Classifications

**Title**: Viral clearance after early corticosteroid treatment in patients with moderate or severe covid-19

**DOI**: 10.1038/s41598-020-78039-1

**Classification**: 0

**Abstract**: The aim of this study was to evaluate the impact of early treatment with corticosteroids on SARS-CoV-2 clearance in hospitalized COVID-19 patients. Retrospective analysis on patients admitted to the San Raffaele Hospital (Milan, Italy) with moderate/severe COVID-19 and availability of at least two nasopharyngeal swabs. The primary outcome was the time to nasopharyngeal swab negativization. A multivariable Cox model was fitted to determine factors associated with nasopharyngeal swab negativization. Of 280 patients included, 59 (21.1%) patients were treated with steroids. Differences observed between steroid users and non-users included the proportion of patients with a baseline PaO2/FiO2 ≤ 200 mmHg (45.8% vs 34.4% in steroids and non-steroids users, respectively; p = 0.023) or ≤ 100 mmHg (16.9% vs 12.7%; p = 0.027), and length of hospitalization (20 vs 14 days; p < 0.001). Time to negativization of nasopharyngeal swabs was similar in steroid and non-steroid users (p = 0.985). According to multivariate analysis, SARS-CoV-2 clearance was associated with age ≤ 70 years, a shorter duration of symptoms at admission, a baseline PaO2/FiO2 > 200 mmHg, and a lymphocyte count at admission > 1.0 × 109/L. SARS-CoV-2 clearance was not associated with corticosteroid use. Our study shows that delayed SARS-CoV-2 clearance in moderate/severe COVID-19 is associated with older age and a more severe disease, but not with an early use of corticosteroids.

**Title**: Efficacy of ribavirin and interferon-α therapy for hospitalized patients with COVID-19: a multicenter, retrospective cohort study

**DOI**: 10.1016/j.ijid.2021.01.055

**Classification**: 0

**Abstract**: Objective: To assess the efficacy and safety of ribavirin and interferon-α (RBV/IFN-α) therapy in COVID-19 patients.

Methods: A multicenter, retrospective cohort study of COVID-19 patients admitted to 4 hospitals in Hubei Province, China, from 31 December 2019 to 31 March 2020. Patients were divided into 2 groups according to their exposure to RBV/IFN-α therapy within 48 h of admission. Mixed-effect Cox model and Logistic regression were used to explore the association between early treatments of RBV/IFN-α and primary outcomes.

Results: Of 2037 patients included, 1281 received RBV/IFN-α (RBV, IFN-α or RBV combined with IFN-α) treatments and 756 received none of these treatments. In a mixed effect model, RBV/IFN-α therapy was not associated with progression from non-severe into severe type (adjusted hazard ratio (aHR) = 1.09, 95% CI: 0.88-1.36) or with reduction in 30-day mortality (aHR = 0.89, 95% CI: 0.61-1.30). However, it was associated with a higher probability of hospital stay >15 days (adjusted odds ratio (aOR) = 2.11, 95% CI: 1.68-2.64) compared with no RBV/IFN-α therapy. The propensity score-matched cohort and subgroup analysis displayed similar results.

Conclusion: RBV/IFN-α therapy was not observed to improve clinical outcomes in COVID-19 patients suggesting that RBV/IFN-α therapy should be avoided in COVID-19 treatment.

Keywords: Antiviral therapy; COVID-19; Cohort studies; Interferon-α; Ribavirin.

**Title**: The effect of early-stage public health policies in the transmission of COVID-19 for South American countries

**DOI**: 10.26633/rpsp.2020.148

**Classification**: 0

**Abstract**: Objectives. The analysis of transmission dynamics is crucial to determine whether mitigation or suppression measures reduce the spread of coronavirus disease 2019 (COVID-19). This study sought to estimate the basic (R0) and time-varying (Rt) reproduction number of COVID-19 and contrast the public health measures for ten South American countries. Methods. Data was obtained from the European Centre for Disease Prevention and Control. Country-specific R0 values during the first two weeks of the outbreak and Rt values after 90 days were estimated. Results. Countries used a combination of isolation, physical distancing, quarantine, and community-wide containment measures to staunch the spread of COVID-19 at different points in time. R0 ranged from 1.52 (95% confidence interval: 1.13-1.99) in Venezuela to 3.83 (3.04-4.75) in Chile, whereas Rt after 90 days ranged from 0.71 (95% credible interval: 0.39-1.05) in Uruguay to 1.20 (1.19-1.20) in Brazil. Different R0 and Rt values may be related to the testing capacity of each country. Conclusion. R0 in the early phase of the outbreak varied across the South American countries. The public health measures adopted in the initial period of the pandemic appear to have reduced Rt over time in each country, albeit to different levels.

**Title**: The State of Vaccine Confidence in Poland: A 2019 Nationwide Cross-Sectional Survey

**DOI**: 10.26633/rpsp.2020.148

**Classification**: 0

**Abstract**: Vaccination is considered as one of the most successful and cost-effective public health interventions. This study aimed to assess (1) the attitudes and behaviors towards mandatory childhood vaccination, with particular emphasis on socio-economic factors determining the vaccine confidence among adults in Poland as well as to (2) identify the potential impact of anti-vaccination movement on vaccination coverage among children and adolescents aged ≤19 years. This cross-sectional study was carried in 2019 on a nationwide, representative sample of 1079 individuals aged 18 and over in Poland (53.7% females). Most of the respondents (74.6%) agreed or strongly agreed that mandatory vaccinations are safe, and only 8% of participants neglected the safety of vaccines. The results of multivariate analysis showed that the lowest level of vaccine confidence was observed among participants aged 25-34 years (aOR: 0.48, 95%CI: 0.29-0.80; p = 0.01). There was a positive correlation (r = 0.35; p < 0.001) between trust in doctors and vaccine confidence. Moreover, there was a positive correlation between trust in scientific knowledge and vaccine confidence (r = 0.19; p < 0.001). Also, a negative correlation (r = -0.13; p < 0.001) between trust in horoscopes and vaccine confidence was observed. Most of the parents declared (97.7%), that their children were vaccinated following the national immunization programme. However, 8.5% of parents who currently vaccinated their children declared that they would stop vaccinating children when vaccination obligation will be abolished. This study demonstrates relatively high confidence in mandatory vaccination among adults in Poland. While most of society trusts in vaccine safety, young adults are the least trustful of vaccinations.

**Title**: The role of textiles as fomites in the healthcare environment: a review of the infection control risk

**DOI**: 10.7717/peerj.9790

**Classification**: 0

**Abstract**: Background: Infectious diseases are a significant threat in both healthcare and community settings. Healthcare associated infections (HCAIs) in particular are a leading cause of complications during hospitalisation. Contamination of the healthcare environment is recognised as a source of infectious disease yet the significance of porous surfaces including healthcare textiles as fomites is not well understood. It is currently assumed there is little infection risk from textiles due to a lack of direct epidemiological evidence. Decontamination of healthcare textiles is achieved with heat and/or detergents by commercial or in-house laundering with the exception of healthcare worker uniforms which are laundered domestically in some countries. The emergence of the COVID-19 pandemic has increased the need for rigorous infection control including effective decontamination of potential fomites in the healthcare environment. This article aims to review the evidence for the role of textiles in the transmission of infection, outline current procedures for laundering healthcare textiles and review studies evaluating the decontamination efficacy of domestic and industrial laundering.

Methodology: Pubmed, Google Scholar and Web of Science were searched for publications pertaining to the survival and transmission of microorganisms on textiles with a particular focus on the healthcare environment.

Results: A number of studies indicate that microorganisms survive on textiles for extended periods of time and can transfer on to skin and other surfaces suggesting it is biologically plausible that HCAIs and other infectious diseases can be transmitted directly through contact with contaminated textiles. Accordingly, there are a number of case studies that link small outbreaks with inadequate laundering or infection control processes surrounding healthcare laundry. Studies have also demonstrated the survival of potential pathogens during laundering of healthcare textiles, which may increase the risk of infection supporting the data published on specific outbreak case studies.

Conclusions: There are no large-scale epidemiological studies demonstrating a direct link between HCAIs and contaminated textiles yet evidence of outbreaks from published case studies should not be disregarded. Adequate microbial decontamination of linen and infection control procedures during laundering are required to minimise the risk of infection from healthcare textiles. Domestic laundering of healthcare worker uniforms is a particular concern due to the lack of control and monitoring of decontamination, offering a route for potential pathogens to enter the clinical environment. Industrial laundering of healthcare worker uniforms provides greater assurances of adequate decontamination compared to domestic laundering, due to the ability to monitor laundering parameters; this is of particular importance during the COVID-19 pandemic to minimise any risk of SARS-CoV-2 transmission.

**Title**: Effects of heterogeneous self-protection awareness on resource-epidemic coevolution dynamics

**DOI**: 10.1016/j.amc.2020.125428

**Classification**: 0

**Abstract**: Recent studies have demonstrated that the allocation of individual resources has a significant influence on the dynamics of epidemic spreading. In the real scenario, individuals have a different level of awareness for self-protection when facing the outbreak of an epidemic. To investigate the effects of the heterogeneous self-awareness distribution on the epidemic dynamics, we propose a resource-epidemic coevolution model in this paper. We first study the effects of the heterogeneous distributions of node degree and self-awareness on the epidemic dynamics on artificial networks. Through extensive simulations, we find that the heterogeneity of self-awareness distribution suppresses the outbreak of an epidemic, and the heterogeneity of degree distribution enhances the epidemic spreading. Next, we study how the correlation between node degree and self-awareness affects the epidemic dynamics. The results reveal that when the correlation is positive, the heterogeneity of self-awareness restrains the epidemic spreading. While, when there is a significant negative correlation, strong heterogeneous or strong homogeneous distribution of the self-awareness is not conducive for disease suppression. We find an optimal heterogeneity of self-awareness, at which the disease can be suppressed to the most extent. Further research shows that the epidemic threshold increases monotonously when the correlation changes from most negative to most positive, and a critical value of the correlation coefficient is found. When the coefficient is below the critical value, an optimal heterogeneity of self-awareness exists; otherwise, the epidemic threshold decreases monotonously with the decline of the self-awareness heterogeneity. At last, we verify the results on four typical real-world networks and find that the results on the real-world networks are consistent with those on the artificial network.

**Title**: International Multi-Center Analysis of In-hospital Morbidity and Mortality of Low-Voltage Electrical Injuries

**DOI**: 10.3389/fmed.2020.590758

**Classification**: 0

**Abstract**: Background: Patients with high- and low-voltage electrical injuries differ in their clinical presentation from minor symptoms to life-threatening conditions. For an adequate diagnosis and treatment strategy a multidisciplinary team is often needed, due to the heterogeneity of the clinical presentation. To minimize costs and medical resources, especially for patients with mild symptoms presenting after low-voltage electrical injuries, risk stratification for the development of further complications is needed.

Methods: During 2012–2019 two independent patient cohorts admitted with electrical injuries in two maximum care university hospitals in Germany and Austria were investigated to quantify risk factors for prolonged treatment, the need of surgery and death in low-voltage injuries. High-voltage injuries were used as reference in the analysis of the low-voltage electrical injury.

Results: We analyzed 239 admitted patients with low-voltage (75%; 276 ± 118 V), high-voltage (17%; 12.385 ± 28.896 V) or unclear voltage (8%). Overall mortality was 2% (N = 5) associated only with high-voltage injuries. Patients with low-voltage injuries presented with electrocution entry marks (63%), various neurological symptoms (31%), burn injuries (at least second degree) (23%), pain (27%), and cardiac symptoms (9%) including self-limiting thoracic pain and dysrhythmia without any therapeutic need. Seventy-three percentage of patients with low-voltage injury were discharged within 24 h. The remaining patients stayed in the hospital (11 ± 10 days) for treatment of entry marks and burns, with an overall need for surgery of 12% in all low-voltage injuries.

Conclusions: The only identified risk factors for prolonged hospital stay in patients with low-voltage electrical injuries were the treatment of burns and electric marks. In this multi-center analysis of hospitalized patients, low-voltage electrical injuries were not associated with cardiac arrhythmia or mortality. Therefore, we suggest that asymptomatic patients, without preexisting conditions, with low-voltage injury can be discharged after an initial check-up without prolonged monitoring.

**Title**: A rapid, low cost, and highly sensitive SARS-CoV-2 diagnostic based on whole genome sequencing

**DOI**: 10.1101/2020.04.25.061499

**Classification**: 0

**Abstract**: Early detection of infection with SARS-CoV-2 is key to managing the current global pandemic, as evidence shows the virus is most contagious on or before symptom onset1,2. Here, we introduce a low-cost, high-throughput method for diagnosis of SARS-CoV-2 infection, dubbed Pathogen-Oriented Low-Cost Assembly & Re-Sequencing (POLAR), that enhances sensitivity by aiming to amplify the entire SARS-CoV-2 genome rather than targeting particular viral loci, as in typical RT-PCR assays. To achieve this goal, we combine a SARS-CoV-2 enrichment method developed by the ARTIC Network (https://artic.network/) with short-read DNA sequencing and de novo genome assembly. We are able to reliably (>95% accuracy) detect SARS-CoV-2 at concentrations of 84 genome equivalents per milliliter, better than the reported limits of detection of almost all diagnostic methods currently approved by the US Food and Drug Administration. At higher concentrations, we are able to reliably assemble the SARS-CoV-2 genome in the sample, often with no gaps and perfect accuracy. Such genome assemblies enable the spread of the disease to be analyzed much more effectively than would be possible with an ordinary yes/no diagnostic, and can help identify vaccine and drug targets. Using POLAR, a single person can process 192 samples over the course of an 8-hour experiment, at a cost of ~$30/patient, enabling a 24-hour turnaround with sequencing and data analysis time included. Further testing and refinement will likely enable greater enhancements in the sensitivity of the above approach.

**Title**: Existing antiviral options against SARS-CoV-2 replication in COVID-19 patients

**DOI**: 10.2217/fmb-2020-0120

**Classification**: 0

**Abstract**: COVID-19 caused by SARS-CoV-2, is an international concern. This infection requires urgent efforts to develop new antiviral compounds. To date, no specific drug in controlling this disease has been identified. Developing the new treatment is usually time consuming, therefore using the repurposing broad-spectrum antiviral drugs could be an effective strategy to respond immediately. In this review, a number of broad-spectrum antivirals with potential efficacy to inhibit the virus replication via targeting the virus spike protein (S protein), RNA-dependent RNA polymerase (RdRp), 3-chymotrypsin-like protease (3CLpro) and papain-like protease (PLpro) that are critical in the pathogenesis and life cycle of coronavirus, have been evaluated as possible treatment options against SARS-CoV-2 in COVID-19 patients.

**Title**: ARIMA modelling & forecasting of COVID-19 in top five affected countries

**DOI**: 10.1101/2020.04.25.061499

**Classification**: 0

**Abstract**: Background and aims: In a little over six months, the Corona virus epidemic has affected over ten million and killed over half a million people worldwide as on June 30, 2020. With no vaccine in sight, the spread of the virus is likely to continue unabated. This article aims to analyze the time series data for top five countries affected by the COVID-19 for forecasting the spread of the epidemic.

Material and methods: Daily time series data from 15th February to June 30, 2020 of total infected cases from the top five countries namely US, Brazil, India, Russia and Spain were collected from the online database. ARIMA model specifications were estimated using Hannan and Rissanen algorithm. Out of sample forecast for the next 77 days was computed using the ARIMA models.

Results: Forecast for the first 18 days of July was compared with the actual data and the forecast accuracy was using MAD and MAPE were found within acceptable agreement. The graphic plots of forecast data suggest that While Russia and Spain have reached the inflexion point in the spread of epidemic, the US, Brazil and India are still experiencing an exponential curve.

Conclusion: Our analysis shows that India and Brazil will hit 1.38 million and 2.47 million mark while the US will reach the 4.29 million mark by 31st July. With no effective cure available at the moment, this forecast will help the governments to be better prepared to combat the epidemic by ramping up their healthcare facilities.