analysing the data.

[News articles and press releases](#_News_articles_and): Several news articles suggest reasons for the drop in EDA, including **fear of getting covid-19** in ED; **not wanting to burden the NHS;** and **ambulance services** being too **overwhelmed to respond** to calls (7, 8, 10). The Society for Acute Medicine has raised concerns about the lack of government action (9) and likely future demand caused by delays in EDA (6). A brief video at <https://www.youtube.com/watch?v=9_rkjbStRck> encouraging EDA for serious non-covid-19 symptoms shows how one USA hospital is addressing this (5).

[Research from previous epidemics](#_Research): Only a few articles address the change in EDA as hospitals return to normal. A Canadian study found activity across the hospital returned to normal **between 3 and 6 months** after an epidemic (22). A Taiwanese hospital found it took **3 months** for EDA to return to normal (23). A Chinese hospital which closed to non-epidemic patients during the crisis had not returned to normal activity levels **3 years** after the event. Recovery varied between specialties (21).

Suggested causes for fewer EDA in pandemics include the public not engaging in usual activity, **reducing traumatic injury** (23, 28); **fewer inappropriate** paediatric EDA (15); and **fear of infection** transmission at EDA, possibly with increased use of health phonelines (26, 27, 28). Conversely an increase in inappropriate EDA in one outbreak was caused by parents not knowing where to access care for children (20). The media may have a role - two papers found EDA peaks among patients who had relevant symptoms but not the epidemic condition shortly **after related media reports** (16, 17). An article which found loneliness increased EDA in COPD patients, independent of health status, may possibly be relevant to the current lockdown (13).

Very different patterns of EDA for non-epidemic conditions have been reported, from a **30% increase** (19) to **no significant change** (18)to a **51% decrease** (22, 23) during epidemics. Changes in the proportion of patients with different levels of acuity also vary (14, 23, 27). Several papers give substantial detail on proportions of different conditions (14, 15, 24). A Canadian study concludes *“Brief reductions occurred in admissions for some acute serious conditions, high-acuity visits to emergency departments and inter-hospital patient transfers suggesting that access to care for some potentially seriously ill patients was affected.”* (22).

Epidemics have been associated with increases in patients leaving ED without being seen (11, 12, 18); increased ED waits (12); and delays in admissions from ED (12).

**Disclaimer:** Please note that the information supplied by the Library and Knowledge Service in response to a literature search is for information purposes only. Every reasonable effort will be made to ensure that this information is accurate, up-to-date and complete. However, it is possible that it may not be representative of the whole body of evidence. No responsibility can be accepted by the Library for any action taken on the basis of this information.

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**Current at:** 29th April 2020

**Time taken for search:** 8 hours.

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Please let me know if you would like me to search further.

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**Please acknowledge this work in any resulting paper or presentation as:**

Evidence Search: Non-covid-19 ED attendance (LS24). Lindsay Snell (2020). Derby, UK: University Hospitals of Derby & Burton NHS Foundation Trust Library and Knowledge Service.

**Feedback:** Once you have read this report, I would appreciate it if you would complete our online literature search feedback form at:

<https://www.smartsurvey.co.uk/s/LiteratureSearchFeedback20202021/>

This relates to this specific search and will help us to monitor and improve our service. Many Thanks.

Kind regards,

Lindsay Snell

Clinical Librarian

Email: [Lindsay.snell@nhs.net](mailto:Lindsay.snell@nhs.net)

**Results**

# Statistics

## 1. Emergency department: weekly bulletins for 2020

Public Health England (2020)

<https://www.gov.uk/government/publications/emergency-department-weekly-bulletins-for-2020>

## 2. Hospital Outpatient Activity

NHS Digital (2020)

<https://digital.nhs.uk/data-and-information/publications/statistical/hospital-outpatient-activity>

This data set gives details of outpatient activity in each English Trust (with 3 and 4 digit diagnosis codes).

## 3. Hospital Accident & Emergency Activity

<https://digital.nhs.uk/data-and-information/publications/statistical/hospital-accident--emergency-activity>

This data set gives details of attendances in Accident & Emergency, including how long people stayed, how they arrived, and information about whether they were admitted or discharged.

## 4. Hospital Admitted Patient Care Activity

This data set gives details of admitted patient care, broken down by organisation and 3 and 4 digit diagnosis codes.

<https://digital.nhs.uk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity/2018-19>

# News articles and press releases

## 5. Going to the Emergency Department for Non-COVID-19 Emergencies

Mount Sinai Health System (28/4/20)

<https://www.youtube.com/watch?v=9_rkjbStRck>

## 6. Senior medic calls for “substance before soundbite” from the government

Society for Acute Medicine (27/4/2020)

<https://www.acutemedicine.org.uk/news/senior-medic-calls-for-substance-before-soundbite-from-the-government/>

## 7. Coronavirus: Sick children hospital treatment 'hit' during pandemic - leaked email

Cohen, D

BBC Newsnight (10/4/2020)

<https://www.bbc.co.uk/news/uk-52239183>

## 8. Empty non-coronavirus beds raise fears that sickest are avoiding NHS: Hospitals report steep drop in attendances for life-threatening conditions such as heart attacks

Neville, S et al.

Financial Times (10/4/2020)

<https://www.ft.com/content/d5ac0a79-6647-4f49-bb64-d1cc66362043>

## 9. Medic says lack of action to address drop in non-COVID emergency attendances “deeply concerning”

Society for Acute Medicine (8/10/2020)

<https://www.acutemedicine.org.uk/news/medic-says-lack-of-action-to-address-drop-in-non-covid-emergency-attendances-deeply-concerning/>

## 10. Some hospitals left 'quiet' as covid-19 sparks huge fall in attendances

West, D

Health Service Journal (26/3/2020)

<https://www.hsj.co.uk/acute-care/some-hospitals-left-quiet-as-covid-19-sparks-huge-fall-in-attendances/7027244.article>

# Research from previous epidemics

## 11. Impact of Viral Seasonal Outbreaks on Crowding and Health Care Quality in Pediatric Emergency Departments

**Author(s):** Noel G.; Viudes G.; Maghoo A.; Piarroux J.; Minodier P.; Gentile S.

**Source:** Pediatric emergency care; Feb 2020

In pediatric emergency departments (PEDs), seasonal viral outbreaks are believed to be associated with an increase of workload, but no quantification of this impact has been published. A retrospective cross-sectional study aimed to measure this impact on crowding and health care quality in PED. The study was performed in 1 PED for 3 years. Visits related to bronchiolitis, influenza, and gastroenteritis were defined using discharge diagnoses. The daily epidemic load (DEL) was the proportion of visits related to one of these diagnoses. The daily mean of 8 crowding indicators (selected in a published Delphi study) was used. A total of 93,976 children were admitted (bronchiolitis, 2253; influenza, 1277; gastroenteritis, 7678). The mean DEL was 10.4% (maximum, 33.6%). The correlation between the DEL and each indicator was significant. The correlation was stronger for bronchiolitis (Pearson R from 0.171 for number of hospitalization to 0.358 for length of stay). Between the first and fourth quartiles of the DEL, a significant increase, between 50% (patients left without being seen) and 8% (patient physician ratio), of all the indicators was observed. In conclusion, seasonal viral outbreaks have a strong impact on crowding and quality of care. The evolution of "patients left without being seen" between the first and fourth quartiles of DEL could be used as an indicator reflecting the capacity of adaptation of an emergency department to outbreaks.

**Database:** EMBASE

## 12. Anatomy of a demand shock: Quantitative analysis of crowding in hospital emergency departments in Victoria, Australia during the 2009 influenza pandemic.

**Author(s):** Sivey, Peter; McAllister, Richard; Vally, Hassan; Burgess, Anna; Kelly, Anne-Maree

**Source:** PloS one; 2019; vol. 14 (no. 9); p. e0222851

Available at [PLOS ONE](http://europepmc.org/search?query=(DOI:10.1371/journal.pone.0222851)) - from Europe PubMed Central - Open Access

Available at [PLOS ONE](http://dx.plos.org/10.1371/journal.pone.0222851) - from Public Library of Science (PLoS)

Available at [PLOS ONE](http://search.ebscohost.com/login.aspx?direct=true&scope=site&site=ehost-live&db=mdc&AN=31550288) - from EBSCO (MEDLINE Complete)

Available at [PLOS ONE](http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2004&res_id=xri:pqm&req_dat=xri:pqil:pq_clntid=145298&rft_val_fmt=ori/fmt:kev:mtx:journal&genre=article&issn=1932-6203&volume=14&issue=9&spage=e0222851) - from ProQuest (Health Research Premium) - NHS Version

Available at [PLOS ONE](https://journals.plos.org/plosone/article/file?id=10.1371/journal.pone.0222851&type=printable) - from Unpaywall

OBJECTIVE An infectious disease outbreak such as the 2009 influenza pandemic is an unexpected demand shock to hospital emergency departments (EDs). We analysed changes in key performance metrics in (EDs) in Victoria during this pandemic to assess the impact of this demand shock. DESIGN AND SETTING Descriptive time-series analysis and longitudinal regression analysis of data from the Victorian Emergency Minimum Dataset (VEMD) using data from the 38 EDs that submit data to the state's Department of Health and Human Services. MAIN OUTCOME MEASURES Daily number of presentations, influenza-like-illness (ILI) presentations, daily mean waiting time (time to first being seen by a doctor), daily number of patients who did-not-wait and daily number of access-blocked patients (admitted patients with length of stay >8 hours) at a system and hospital-level. RESULTS During the influenza pandemic, mean waiting time increased by up to 25%, access block increased by 32% and did not wait presentations increased by 69% above pre-pandemic levels. The peaks of all three crowding variables corresponded approximately to the peak in admitted ILI presentations. Longitudinal fixed-effects regression analysis estimated positive and statistically significant associations between mean waiting times, did not wait presentations and access block and ILI presentations. CONCLUSIONS This pandemic event caused excess demand leading to increased waiting times, did-not-wait patients and access block. Increases in admitted patients were more strongly associated with crowding than non-admitted patients during the pandemic period, so policies to divert or mitigate low-complexity non-admitted patients are unlikely to be effective in reducing ED crowding.

**Database:** Medline

## 13. Loneliness and ED Visits in Chronic Obstructive Pulmonary Disease

**Author(s):** Marty P.K.; Novotny P.; Benzo R.P.

**Source:** Mayo Clinic Proceedings: Innovations, Quality and Outcomes; Sep 2019; vol. 3 (no. 3); p. 350-357

Available at [Mayo Clinic Proceedings: Innovations, Quality & Outcomes](http://mcpiqojournal.org/article/S2542454819300736/pdf) - from Unpaywall

The primary objective of this study was to investigate the association of loneliness and the incidence of ED visits in a large and well-characterized cohort of patients with severe chronic obstructive pulmonary disease (COPD); the association of loneliness with performance measures and health perception was the secondary objective. Baseline data were used from the National Emphysema Treatment Trial (NETT), which investigated the effectiveness of lung volume reduction surgery in patients with moderate-to-severe COPD. Patients received Quality of Wellbeing questionnaires, which asked about loneliness and social isolation. For comparing baseline variables between lonely and non-lonely subjects, we used chi2 tests for categorical variables and Wilcoxon tests for continuous variables. The association of loneliness with ED visits and health perception was assessed with a logistic model that adjusted for multiple critical confounders. The study took place from December 2002, to December 2004, with a follow-up period of 5 years to assess loneliness and 24 months to assess use of the emergency department. There were 1218 patients analyzed, mean age 65 (standard deviation [SD] 12), 47% were women, FEV 1% 41 (SD 12); 7.9% of participants reported feeling lonely. These individuals had worse health ratings, 6-minute walk tests (6MWTs), and breathlessness. Loneliness was independently associated with ED visits after adjusting for age, lung function, dyspnea, 6MWT, treatment, and gender, odds ratio (OR) 1.57 (95% confidence interval [CI], 1.005-2.466), P=.04. This study suggests that loneliness in patients with COPD is significantly and independently associated to ED visits and reduced health perception. Addressing loneliness of patients with COPD in the outpatient setting may contribute to improved health perception and less health care utilization. Copyright © 2019

**Database:** EMCARE

## 14. Impact of the 2015 Middle East Respiratory Syndrome Outbreak on Emergency Care Utilization and Mortality in South Korea.

**Author(s):** Lee, Sun Young; Khang, Young Ho; Lim, Hwa Kyung

**Source:** Yonsei medical journal; Aug 2019; vol. 60 (no. 8); p. 796-803

Available at [Yonsei medical journal](http://europepmc.org/search?query=(DOI:10.3349/ymj.2019.60.8.796)) - from Europe PubMed Central - Open Access

Available at [Yonsei medical journal](http://search.ebscohost.com/login.aspx?direct=true&scope=site&site=ehost-live&db=mdc&AN=31347336) - from EBSCO (MEDLINE Complete)

Available at [Yonsei medical journal](https://doi.org/10.3349/ymj.2019.60.8.796) - from Unpaywall

PURPOSE In May 2015, South Korea experienced an epidemic of Middle East respiratory syndrome (MERS). This study investigated the impacts of MERS epidemic on emergency care utilization and mortality in South Korea. MATERIALS AND METHODS A natural experimental study was conducted using healthcare utilization and mortality data of the entire Korean population. The number of monthly emergency room (ER) visits was investigated to identify changes in emergency care utilization during the MERS epidemic; these trends were also examined according to patients' demographic factors, disease severity, and region. Deaths within 7 days after visiting an ER were analyzed to evaluate the impact of the reduction in ER visits on mortality. RESULTS The number of ER visits during the peak of the MERS epidemic (June 2015) decreased by 33.1% compared to the average figures from June 2014 and June 2016. The decrease was observed in all age, sex, and income groups, and was more pronounced for low-acuity diseases (acute otitis media: 53.0%; upper respiratory infections: 45.2%) than for high-acuity diseases (myocardial infarctions: 14.0%; ischemic stroke: 16.6%). No substantial changes were detected for the highest-acuity diseases, with increases of 3.5% for cardiac arrest and 2.4% for hemorrhagic stroke. The number of deaths within 7 days of an ER visit did not change significantly. CONCLUSION During the MERS epidemic, the number of ER visits decreased in all age, sex, and socioeconomic groups, and decreased most sharply for low-acuity diseases. Nonetheless, there was no significant change in deaths after emergency care.

**Database:** Medline

## 15. The Impact of Middle East Respiratory Syndrome Outbreak on Trends in Emergency Department Utilization Patterns.

**Author(s):** Paek, So Hyun; Kim, Do Kyun; Lee, Jin Hee; Kwak, Young Ho

**Source:** Journal of Korean medical science; Oct 2017; vol. 32 (no. 10); p. 1576-1580

Available at [Journal of Korean medical science](http://europepmc.org/search?query=(DOI:10.3346/jkms.2017.32.10.1576)) - from Europe PubMed Central - Open Access

Available at [Journal of Korean medical science](https://doi.org/10.3346/jkms.2017.32.10.1576) - from Unpaywall

Changes occurred in the patterns of utilization of emergency medical services during the Middle East respiratory syndrome (MERS) outbreak. The purpose of this study was to analyze the patterns of adult and pediatric patients who visited the emergency department (ED) during the outbreak. This retrospective study was conducted by analyzing changes in the patterns of visits among adult and pediatric patients in the ED at one tertiary teaching hospital in Korea. The study was performed from June 1, 2013 to July 31, 2015. The MERS outbreak period was from June 1 to July 31, 2015, and we compared that period to the same periods in 2013 and 2014. We compared and analyzed the patients' characteristics, emergency severity index (ESI) level at the visit, cause of visit, diagnosis, final dispositions, injury/non-injury, length of stay at the ED (EDLOS), and hospitalization rate. A total of 9,107 patients visited the ED during this period. Of these patients, 2,572 (28.2%) were pediatric patients and 6,535 (71.8%) were adult patients. The most common cause of an ED visit was fever (adult patients: 21.6%, pediatric patients: 56.2%). The proportion of non-urgent visits involving an ESI level of 4 or 5 and the EDLOS decreased significantly in pediatric and adult patients in comparison to that during the past two years. This change was significant in pediatric patients. Among adult patients, the rate of injury decreased, whereas it increased among pediatric patients. During the MERS outbreak period, pediatric ED visits due to non-urgent cases decreased significantly and there were more pronounced differences in ED utilization patterns in pediatric patients than in adult patients.

**Database:** Medline

## 16. Impact of mass media on public behavior and physicians: an ecological study of the H1N1 influenza pandemic.

**Author(s):** Codish, Shlomi; Novack, Lena; Dreiher, Jacob; Barski, Leonid; Jotkowitz, Alan; Zeller, Lior; Novack, Victor

**Source:** Infection control and hospital epidemiology; Jun 2014; vol. 35 (no. 6); p. 709-716

BACKGROUND The mass media plays an important role in public health behavior. PURPOSE The objective of the present study was to investigate the effect of mass media coverage of the H1N1 pandemic on the number of emergency department (ED) visits and hospital admission rates. METHODS An ecological study of ED visits to 8 general Israeli hospitals due to influenza-like illness during the period June-October 2009 was performed. Data on the number of visits per day for children and adults and daily hospitalization rates were analyzed. Associations with the estimated value of H1N1-related publications and weekly reports from nationwide sentinel clinics were assessed. The analysis was performed in 2012-2013. RESULTS There were 55,070 ED visits due to influenza-like illness during the study period. The overall number of media reports was 1,812 (14.3% radio broadcasts, 9.8% television broadcasts, 27.5% newspaper articles, and 48.5% major website reports). The overall estimated value of advertising of publications was $16,399,000, excluding the Internet. While H1N1 incidence recorded by Israeli sentinel clinics showed no association with mass media publications, peaks of media reports were followed by an increase in the number of ED visits, usually with a delay of 3 days (P = .005). This association was noted in children (P .1), with a corresponding decrease in hospital admission rates. Publications' framing had no association with ED visits. CONCLUSIONS During the 2009 H1N1 influenza outbreak in Israel, an increase in mass media coverage was associated with an increase in pediatric ED visits.

**Database:** Medline

## 17. TV news and concerns about - the EHEC-outbreak 2011 in Germany.

**Author(s):** Schulz, C; Schütte, K; Jacobi, C A; Hülsemann, J L; Malfertheiner, P

**Source:** Zeitschrift fur Gastroenterologie; Mar 2014; vol. 52 (no. 3); p. 277-280

BACKGROUND AND AIM In the beginning of May 2011 and finally terminated on July 26th 2011 an outbreak of infections with enterohaemorrhagic Escherichia (E.) coli (EHEC) strain O104:H4 occurred in Germany. The aim of this study is to analyse whether media coverage of the outbreak influenced the number of patients presenting with diarrhoea to the emergency room of a tertiary centre and to evaluate the influence of information on perception and rating of symptoms. METHODS Prospectively collected data in a tertiary centre on the number of patients presenting to the emergency room with diarrhea during the EHEC outbreak was correlated with retrospectively collected data about the media coverage of the outbreak on TV and compared to the number of patients that had presented with diarrhea during a comparative period in 2010. RESULTS A total of 1,625 patients presented to our emergency room during the observation period in 2011 between May 31st and June 13th, including 72 patients (4.4%) presenting with the predominant symptom of diarrhoea, of whom six patients (0.4%) reported haemorrhagic diarrhoea. In the comparative period in 2010, between May 31st and June 13th, twelve patients (1.6%) presenting the symptom of diarrhea were treated in our emergency room. The analysis of the news reports in 2011 revealed a total of 1,150 reports broadcast in the ARD and a total of 173 reports broadcast in the regional news channel MDR between May 29th and June 11th. In 2010 not a single report regarding our search terms was broadcast in the corresponding time period. CONCLUSION Our data suggest a clear positive correlation of the frequency of TV reports dealing with the epidemic disease outbreak and the rate of outpatient consultations in emergency rooms because of diarrhoea and could make an important contribution for future discussions.

**Database:** Medline

## 18. Impact of seasonal and pandemic influenza on emergency department visits, 2003-2010, Ontario, Canada.

**Author(s):** Schanzer, Dena L; Schwartz, Brian

**Source:** Academic emergency medicine : official journal of the Society for Academic Emergency Medicine; Apr 2013; vol. 20 (no. 4); p. 388-397

Available at [Academic emergency medicine : official journal of the Society for Academic Emergency Medicine](https://onlinelibrary.wiley.com/doi/full/10.1111/acem.12111) - from Wiley Online Library

Available at [Academic emergency medicine : official journal of the Society for Academic Emergency Medicine](http://europepmc.org/articles/pmc3748786?pdf=render) - from Unpaywall

OBJECTIVES Weekly influenza-like illness (ILI) consultation rates are an integral part of influenza surveillance. However, in most health care settings, only a small proportion of true influenza cases are clinically diagnosed as influenza or ILI. The primary objective of this study was to estimate the number and rate of visits to the emergency department (ED) that are attributable to seasonal and pandemic influenza and to describe the effect of influenza on the ED by age, diagnostic categories, and visit disposition. A secondary objective was to assess the weekly "real-time" time series of ILI ED visits as an indicator of the full burden due to influenza. METHODS The authors performed an ecologic analysis of ED records extracted from the National Ambulatory Care Reporting System (NARCS) database for the province of Ontario, Canada, from September 2003 to March 2010 and stratified by diagnostic characteristics (International Classification of Diseases, 10th Revision [ICD-10]), age, and visit disposition. A regression model was used to estimate the seasonal baseline. The weekly number of influenza-attributable ED visits was calculated as the difference between the weekly number of visits predicted by the statistical model and the estimated baseline. RESULTS The estimated rate of ED visits attributable to influenza was elevated during the H1N1/2009 pandemic period at 1,000 per 100,000 (95% confidence interval [CI] = 920 to 1,100) population compared to an average annual rate of 500 per 100,000 (95% CI = 450 to 550) for seasonal influenza. ILI or influenza was clinically diagnosed in one of 2.6 (38%) and one of 14 (7%) of these visits, respectively. While the ILI or clinical influenza diagnosis was the diagnosis most specific to influenza, only 87% and 58% of the clinically diagnosed ILI or influenza visits for pandemic and seasonal influenza, respectively, were likely directly due to an influenza infection. Rates for ILI ED visits were highest for younger age groups, while the likelihood of admission to hospital was highest in older persons. During periods of seasonal influenza activity, there was a significant increase in the number of persons who registered with nonrespiratory complaints, but left without being seen. This effect was more pronounced during the 2009 pandemic. The ratio of influenza-attributed respiratory visits to influenza-attributed ILI visits varied from 2.4:1 for the fall H1N1/2009 wave to 9:1 for the 2003/04 influenza A(H3N2) season and 28:1 for the 2007/08 H1N1 season. CONCLUSIONS Influenza appears to have had a much larger effect on ED visits than was captured by clinical diagnoses of influenza or ILI. Throughout the study period, ILI ED visits were strongly associated with excess respiratory complaints. However, the relationship between ILI ED visits and the estimated effect of influenza on ED visits was not consistent enough from year to year to predict the effect of influenza on the ED or downstream in-hospital resource requirements.

**Database:** Medline

## 19. Impact of the fall 2009 influenza A(H1N1)pdm09 pandemic on US hospitals.

**Author(s):** Rubinson, Lewis; Mutter, Ryan; Viboud, Cecile; Hupert, Nathaniel; Uyeki, Timothy; Creanga, Andreea; Finelli, Lyn; Iwashyna, Theodore J; Carr, Brendan; Merchant, Raina; Katikineni, Devi; Vaughn, Frances; Clancy, Carolyn; Lurie, Nicole

**Source:** Medical care; Mar 2013; vol. 51 (no. 3); p. 259-265

Available at [Medical care](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6669026) - from Unpaywall

BACKGROUND Understanding how hospitals functioned during the 2009 influenza A(H1N1)pdm09 pandemic may improve future public health emergency response, but information about its impact on US hospitals remains largely unknown. RESEARCH DESIGN We matched hospital and emergency department (ED) discharge data from the Agency for Healthcare Research and Quality (AHRQ) Healthcare Cost and Utilization Project with community-level influenza-like illness activity during each hospital's pandemic period in fall 2009 compared with a corresponding calendar baseline period. We compared inpatient mortality for sentinel conditions at high-surge versus nonsurge hospitals. RESULTS US hospitals experienced a doubling of pneumonia and influenza ED visits during fall 2009 compared with prior years, along with an 18% increase in overall ED visits. Although no significant increase in total inpatient admissions occurred overall, approximately 10% of all study hospitals experienced high surge, associated with higher acute myocardial infarction and stroke case fatality rates. These hospitals had similar characteristics to other US hospitals except that they had higher mortality for acute cardiac illnesses before the pandemic. After adjusting for 2008 case fatality rates, the association between high-surge hospitals and increased mortality for acute myocardial infarction and stroke patients persisted. CONCLUSIONS The fall 2009 pandemic period substantially impacted US hospitals, mostly through increased ED visits. For a small proportion of hospitals that experienced a high surge in inpatient admissions, increased mortality from selected clinical conditions was associated with both prepandemic outcomes and surge, highlighting the linkage between daily hospital operations and disaster preparedness.

**Database:** Medline

## 20. Parental reasons for utilization of an urban pediatric emergency department during the 2009 H1N1 influenza epidemic.

**Author(s):** Stockwell, Melissa S; Rausch, John; Sonnett, Meridith; Stanberry, Lawrence R; Rosenthal, Susan L

**Source:** Pediatric emergency care; Apr 2011; vol. 27 (no. 4); p. 261-265

OBJECTIVE The objective of the study was to understand the utilization of the pediatric emergency department (PED) of an academic hospital during regular primary care office hours during the 2009 H1N1 epidemic. Children with a usual source of care presenting for influenza-like illness (ILI) symptoms were compared with those presenting with other symptoms. METHODS During the 2009 H1N1 outbreak, parents visiting a PED in a low-income area in New York City in June 2009 were surveyed using open- and close-ended questions. Sociodemographic factors and reasons for seeking care in the PED rather than their usual source of care were compared between groups. RESULTS There were no sociodemographic differences among children brought to the PED for ILI and those brought for other presenting symptoms. Those families with a child with ILI symptoms were less likely to report urgency as the primary reason they brought their child to the PED. A common reason reported for coming to the PED was limited access to care. In further exploration of limited access, parents with a child with ILI symptoms were more likely to report that their usual source of care did not have any evening and/or weekend hours, and they did not know how to reach their provider after hours. CONCLUSIONS Enhancing access to primary care settings and encouraging parents to use their primary care providers might reduce the utilization of the PED for nonurgent problems during epidemics.

**Database:** Medline

## 21. The impact of SARS on hospital performance.

**Author(s):** Chu, Dachen; Chen, Ran-Chou; Ku, Chia-Yu; Chou, Pesus

**Source:** BMC health services research; Nov 2008; vol. 8 ; p. 228

Available at [BMC health services research](http://bmchealthservres.biomedcentral.com/articles/10.1186/1472-6963-8-228) - from BioMed Central

Available at [BMC health services research](http://europepmc.org/search?query=(DOI:10.1186/1472-6963-8-228)) - from Europe PubMed Central - Open Access

Available at [BMC health services research](http://search.ebscohost.com/login.aspx?direct=true&scope=site&site=ehost-live&db=mdc&AN=NLM18990210) - from EBSCO (MEDLINE Complete)

Available at [BMC health services research](https://bmchealthservres.biomedcentral.com/track/pdf/10.1186/1472-6963-8-228) - from Unpaywall

BACKGROUND During the SARS epidemic, healthcare utilization and medical services decreased significantly. However, the long-term impact of SARS on hospital performance needs to be further discussed. METHODS A municipal hospital in Taipei City was shut down for a month due to SARS and then became the designated SARS and infectious disease hospital for the city. This study collected the outpatient, inpatient and emergency service volumes for every year from April to March over four years. Average monthly service amount +/- standard deviation were used to compare patient volume for the whole hospital, as well as the outpatient numbers accessing different departments. The ARIMA model of outpatient volume in the pre-SARS year was developed. RESULTS The average monthly service volume of outpatient visits for the base year 2002 was 52317 +/- 4204 visits per month, and number for 2003 and the following two years were 55%, 82% and 84% of the base year respectively. The average emergency service volume was 4382 +/- 356 visits per month at the base year and this became 45%, 77% and 87% of the base year for the following three years respectively. Average inpatient service volume was 8520 +/- 909 inpatient days per month at the base year becoming 43%, 81% and 87% of the base year for the following three years respectively. Only the emergency service volume had recovered to the level of a non-significant difference at the second year after SARS. In addition, the departments of family medicine, metabolism and nephrology reached the 2002 patient number in 2003. The ARIMA (2,1,0) model was the most suitable for outpatient volume in pre-SARS year. The MAPE of the ARIMA (2,1,0) model for the pre-SARS year was 6.9%, and 43.2%, 10.6%, 6.2% for following 3 years. CONCLUSION This study demonstrates that if a hospital is completely shut down due to SARS or a similar disease, the impact is longer than previous reported and different departments may experience different recover periods. The findings of this study identify subspecialties that are particularly vulnerable in an infectious disease designated hospital and such hospitals need to consider which subspecialties should be included in their medical structure.

**Database:** Medline

## 22. Effect of widespread restrictions on the use of hospital services during an outbreak of severe acute respiratory syndrome.

**Author(s):** Schull, Michael J; Stukel, Thérèse A; Vermeulen, Marian J; Zwarenstein, Merrick; Alter, David A; Manuel, Douglas G; Guttmann, Astrid; Laupacis, Andreas; Schwartz, Brian

**Source:** CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne; Jun 2007; vol. 176 (no. 13); p. 1827-1832

Available at [CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne](http://europepmc.org/search?query=(DOI:10.1503/cmaj.061174)) - from Europe PubMed Central - Open Access

Available at [CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne](http://search.ebscohost.com/login.aspx?direct=true&scope=site&site=ehost-live&db=mdc&AN=17576979) - from EBSCO (MEDLINE Complete)

Available at [CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne](http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2004&res_id=xri:pqm&req_dat=xri:pqil:pq_clntid=145298&rft_val_fmt=ori/fmt:kev:mtx:journal&genre=article&issn=0820-3946&volume=176&issue=13&spage=1827) - from ProQuest (Health Research Premium) - NHS Version

Available at [CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne](https://www.ncbi.nlm.nih.gov/pubmed/17576979) - from PubMed

Available at [CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1891122/) - from PubMed Central

Available at [CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne](https://doi.org/10.1503/cmaj.061174) - from doi.org

Available at [CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne](https://www.cmaj.ca/content/cmaj/176/13/1827.full.pdf) - from Unpaywall

BACKGROUND Restrictions on the nonurgent use of hospital services were imposed in March 2003 to control an outbreak of severe acute respiratory syndrome (SARS) in Toronto, Ont. We describe the impact of these restrictions on health care utilization and suggest lessons for future epidemics. METHODS We performed a retrospective population-based study of the Greater Toronto Area (hereafter referred to as Toronto) and unaffected comparison regions (Ottawa and London, Ont.) before, during and after the SARS outbreak (April 2001-March 2004). We determined the adjusted rates of hospital admissions, emergency department and outpatient visits, diagnostic testing and drug prescribing. RESULTS During the early and late SARS restriction periods, the rate of overall and medical admissions decreased by 10%-12% in Toronto; there was no change in the comparison regions. The rate of elective surgery in Toronto fell by 22% and 15% during the early and late restriction periods respectively and by 8% in the comparison regions. The admission rates for urgent surgery remained unchanged in all regions; those for some acute serious medical conditions decreased by 15%-21%. The rates of elective cardiac procedures declined by up to 66% in Toronto and by 71% in the comparison regions; the rates of urgent and semi-urgent procedures declined little or increased. High-acuity visits to emergency departments fell by 37% in Toronto, and inter-hospital patient transfers fell by 44% in the circum-Toronto area. Drug prescribing and primary care visits were unchanged in all regions. INTERPRETATION The restrictions achieved modest reductions in overall hospital admissions and substantial reductions in the use of elective services. Brief reductions occurred in admissions for some acute serious conditions, high-acuity visits to emergency departments and inter-hospital patient transfers suggesting that access to care for some potentially seriously ill patients was affected.

**Database:** Medline

## 23. Declining emergency department visits and costs during the severe acute respiratory syndrome (SARS) outbreak

**Author(s):** Huang H.-H.; Yen D.H.-T.; Kao W.-F.; Wang L.-M.; Huang C.-I.; Lee C.-H.

**Source:** Journal of the Formosan Medical Association; Jan 2006; vol. 105 (no. 1); p. 31-37

Available at [Journal of the Formosan Medical Association = Taiwan yi zhi](https://www.ncbi.nlm.nih.gov/pubmed/16440068) - from PubMed

Available at [Journal of the Formosan Medical Association = Taiwan yi zhi](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7135596/) - from PubMed Central

Available at [Journal of the Formosan Medical Association = Taiwan yi zhi](https://doi.org/10.1016/S0929-6646(09)60106-6) - from doi.org

Available at [Journal of the Formosan Medical Association = Taiwan yi zhi](http://www.sciencedirect.com/science/article/pii/S0929664609601066) - from ScienceDirect

Available at [Journal of the Formosan Medical Association = Taiwan yi zhi](https://doi.org/10.1016/s0929-6646(09)60106-6) - from Unpaywall

Background: The immediate and long-term impact of severe acute respiratory syndrome (SARS) outbreak on emergency department (ED) visits and hospital expenditures for these visits has not been thoroughly investigated. The objectives of this retrospective observational study investigated the impact of SARS outbreak on ED visits and the cost of these visits in a designated SARS medical center. Method(s): Data related to the total number of ED visits and their costs were collected for the SARS epidemic period in 2003 and the same period in the preceding year in 2002. Data collected included total number of ED visits, services provided, triage categories, and total expenditures for all patients. Data for before and during the outbreak were retrieved and compared. Result(s): At the peak of the SARS epidemic, the reduction in daily ED visits reached 51.6% of pre-epidemic numbers (p < 0.01). In pediatric, trauma and non-trauma patients, the maximum mean decreases in number of visits were 80.0% (p < 0.01), 57.6% (p < 0.01) and 40.8% (p < 0.01), respectively. In triage 1, 2 and 3 patients, the maximum mean decreases were 18.1% (p < 0.01), 55.9% (p < 0.01) and 53.7% (p < 0.01), respectively. The maximum decrease in total costs was 37.7% (p < 0.01). The maximum mean costs per patient increased 35.9% (p < 0.01). The proportions of increases in mean costs for each patient were attributed to laboratory investigations (31.4%), radiography (21.9%) and medications (29.5%). Conclusion(s): The SARS outbreak resulted in a marked reduction in the number of ED visits which persisted for 3 months after the end of the epidemic. Total cost of treating individual patients showed a simultaneous marked increase, while overall operational costs in the ED showed a marked decrease. The increased total cost for each patient was attributed to the increased number of diagnostic procedures to screen for possible SARS in the ED. ©2006 Elsevier & Formosan Medical Association.

**Database:** EMBASE

## 24. Impact of severe acute respiratory syndrome (SARS) outbreaks on the use of emergency department medical resources.

**Author(s):** Huang, Chien-Cheng; Yen, David Hung-Tsang; Huang, Hsien-Hao; Kao, Wei-Fong; Wang, Lee-Min; Huang, Chun-I; Lee, Chen-Hsen

**Source:** Journal of the Chinese Medical Association : JCMA; Jun 2005; vol. 68 (no. 6); p. 254-259

Available at [Journal of the Chinese Medical Association : JCMA](https://www.ncbi.nlm.nih.gov/pubmed/15984818) - from PubMed

Available at [Journal of the Chinese Medical Association : JCMA](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7128348/) - from PubMed Central

Available at [Journal of the Chinese Medical Association : JCMA](http://www.sciencedirect.com/science/article/pii/S1726490109701467) - from ScienceDirect

Available at [Journal of the Chinese Medical Association : JCMA](https://doi.org/10.1016/S1726-4901(09)70146-7) - from doi.org

Available at [Journal of the Chinese Medical Association : JCMA](https://doi.org/10.1016/s1726-4901(09)70146-7) - from Unpaywall

BACKGROUND The impact of the severe acute respiratory syndrome (SARS) outbreak in 2003 on the emergency department (ED) medical needs of adult patients has not been elucidated. The purpose of this study was to investigate the demographic and clinical characteristics of ED adult patients before, during and after the SARS epidemic in a SARS-dedicated hospital. METHODS A retrospective, ED chart review was conducted, and demographic data were obtained from a computer database, for a total of 17,586 patients. Patient information, including age, gender, mode of arrival, triage category, time of visit, main diagnosis, use of ED services, and status after the ED visit, were collected and compared for pre-, early-, peak-, late-, and post-SARS epidemic stages. RESULTS Demographic data demonstrated a significant decrease in patient attendances per day, with a mean reduction of 92.5 +/- 8.3 patients (43.7 +/- 3.9% reduction in rate; p < 0.01) during peak- versus pre-epidemic stages, but revealed no differences in patient age and gender. The numbers of patients with ambulance transport, inter-hospital referral, and critical illnesses, including DOA, categorized as triage 1, or admitted to a ward or intensive care unit after the ED visit, were not influenced by the SARS epidemic. The number of patients with upper airway infections and suicide attempts from drug overdoses increased, but not statistically significantly. The number of patients with other diagnoses decreased progressively from early- to peak-epidemic stages, but returned to their earlier levels at the post-epidemic stage. Statistically significant decreases (p < 0.05) were noted in mean attendance at peak-versus pre- and early-epidemic stages for patients with cardiovascular disease, inflammatory or functional bowel disease, endocrine disease, dizziness or vertigo, or trauma. CONCLUSION The SARS outbreak did not eliminate the need of critically ill patients for advanced medical support. However, besides an overall decrease in patient numbers, the SARS epidemic markedly altered demographic information, clinical characteristics, and the use of medical services by adult patients in the ED of a SARS-dedicated hospital.

**Database:** Medline

## 25. The impact of the SARS outbreak on an urban emergency department in Taiwan.

**Author(s):** Chen, Wei-Kung; Cheng, Yi-Chang; Chung, Yu-Ting; Lin, Cheng-Chieh

**Source:** Medical care; Feb 2005; vol. 43 (no. 2); p. 168-172

OBJECTIVE Emergency departments (ED) were on the front lines for possible cases of transmission during the severe acute respiratory syndrome (SARS) epidemic. The purpose of this study was to investigate the impact of the SARS catastrophe on an urban ED. METHODS The patients' characteristics in an urban ED were collected from March to May 2003 during the SARS outbreak in Taiwan. The crisis period was divided into 2 periods: 30 days before (period 1) and after (period 2) April 21, the date of the first hospital-associated transmission. Problem severity in the ED and stress levels of ED staff during the SARS catastrophe were rated from mild (1 point) to severe (5 points). RESULTS The number of ED patients declined 33.4% in period 2. There was a 2.1% (95%CI, 0.4-3.8) increase in the percentage of male patients, a 2.5% (95% CI, 1.5-3.7) increase in percentage of fever (>38 degrees C), and a 4.0% (95% CI, 2.6-5.4%) increase in chief complaint of fever in period 2. The number of nontrauma patients younger than 18 years had declined by 44.5% in period 2. The total charge for reimbursement from an insurance institution declined 21.7%. During the SARS outbreak, the most severe stress experienced by either physicians or nurses occurred during emergency resuscitation (median stress rating point, 4; interquartile range, 1). CONCLUSION The SARS catastrophe affected the ED visit volume, finances, various patient characteristics, and stress levels in the ED physicians and nurses. EDs must be fully prepared to face the challenges of the next outbreak of SARS or other infectious disease.

**Database:** Medline

## 26. The impact of SARS on a tertiary care pediatric emergency department.

**Author(s):** Boutis, Kathy; Stephens, Derek; Lam, Kelvin; Ungar, Wendy J; Schuh, Suzanne

**Source:** CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne; Nov 2004; vol. 171 (no. 11); p. 1353-1358

Available at [Canadian Medical Association Journal](http://europepmc.org/search?query=(DOI:10.1503/cmaj.1031257)) - from Europe PubMed Central - Open Access

Available at [Canadian Medical Association Journal](http://search.ebscohost.com/login.aspx?direct=true&scope=site&site=ehost-live&db=mdc&AN=15557588) - from EBSCO (MEDLINE Complete)

Available at [Canadian Medical Association Journal](http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2004&res_id=xri:pqm&req_dat=xri:pqil:pq_clntid=145298&rft_val_fmt=ori/fmt:kev:mtx:journal&genre=article&issn=0820-3946&volume=171&issue=11&spage=1353) - from ProQuest (Health Research Premium) - NHS Version

Available at [Canadian Medical Association Journal](https://www.ncbi.nlm.nih.gov/pubmed/15557588) - from PubMed

Available at [Canadian Medical Association Journal](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC527337/) - from PubMed Central

Available at [Canadian Medical Association Journal](https://doi.org/10.1503/cmaj.1031257) - from doi.org

Available at [Canadian Medical Association Journal](http://www.cmaj.ca/content/171/11/1353.full.pdf) - from Unpaywall

BACKGROUND The Greater Toronto Area (GTA) was considered a "hot zone" for severe acute respiratory syndrome (SARS) in 2003. In accordance with mandated city-wide infection control measures, the Hospital for Sick Children (HSC) drastically reduced all services while maintaining a fully operational emergency department. Because of the GTA health service suspensions and the overlap of SARS-like symptoms with many common childhood illnesses, this introduced the potential for a change in the volumes of patients visiting the emergency department of the only regional tertiary care children's hospital. METHODS We compared HSC emergency department patient volumes, admission rates and length of stay in the emergency department in the baseline years of 2000-2002 (non-SARS years) with those in 2003 (SARS year). The data from the prior years were modeled as a time series. Using an interrupted time series analysis, we compared the 2003 data for the periods before, during and after the SARS periods with the modeled data for significant differences in the 3 aforementioned outcomes of interest. RESULTS Compared with the 2000-2002 data, we found no differences in visits, admission rates or length of stay in the pre-SARS period in 2003. There were significant decreases in visits and length of stay (p < 0.001) and increases in admission rates (p < 0.001) during the periods in 2003 when there were new and active cases of SARS in the GTA. All 3 outcomes returned to expected estimates coincident with the absence of SARS cases from September to December 2003. INTERPRETATION During the SARS outbreak in the GTA, the HSC emergency department experienced significantly reduced volumes of patients with low-acuity complaints. This gives insight into utilization rates of a pediatric emergency department during a time when there was additional perceived risk in using emergency department services and provides a foundation for emergency department preparedness policies for SARS-like public health emergencies.

**Database:** Medline

## 27. Impact of a severe acute respiratory syndrome outbreak in the emergency department: An experience in Taiwan

**Author(s):** Chen T.-A.; Lai K.-H.; Chang H.-T.

**Source:** Emergency Medicine Journal; Nov 2004; vol. 21 (no. 6); p. 660-662

Available at [Emergency medicine journal : EMJ](https://go.openathens.net/redirector/nhs?url=https%3A%2F%2Femj.bmj.com%2Flookup%2Fdoi%2F10.1136%2Femj.2003.010678) - from BMJ Journals - NHS

Available at [Emergency medicine journal : EMJ](http://europepmc.org/search?query=(DOI:10.1136/emj.2003.010678)) - from Europe PubMed Central - Open Access

Available at [Emergency medicine journal : EMJ](http://emj.bmj.com/cgi/doi/10.1136/emj.2003.010678) - from HighWire - Free Full Text

Available at [Emergency medicine journal : EMJ](http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2004&res_id=xri:pqm&req_dat=xri:pqil:pq_clntid=145298&rft_val_fmt=ori/fmt:kev:mtx:journal&genre=article&issn=1472-0205&volume=21&issue=6&spage=660) - from ProQuest (Health Research Premium) - NHS Version

Available at [Emergency medicine journal : EMJ](https://emj.bmj.com/content/emermed/21/6/660.full.pdf) - from Unpaywall

Objectives: To evaluate the impact of a severe acute respiratory syndrome (SARS) outbreak in the emergency department (ED). Method(s): Computerised records of all ED visits in January and May 2003 were analysed and compared, representing before and during the SARS epidemic respectively. Data were grouped into two categories. Group 1 was the indicators of impact on patients, including visitor's condition classification, number of patients that died on arrival (DOA), received cardiopulmonary resuscitation, underwent endotracheal intubation, needed mechanical ventilation, discharged against medical advice (AAD), died in the ED, and the admission rate to wards. Group 2 was the indicators of impact on the quality of medical care, including number of visits that returned within 72 hours (early returns), underwent chest radiography, upper abdomen sonography or computed tomography, and the length of stay. Result(s): There were 6650 and 3901 consecutive encounters in January and May 2003 respectively. There were significant differences on condition classifications (p=0.000), increased rate of patients that underwent endotracheal intubation (p=0.003), needed mechanical ventilation (p=0.020), and admission (p=0.000). The rate of AAD decreased significantly (p=0.024). There was no significant difference on early returns, although the length of stay in the ED increased (p=0.043). The number of visits that underwent chest radiological examination increased (p=0.000) and upper abdomen sonography (p=0.007) decreased significantly in May. Conclusion(s): SARS had an impact on the medical service system and decreased visits by 40% in the ED. Patients visiting the ED had more severe conditions than before. The impact of SARS on quality of medical care can be minimised when adequate infection control measures are applied.

**Database:** EMCARE

## 28. Impact of SARS on an emergency department in Hong Kong.

**Author(s):** Man, Chi Yin; Yeung, Richard S; Chung, Josephine Y; Cameron, Peter A

**Source:** Emergency medicine (Fremantle, W.A.); 2003; vol. 15 (no. 5-6); p. 418-422

OBJECTIVE To report on the impact of a Severe Acute Respiratory Syndrome (SARS) outbreak on the attendances of a major teaching hospital ED. METHODS Two periods were studied. The first was prior to the closure of the ED due to SARS and the second was after re-opening of the ED. Data on attendances, discharge against medical advice, triage categories, trauma and ambulance cases were retrieved from the computer and compared with the data in the same periods in 2002. RESULTS In the first period, when compared with 2002 there was a significant decrease in the mean daily attendance (397 vs 524), trauma cases (68 vs 111), minor cases (category 4: 283 vs 361, and category 5: 20 vs 43). In the second period, there was a significant decrease in the mean daily attendance (265 vs 545), trauma cases (40 vs 111), minor cases (category 4:181 vs 376, and category 5: 12 vs 45), discharge against medical advice (4 vs 6 daily) and ambulance cases (70 vs 86 daily). Patients requiring immediate care however, remained similar. CONCLUSION There was a significant drop in the overall ED attendance, trauma cases and minor cases after the outbreak of SARS. Possible causes include changes in community behaviour, resulting in a lower incidence of trauma and disease and fear of presenting to hospital and contracting SARS.

**Database:** Medline

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**Databases searched:** MEDLINE, EMBASE, Emcare, Cinahl, PubMed, NHS Digital, Google.

**Search History:**

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Database** | **Search term** | **Results** |
| 1 | Medline | (covid-19).ti,ab | 1551 |
| 2 | Medline | (wuhan ADJ2 coronavir\*).ti,ab | 40 |
| 3 | Medline | (ncov).ti,ab | 340 |
| 4 | Medline | (sars-cov\*).ti,ab | 2777 |
| 5 | Medline | exp CORONAVIRIDAE/ | 12696 |
| 6 | Medline | exp "CORONAVIRIDAE INFECTIONS"/ | 10756 |
| 7 | Medline | (sars OR "severe acute respiratory").ti,ab | 10989 |
| 8 | Medline | (mers OR "middle east respiratory" OR "middle eastern respiratory").ti,ab | 4369 |
| 9 | Medline | PANDEMICS/ | 4923 |
| 10 | Medline | EPIDEMICS/ | 9918 |
| 11 | Medline | (pandemic\* OR epidemic\* OR outbreak\*).ti | 73274 |
| 12 | Medline | (lockdown).ti,ab | 113 |
| 13 | Medline | (lock-down).ti,ab | 25 |
| 14 | Medline | (quarantin\*).ti,ab | 4550 |
| 15 | Medline | (curfew).ti,ab | 65 |
| 16 | Medline | (confine\*).ti,ab | 95471 |
| 17 | Medline | (self-isolat\*).ti,ab | 126 |
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| 21 | Medline | (refer OR referred OR referral OR refers OR referring).ti | 19614 |
| 22 | Medline | \*"REFERRAL AND CONSULTATION"/ | 25622 |
| 23 | Medline | (21 OR 22) | 38127 |
| 24 | Medline | (20 AND 23) | 171 |
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| 26 | EMBASE | (wuhan ADJ2 coronavir\*).ti,ab | 21 |
| 27 | EMBASE | (ncov).ti,ab | 342 |
| 28 | EMBASE | (sars-cov\*).ti,ab | 2950 |
| 29 | EMBASE | exp CORONAVIRIDAE/ | 12703 |
| 30 | EMBASE | exp "CORONAVIRIDAE INFECTION"/ | 11511 |
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| 34 | EMBASE | \*EPIDEMIC/ | 32261 |
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| 36 | EMBASE | (outbreak\*).ti | 31230 |
| 37 | EMBASE | (lockdown).ti,ab | 130 |
| 38 | EMBASE | (lock-down).ti,ab | 32 |
| 39 | EMBASE | (quarantin\*).ti,ab | 4629 |
| 40 | EMBASE | (curfew).ti,ab | 83 |
| 41 | EMBASE | (confine\*).ti,ab | 99837 |
| 42 | EMBASE | (self-isolat\*).ti,ab | 147 |
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| 45 | EMBASE | exp "CONTACT ISOLATION"/ OR "SOCIAL ISOLATION"/ | 22118 |
| 46 | EMBASE | ISOLATION/ | 1948 |
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| 51 | EMBASE | (47 AND 50) | 185 |
| 52 | EMCARE | (covid-19).ti,ab | 333 |
| 53 | EMCARE | (wuhan ADJ2 coronavir\*).ti,ab | 11 |
| 54 | EMCARE | (ncov).ti,ab | 89 |
| 55 | EMCARE | (sars-cov\*).ti,ab | 262 |
| 56 | EMCARE | exp CORONAVIRIDAE/ | 1979 |
| 57 | EMCARE | exp "CORONAVIRIDAE INFECTION"/ | 3674 |
| 58 | EMCARE | (sars OR "severe acute respiratory").ti,ab | 2958 |
| 59 | EMCARE | (mers OR "middle east respiratory" OR "middle eastern respiratory").ti,ab | 943 |
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| 61 | EMCARE | \*EPIDEMIC/ | 6896 |
| 62 | EMCARE | (pandemic\* OR epidemic\*).ti | 9715 |
| 63 | EMCARE | (outbreak\*).ti | 7404 |
| 64 | EMCARE | (lockdown).ti,ab | 27 |
| 65 | EMCARE | (lock-down).ti,ab | 13 |
| 66 | EMCARE | (quarantin\*).ti,ab | 739 |
| 67 | EMCARE | (curfew).ti,ab | 43 |
| 68 | EMCARE | (confine\*).ti,ab | 13454 |
| 69 | EMCARE | (self-isolat\*).ti,ab | 53 |
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| 81 | CINAHL | (ncov).ti,ab | 9 |
| 82 | CINAHL | (sars-cov\*).ti,ab | 101 |
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| 84 | CINAHL | exp "CORONAVIRIDAE INFECTIONS"/ | 2956 |
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| 87 | CINAHL | (pandemic\* OR epidemic\*).ti | 11630 |
| 88 | CINAHL | (outbreak\*).ti | 8938 |
| 89 | CINAHL | (lockdown).ti,ab | 70 |
| 90 | CINAHL | (lock-down).ti,ab | 12 |
| 91 | CINAHL | (quarantine).ti,ab | 461 |
| 92 | CINAHL | (curfew).ti,ab | 51 |
| 93 | CINAHL | (confine\*).ti,ab | 7200 |
| 94 | CINAHL | (self-isolat\*).ti,ab | 49 |
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| 97 | CINAHL | QUARANTINE/ | 526 |
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| 100 | CINAHL | \*"REFERRAL AND CONSULTATION"/ | 13488 |
| 101 | CINAHL | (99 OR 100) | 20225 |
| 102 | CINAHL | (98 AND 101) | 69 |

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