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**1. Reduction and Functional Exhaustion of T Cells in Patients With Coronavirus Disease 2019 (COVID-19).**

**Author(s):** Diao, Bo; Wang, Chenhui; Tan, Yingjun; Chen, Xiewan; Liu, Ying; Ning, Lifen; Chen, Li; Li, Min; Liu, Yueping; Wang, Gang; Yuan, Zilin; Feng, Zeqing; Zhang, Yi; Wu, Yuzhang; Chen, Yongwen

**Source:** Frontiers in immunology; 2020; vol. 11 ; p. 827

**Publication Date:** 2020

**Publication Type(s):** Research Support, Non-u.s. Gov't Journal Article

**PubMedID:** 32425950

Available at [Frontiers in Immunology](http://europepmc.org/search?query=(DOI:10.3389/fimmu.2020.00827)) - from Europe PubMed Central - Open Access

Available at [Frontiers in Immunology](https://www.frontiersin.org/articles/10.3389/fimmu.2020.00827/pdf) - from Unpaywall

**Abstract:**Background: The outbreak of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has posed great threat to human health. T cells play a critical role in antiviral immunity but their numbers and functional state in COVID-19 patients remain largely unclear. Methods: We retrospectively reviewed the counts of T cells and serum cytokine concentration from data of 522 patients with laboratory-confirmed COVID-19 and 40 healthy controls. In addition, the expression of T cell exhaustion markers were measured in 14 COVID-19 cases. Results: The number of total T cells, CD4+ and CD8+ T cells were dramatically reduced in COVID-19 patients, especially in patients requiring Intensive Care Unit (ICU) care. Counts of total T cells, CD8+ T cells or CD4+ T cells lower than 800, 300, or 400/μL, respectively, were negatively correlated with patient survival. T cell numbers were negatively correlated to serum IL-6, IL-10, and TNF-α concentration, with patients in the disease resolution period showing reduced IL-6, IL-10, and TNF-α concentrations and restored T cell counts. T cells from COVID-19 patients had significantly higher levels of the exhausted marker PD-1. Increasing PD-1 and Tim-3 expression on T cells was seen as patients progressed from prodromal to overtly symptomatic stages. Conclusions: T cell counts are reduced significantly in COVID-19 patients, and the surviving T cells appear functionally exhausted. Non-ICU patients with total T cells counts lower than 800/μL may still require urgent intervention, even in the immediate absence of more severe symptoms due to a high risk for further deterioration in condition.

**Database:** Medline

**2. Lymphopenia in COVID-19: Therapeutic opportunities**

**Author(s):** Fathi N.; Rezaei N.

**Source:** Cell Biology International; 2020

**Publication Date:** 2020

**Publication Type(s):** Review

**PubMedID:** 32458561

Available at [Cell biology international](https://go.openathens.net/redirector/nhs?url=https%3A%2F%2Fonlinelibrary.wiley.com%2Fdoi%2Ffull%2F10.1002%2Fcbin.11403) - from Wiley Online Library Medicine and Nursing Collection 2019 - NHS

Available at [Cell biology international](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [Cell biology international](https://onlinelibrary.wiley.com/doi/pdfdirect/10.1002/cbin.11403) - from Unpaywall

**Abstract:**Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is uncontrollably spread all over the world. The host immune responses strongly try to confront it with all the potential cells and cytokines. With chronically condition of SARS-CoV-2, natural killer cells and T cells become exhausted and decreasing their count leads to lymphopenia. Inability to eradicate the infected organ makes hyperinitiation of the immune system, which releases the excessive inflammatory cytokines to compensate the exhausted one as well as the low lymphocytes counts; it consequently leads to the cytokine storm syndrome. These mechanisms and the potential therapeutic targeting are discussed in this paper.Copyright © 2020 International Federation for Cell Biology

**Database:** EMBASE

**3. A retrospective study on the epidemiological characteristics and establishment of early warning system of severe COVID-19 patients**

**Author(s):** Yang P.; Wang P.; Zhang A.; Song Y.; Yuan G.; Cui Y.

**Source:** Journal of Medical Virology; 2020

**Publication Date:** 2020

**Publication Type(s):** Article

**PubMedID:** 32410285

Available at [Journal of medical virology](https://go.openathens.net/redirector/nhs?url=https%3A%2F%2Fonlinelibrary.wiley.com%2Fdoi%2Ffull%2F10.1002%2Fjmv.26022) - from Wiley Online Library Medicine and Nursing Collection 2019 - NHS

Available at [Journal of medical virology](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [Journal of medical virology](https://onlinelibrary.wiley.com/doi/pdfdirect/10.1002/jmv.26022) - from Unpaywall

**Abstract:**Objective: To explore epidemiological characteristics and risk factors of COVID-19 in Chongqing and establish early warning system that provides a feasible protocol for clinical assessment of COVID-19. Method(s): A retrospective cohort study of 133 confirmed COVID-19 cases was conducted from January to March, 2020. They were assigned to mild group (n=65) and severe group (n=68). Univariate analysis and multivariate Logistic regression analysis were used to identify the independent predictors of severe cases. An early warning system for COVID-19 was established, with accuracy evaluated by ROC analysis. Result(s): The age of the severe group was significantly elder than that of the mild group (P<0.05). There was no significant difference in epidemiological characteristics except age between the two groups (P>0.05). Multivariate Logistic regression showed that the age, shortness of breath, lymphocyte count, PCT level, LDH level, APTT level, and CRP level were independent predictors for severe COVID-19. COVID-19. prediction model (including independent risk factors) was established, showing a high accuracy and capability for predicting higher risk of severe COVID-19 (with a AUC value of 0.8842, sensitivity value of 84.33%, and specificity value of 96.89%). Conclusion(s): According to the epidemiological characteristics of COVID-19 in Chongqing, a positive correlation between age and severity of COVID-19 was found, but no association between epidemiological history and disease severity was seen. Prediction model has a high sensitivity and is easy to use, which provides a strong basis for the early clinical evaluation on the severity of COVID-19. This article is protected by copyright. All rights reserved.

**Database:** EMBASE

**4. Analysis of the clinical characteristics, drug treatments and prognoses of 136 patients with coronavirus disease 2019**

**Author(s):** Yang Q.; Xie L.; Zhang W.; Zhao L.; Wu H.; Jiang J.; Zou J.; Chen Y.; Wu J.; Liu J.

**Source:** Journal of Clinical Pharmacy and Therapeutics; 2020

**Publication Date:** 2020

**Publication Type(s):** Review

**PubMedID:** 32449224

Available at [Journal of clinical pharmacy and therapeutics](https://go.openathens.net/redirector/nhs?url=https%3A%2F%2Fonlinelibrary.wiley.com%2Fdoi%2Ffull%2F10.1111%2Fjcpt.13170) - from Wiley Online Library Medicine and Nursing Collection 2019 - NHS

Available at [Journal of clinical pharmacy and therapeutics](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [Journal of clinical pharmacy and therapeutics](https://onlinelibrary.wiley.com/doi/pdfdirect/10.1111/jcpt.13170) - from Unpaywall

**Abstract:**What is known and objective: Since the December 2019 discovery of several cases of coronavirus disease 2019 (COVID-19) in Wuhan, China, the infection has spread worldwide. Our aim is to report on the clinical characteristics, treatments and prognoses of COVID-19. Method(s): This was a retrospective, single-centre, case series of 136 patients who were diagnosed with COVID-19 at Wuhan Third Hospital in Wuhan, China, between 28 January 2020 and 12 February 2020. The clinical characteristics, laboratory tests, treatment features and prognoses were summarized. Results and discussion: The 136 patients were divided into a moderate (M) group (n = 103, 75.7%) and a severe and critical (SC) group (n = 33, 24.3%). There were significant differences in the incidences of concomitant chronic medical illnesses (eg, hypertension, diabetes and cardiovascular disease), fever, dry cough and dyspnoea among the two groups (P <.05). Compared with those in the M group, lymphocyte count (LYM) decreased significantly in the SC group, while the serum levels of C-reactive protein (CRP), procalcitonin (PCT), creatinine (Cre), D-dimer, lactic dehydrogenase (LDH), myoglobin (MB) and troponin I (cTnl) increased significantly in the SC group (P <.05). The main therapeutic drugs were antivirals, antibiotics, glucocorticoids, immunomodulators, traditional Chinese medicine preparations and symptomatic support drugs. There were significant differences in the incidences of shock, myocardial injury, acute respiratory distress syndrome (ARDS) and renal injury among the two groups (P <.05). Among the 136 patients, 99 (72.7%) were cured, 14 (10.3%) were transferred to other hospital and 23 (16.9%) died. What is new and conclusion: Elderly patients with chronic diseases are more likely to develop severe or critical COVID-19 with multiple organ damage or systemic injuries. The improvement of LYM and CRP may be associated with the prognoses of COVID-19. The combined use of three or more antiviral drugs is to be avoided. The combination of broad-spectrum antibacterial drugs is not recommended and the risk of drug-induced liver injury should be monitored. Throughout a patient's hospitalization, their treatment plan should be evaluated and adjusted according to their vital signs, clinical symptoms, laboratory tests and imaging changes. Patients should receive effective psychological counselling.Copyright © 2020 John Wiley & Sons Ltd

**Database:** EMBASE

**5. Increased expression of CD8 marker on T-cells in COVID-19 patients.**

**Author(s):** Ganji, Ali; Farahani, Iman; Khansarinejad, Behzad; Ghazavi, Ali; Mosayebi, Ghasem

**Source:** Blood cells, molecules & diseases; Jul 2020; vol. 83 ; p. 102437

**Publication Date:** Jul 2020

**Publication Type(s):** Journal Article

**PubMedID:** 32325421

Available at [Blood cells, molecules & diseases](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [Blood cells, molecules & diseases](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7194879) - from Unpaywall

**Abstract:**BACKGROUNDCell-mediated immunity including T-cells (T helper and cytotoxic) plays an essential role in efficient antiviral responses against coronavirus disease-2019 (COVID-19). Therefore, in this study, we evaluated the ratio and expression of CD4 and CD8 markers in COVID-19 patients to clarify the immune characterizations of CD4 and CD8 T-cells in COVID-19 patients.METHODSPeripheral blood samples of 25 COVID-19 patients and 25 normal individuals with similar age and sex as the control group were collected. White blood cells, platelets, and lymphocytes were counted and CD4 and CD8 T lymphocytes were evaluated by flow cytometry.RESULTSThe number of white blood cells, lymphocytes, and platelets were reduced significantly in COVID-19 patients (P  0.05); however, the CD8 MFI increased significantly in COVID-19 infected patients (P < 0.05).CONCLUSIONAlthough, there is no significant difference in the ratio of CD4 to CD8 between two groups, the expression level of CD8 in COVID-19 patients was significantly higher than the normal individuals. This result suggested that the cellular immune responses triggered by COVID-19 infection were developed through overexpression of CD8 and hyperactivation of cytotoxic T lymphocytes.

**Database:** Medline

**6. Risk factors for disease progression in hospitalized patients with COVID-19: a retrospective cohort study.**

**Author(s):** Hou, Wei; Zhang, Wei; Jin, Ronghua; Liang, Lianchun; Xu, Bin; Hu, Zhongjie

**Source:** Infectious diseases (London, England); Jul 2020; vol. 52 (no. 7); p. 498-505

**Publication Date:** Jul 2020

**Publication Type(s):** Journal Article

**PubMedID:** 32370577

Available at [Infectious diseases (London, England)](https://www.tandfonline.com/doi/pdf/10.1080/23744235.2020.1759817?needAccess=true) - from Unpaywall

**Abstract:**Background: To investigate the risk factors related to aggravation and clinical outcomes in coronavirus disease 2019 (COVID-19) patients.Methods: We performed a retrospective study on the risk factors for disease progression of cases with COVID-19. Based on the clinical types, the patients were divided into a progression group and an improvement group. Multivariable logistic regression and ROC curve analysis were performed to explore the risk factors for disease progression.Results: A total of 101 patients were included in this study; diseases progression occurred in 17 patients, 84 patients improved, 6 were transferred to intensive care unit (ICU), and 5 died. The mean time to obtain negative nucleic acid results was 12.5 ± 5.0 days. Multivariate logistic analysis indicated that age (OR, 0.104; p = .002), C-reactive protein (CRP) (OR, 0.093; p < .001) and lymphocyte count (OR, 3.397; p = .022) were risk factors for disease progression. ROC curve analysis revealed that the AUC of age, CRP and lymphocyte count for disease progression were 0.873, 0.911 and 0.817, respectively.Conclusions: Older age increased CRP and decreased lymphocyte count resulted in potential risk factors for COVID-19 progression. This may be helpful in identifying patients whose condition worsens at an early stage.

**Database:** Medline

**7. The diagnostic and predictive role of NLR, d-NLR and PLR in COVID-19 patients**

**Author(s):** Yang A.-P.; Liu J.-P.; Li H.-M.; Tao W.-Q.

**Source:** International Immunopharmacology; Jul 2020; vol. 84

**Publication Date:** Jul 2020

**Publication Type(s):** Article

**PubMedID:** 32304994

Available at [International immunopharmacology](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [International immunopharmacology](https://doi.org/10.1016/j.intimp.2020.106504) - from Unpaywall

**Abstract:**Aim: To accumulate evidence that indicated the key role played by virus-triggered inflammation in the 2019-novel coronavirus disease (COVID-19) which emerged in Wuhan City and rapidly spread throughout China. Method(s): Age, neutrophil(NEU)-to-lymphocyte (LYM) ratio (NLR), lymphocyte-to-monocyte (MON) ratio, platelet-to-lymphocyte ratio (PLR), and C-reactive protein (CRP) of 93 patients with laboratory confirmed COVID-19 were investigated and compared. The receiver operating characteristic curve was applied to determine the thresholds for five bio-markers, and their prognostic values were assessed via the Kaplan-Meier curve and multivariate COX regression models. Result(s): The median age was 46.4 years old, and 37cases were females. A total of 27.8% of patients had been to Wuhan, and 73.1% had contacted with people from Wuhan. Fever (83.8%) and cough (70.9%) were the two most common symptoms. Elevated NLR and age were significantly associated with illness severity. The binary logistic analysis identified elevated NLR (hazard risk [HR] 2.46, 95% confidence interval [CI] 1.98-4.57) and age (HR 2.52, 95% CI 1.65-4.83) as independent factors for poor clinical outcome of COVID-19. NLR exhibited the largest area under the curve at 0.841, with the highest specificity (63.6%) and sensitivity (88%). Conclusion(s): Elevated age and NLR can be considered independent biomarkers for indicating poor clinical outcomes.Copyright © 2020 Elsevier B.V.

**Database:** EMBASE

**8. Mild versus severe COVID-19: Laboratory markers**

**Author(s):** Velavan T.P.; Meyer C.G.

**Source:** International Journal of Infectious Diseases; Jun 2020; vol. 95 ; p. 304-307

**Publication Date:** Jun 2020

**Publication Type(s):** Short Survey

**PubMedID:** 32344011

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Available at [International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases](https://doi.org/10.1016/j.ijid.2020.04.061) - from Unpaywall

**Abstract:**The number of COVID-19 patients is dramatically increasing worldwide. Treatment in intensive care units (ICU) has become a major challenge; therefore, early recognition of severe forms is absolutely essential for timely triaging of patients. While the clinical status, in particular peripheral oxygen saturation (SpO2) levels, and concurrent comorbidities of COVID-19 patients largely determine the need for their admittance to ICUs, several laboratory parameters may facilitate the assessment of disease severity. Clinicians should consider low lymphocyte count as well as the serum levels of CRP, D-dimers, ferritin, cardiac troponin and IL-6, which may be used in risk stratification to predict severe and fatal COVID-19 in hospitalised patients. It is more likely that the course of the disease will be unfavourable if some or all of these parameters are altered.Copyright © 2020 The Author(s)

**Database:** EMBASE

**9. Predictive factors for disease progression in hospitalized patients with coronavirus disease 2019 in Wuhan, China**

**Author(s):** Zhang J.; Tong S.; Liu L.-Y.; Yu M.; Tang L.-V.

**Source:** Journal of Clinical Virology; Jun 2020; vol. 127

**Publication Date:** Jun 2020

**Publication Type(s):** Article

**PubMedID:** 32361327

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Available at [Journal of clinical virology : the official publication of the Pan American Society for Clinical Virology](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [Journal of clinical virology : the official publication of the Pan American Society for Clinical Virology](https://doi.org/10.1016/j.jcv.2020.104392) - from Unpaywall

**Abstract:**Background: A few studies have revealed the clinical characteristics of hospitalized patients with COVID-19. However, predictive factors for the outcomes remain unclear. Objective(s): Attempted to determine the predictive factors for the poor outcomes of patients with COVID-19. Study design: This is a single-center, retrospective study. Clinical, laboratory, and treatment data were collected and analyzed from 111 hospitalized patients with laboratory-confirmed COVID-19 in Union Hospital. The gathered data of discharged and deteriorated patients were compared. Result(s): Among these 111 patients, 93 patients were discharged and 18 patients were deteriorated. The lymphocyte count (0.56 G/L [0.47-0.63] vs 1.30 G/L [0.95-1.65]) was lower in the deteriorated group than those in the discharged group. The numbers of pulmonary lobe involved (5.00 [5.00-5.00] vs 4.00 [2.00-5.00]), serum C-reactive protein (CRP, 79.52 mg/L [61.25-102.98] vs 7.93 mg/L [3.14-22.50]), IL-6 (35.72 pg/mL [9.24-85.19] vs 5.09 pg/mL [3.16-9.72]), and IL-10 (5.35 pg/mL [4.48-7.84] vs 3.97 pg/mL [3.34-4.79]) concentrations in deteriorated patients were elevated compared with discharged patients. Multivariate logistic regression analysis showed that male gender (OR, 24.8 [1.8-342.1]), comorbidity (OR, 52.6 [3.6-776.4]), lymphopenia (OR, 17.3 [1.1-261.8]), and elevated CRP (OR, 96.5 [4.6-2017.6]) were the independent risk factors for the poor prognosis in COVID-19 patients. Conclusion(s): This finding would facilitate the early identification of high-risk COVID-19 patients.Copyright © 2020 Elsevier B.V.

**Database:** EMBASE

**10. The laboratory tests and host immunity of COVID-19 patients with different severity of illness.**

**Author(s):** Wang, Feng; Hou, Hongyan; Luo, Ying; Tang, Guoxing; Wu, Shiji; Huang, Min; Liu, Weiyong; Zhu, Yaowu; Lin, Qun; Mao, Liyan; Fang, Minghao; Zhang, Huilan; Sun, Ziyong

**Source:** JCI insight; May 2020; vol. 5 (no. 10)

**Publication Date:** May 2020

**Publication Type(s):** Research Support, Non-u.s. Gov't Journal Article

**PubMedID:** 32324595

Available at [JCI insight](http://europepmc.org/search?query=(DOI:10.1172/jci.insight.137799)) - from Europe PubMed Central - Open Access

Available at [JCI insight](http://insight.jci.org/articles/view/137799/files/pdf) - from Unpaywall

**Abstract:**BACKGROUNDThe coronavirus disease 2019 (COVID-19), infected by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has caused a severe outbreak throughout the world. The host immunity of COVID-19 patients is unknown.METHODSThe routine laboratory tests and host immunity in COVID-19 patients with different severity of illness were compared after patient admission.RESULTSA total of 65 SARS-CoV-2-positive patients were classified as having mild (n = 30), severe (n = 20), and extremely severe (n = 15) illness. Many routine laboratory tests, such as ferritin, lactate dehydrogenase, and D-dimer, were increased in severe and extremely severe patients. The absolute numbers of CD4+ T cells, CD8+ T cells, and B cells were gradually decreased with increased severity of illness. The activation markers such as HLA-DR and CD45RO expressed on CD4+ and CD8+ T cells were increased in severe and extremely severe patients compared with mild patients. The costimulatory molecule CD28 had opposite results. The percentage of natural Tregs was decreased in extremely severe patients. The percentage of IFN-γ-producing CD8+ T cells was increased in both severe and extremely severe patients compared with mild patients. The percentage of IFN-γ-producing CD4+ T cells was increased in extremely severe patients. IL-2R, IL-6, and IL-10 were all increased in extremely severe patients. The activation of DC and B cells was decreased in extremely severe patients.CONCLUSIONThe number and function of T cells are inconsistent in COVID-19 patients. The hyperfunction of CD4+ and CD8+ T cells is associated with the pathogenesis of extremely severe SARS-CoV-2 infection.FUNDINGThis work was funded by the National Mega Project on Major Infectious Disease Prevention (2017ZX10103005-007) and the Fundamental Research Funds for the Central Universities (2019kfyRCPY098).

**Database:** Medline

**11. Characteristics of Peripheral Lymphocyte Subset Alteration in COVID-19 Pneumonia.**

**Author(s):** Wang, Fan; Nie, Jiayan; Wang, Haizhou; Zhao, Qiu; Xiong, Yong; Deng, Liping; Song, Shihui; Ma, Zhiyong; Mo, Pingzheng; Zhang, Yongxi

**Source:** The Journal of infectious diseases; May 2020; vol. 221 (no. 11); p. 1762-1769

**Publication Date:** May 2020

**Publication Type(s):** Research Support, Non-u.s. Gov't Journal Article

**PubMedID:** 32227123

Available at [The Journal of infectious diseases](http://www.uhl-library.nhs.uk/directpages/uhlarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from NULJ library) - click this link for more information Local Print Collection [location] : UHL Libraries On Request (Free).

Available at [The Journal of infectious diseases](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [The Journal of infectious diseases](https://academic.oup.com/jid/article-pdf/221/11/1762/33202327/jiaa150.pdf) - from Unpaywall

**Abstract:**BACKGROUNDIn December 2019, novel coronavirus (SARS-CoV-2) pneumonia (COVID-19) was reported in Wuhan and has since rapidly spread throughout China. We aimed to clarify the characteristics and clinical significance of peripheral lymphocyte subset alteration in COVID-19.METHODSThe levels of peripheral lymphocyte subsets were measured by flow cytometry in 60 hospitalized COVID-19 patients before and after treatment, and their association with clinical characteristics and treatment efficacy was analyzed.RESULTSTotal lymphocytes, CD4+ T cells, CD8+ T cells, B cells, and natural killer (NK) cells decreased in COVID-19 patients, and severe cases had a lower level than mild cases. The subsets showed a significant association with inflammatory status in COVID-19, especially CD8+ T cells and CD4+/CD8+ ratio. After treatment, 37 patients (67%) showed clinical response, with an increase in CD8+ T cells and B cells. No significant change in any subset was detected in nonresponsive cases. In multivariate analysis, posttreatment decrease in CD8+ T cells and B cells and increase in CD4+/CD8+ ratio were indicated as independent predictors of poor efficacy.CONCLUSIONSPeripheral lymphocyte subset alteration was associated with clinical characteristics and treatment efficacy of COVID-19. CD8+ T cells tended to be an independent predictor for COVID-19 severity and treatment efficacy.

**Database:** Medline

**12. Longitudinal characteristics of lymphocyte responses and cytokine profiles in the peripheral blood of SARS-CoV-2 infected patients.**

**Author(s):** Liu, Jing; Li, Sumeng; Liu, Jia; Liang, Boyun; Wang, Xiaobei; Wang, Hua; Li, Wei; Tong, Qiaoxia; Yi, Jianhua; Zhao, Lei; Xiong, Lijuan; Guo, Chunxia; Tian, Jin; Luo, Jinzhuo; Yao, Jinghong; Pang, Ran; Shen, Hui; Peng, Cheng; Liu, Ting; Zhang, Qian; Wu, Jun; Xu, Ling; Lu, Sihong; Wang, Baoju; Weng, Zhihong; Han, Chunrong; Zhu, Huabing; Zhou, Ruxia; Zhou, Helong; Chen, Xiliu; Ye, Pian; Zhu, Bin; Wang, Lu; Zhou, Wenqing; He, Shengsong; He, Yongwen; Jie, Shenghua; Wei, Ping; Zhang, Jianao; Lu, Yinping; Wang, Weixian; Zhang, Li; Li, Ling; Zhou, Fengqin; Wang, Jun; Dittmer, Ulf; Lu, Mengji; Hu, Yu; Yang, Dongliang; Zheng, Xin

**Source:** EBioMedicine; May 2020; vol. 55 ; p. 102763

**Publication Date:** May 2020

**Publication Type(s):** Journal Article

**PubMedID:** 32361250

Available at [EBioMedicine](http://europepmc.org/search?query=(DOI:10.1016/j.ebiom.2020.102763)) - from Europe PubMed Central - Open Access

Available at [EBioMedicine](https://doi.org/10.1016/j.ebiom.2020.102763) - from Unpaywall

**Abstract:**BACKGROUNDThe dynamic changes of lymphocyte subsets and cytokines profiles of patients with novel coronavirus disease (COVID-19) and their correlation with the disease severity remain unclear.METHODSPeripheral blood samples were longitudinally collected from 40 confirmed COVID-19 patients and examined for lymphocyte subsets by flow cytometry and cytokine profiles by specific immunoassays.FINDINGSOf the 40 COVID-19 patients enrolled, 13 severe cases showed significant and sustained decreases in lymphocyte counts [0·6 (0·6-0·8)] but increases in neutrophil counts [4·7 (3·6-5·8)] than 27 mild cases [1.1 (0·8-1·4); 2·0 (1·5-2·9)]. Further analysis demonstrated significant decreases in the counts of T cells, especially CD8+ T cells, as well as increases in IL-6, IL-10, IL-2 and IFN-γ levels in the peripheral blood in the severe cases compared to those in the mild cases. T cell counts and cytokine levels in severe COVID-19 patients who survived the disease gradually recovered at later time points to levels that were comparable to those of the mild cases. Moreover, the neutrophil-to-lymphocyte ratio (NLR) (AUC=0·93) and neutrophil-to-CD8+ T cell ratio (N8R) (AUC =0·94) were identified as powerful prognostic factors affecting the prognosis for severe COVID-19.INTERPRETATIONThe degree of lymphopenia and a proinflammatory cytokine storm is higher in severe COVID-19 patients than in mild cases, and is associated with the disease severity. N8R and NLR may serve as a useful prognostic factor for early identification of severe COVID-19 cases.FUNDINGThe National Natural Science Foundation of China, the National Science and Technology Major Project, the Health Commission of Hubei Province, Huazhong University of Science and Technology, and the Medical Faculty of the University of Duisburg-Essen and Stiftung Universitaetsmedizin, Hospital Essen, Germany.

**Database:** Medline

**13. Serum Hydrogen Sulfide and Outcome Association in Pneumonia by the SARS-CoV-2 Coronavirusxs**

**Author(s):** Renieris G.; Katrini K.; Damoulari C.; Psarrakis C.; Koufargyris P.; Giamarellos-Bourboulis E.J.; Akinosoglou K.; Kyriakopoulou M.; Dimopoulos G.; Lada M.

**Source:** Shock (Augusta, Ga.); May 2020

**Publication Date:** May 2020

**Publication Type(s):** Article

**PubMedID:** 32433216

Available at [Shock (Augusta, Ga.)](http://www.uhl-library.nhs.uk/directpages/uhlarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from NULJ library) - click this link for more information Local Print Collection [location] : UHL Libraries On Request (Free).

Available at [Shock (Augusta, Ga.)](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [Shock (Augusta, Ga.)](https://journals.lww.com/shockjournal/Abstract/9000/Serum_Hydrogen_Sulfide_and_Outcome_Association_in.97487.aspx) - from Unpaywall

**Abstract:**BACKGROUND: The pneumonia of COVID-19 illness has often a subtle initial presentation making mandatory the use of biomarkers for evaluation of severity and prediction of final patient disposition. We evaluated the use of hydrogen sulfide (H2S) for the outcome of COVID-19 pneumonia. MATERIALS & METHODS: We studied 74 patients with COVID-19. Clinical data were collected, and survival predictors were calculated. Blood was collected within 24 hours after admission (day 1) and on day 7. H2S was measured in sera by monobromobimane derivation (MBB) followed by high performance liquid chromatography and correlated to other markers like procalcitonin (PCT) and C- reactive protein (CRP). Tumor necrosis factor alpha (TNFalpha) and interleukin (IL)-6 were also measured in serum. RESULT(S): Survivors had significantly higher H2S levels on day 1 and 7 after admission. A cut-off point of 150.44 muM could discriminate survivors from non-survivors with 80% sensitivity, 73.4% specificity and negative predictive value 95.9%. Mortality after 28 days was 32% with admission levels lower or equal to 150.44 muM and 4.1% with levels above 150.44 muM (p: 0.0008). Mortality was significantly greater among patients with a decrease of H2S levels from day 1 to day 7 greater or equal to 36% (p: 0.0005). Serum H2S on day 1 was negatively correlated with IL- 6 and CRP and positively correlated with the absolute lymphocyte count in peripheral blood. CONCLUSION(S): It is concluded that H2S is a potential marker for severity and final outcome of pneumonia by the SARS-CoV-2 coronavirus. Its correlation with IL- 6 suggests anti-inflammatory properties.

**Database:** EMBASE

**14. Clinical Analysis of 25 Novel Coronavirus Infections in Children**

**Author(s):** Bai K.; Liu W.; Liu C.; Fu Y.; Hu J.; Qin Y.; Zhang Q.; Xu F.; Chen H.; Li C.

**Source:** The Pediatric infectious disease journal; May 2020

**Publication Date:** May 2020

**Publication Type(s):** Article

**PubMedID:** 32404786

Available at [The Pediatric infectious disease journal](http://www.uhl-library.nhs.uk/directpages/uhlarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from NULJ library) - click this link for more information Local Print Collection [location] : UHL Libraries On Request (Free).

Available at [The Pediatric infectious disease journal](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

**Abstract:**BACKGROUND: To describe the characteristics of clinical manifestations of children with 2019 novel coronavirus (2019-nCoV) infection in Chongqing. METHOD(S): All 25 children with laboratory-confirmed 2019-nCoV infection by real-time reverse transcription-PCR (RNA-PCR) were admitted from the 4 designated treatment hospitals of 2019-nCoV in Chongqing from January 19 to March 12, 2020. Clinical data and epidemiological history of these patients were retrospectively collected and analyzed. RESULT(S): The diagnosis was confirmed through RNA-PCR testing. Among the 25 cases, 14 were males and 11 were females. The median age was 11.0 (6.3-14.5) years (range 0.6-17.0 years). All children were related to a family cluster outbreak, and 7 children (28%) with a travel or residence history in Hubei Province. These patients could be categorized into different clinical types, including 8 (32%) asymptomatic, 4 (16%) very mild cases and 13 (52%) common cases. No severe or critical cases were identified. The most common symptoms were cough (13 cases, 52%) and fever (6 cases, 24%). The duration time of clinical symptoms was 13.0 (8.0-25.0) days. In the 25 cases, on admission, 21 cases (84%) had normal white blood cell counts, while only 2 cases (8%) more than 10 x 10/L and 2 cases (8%) less than 4 x 10/L, respectively; 22 cases(88%) had normal CD4+ T lymphocyte counts, while in the remaining 3 cases(8%) this increased mildly; 23 cases had normal CD8+ T lymphocyte counts, while in the remaining 2 cases (8%) CD8+ T lymphocyte counts were mildly increased as well. All Lymphocyte counts were normal. There were no statistical differences of lab results between the groups of asymptomatic cases, mild cases and common cases. There were only 13 cases with abnormal CT imaging, most of which were located in the subpleural area of the bottom of the lung. All patients were treated with interferon, 6 cases combined with Ribavirin, and 12 cases combined with lopinavir or ritonavir. The days from onset to RNA turning negative was 15.20 +/- 6.54 days. There was no significant difference of RNA turning negative between the groups of interferon, interferon plus ribavirin and interferon plus lopinavir or ritonavir treatment. All the cases recovered and were discharged from hospital. CONCLUSION(S): The morbidity of 2019-nCoV infection in children is lower than in adults and the clinical manifestations and inflammatory biomarkers in children are nonspecific and milder than that in adults. RNA-PCR test is still the most reliable diagnostic method, especially for asymptomatic patients.

**Database:** EMBASE

**15. Characteristics of inflammatory factors and lymphocyte subsets in patients with severe COVID-19**

**Author(s):** Ni M.; Tian F.-B.; Xiang D.-D.; Yu B.

**Source:** Journal of medical virology; May 2020

**Publication Date:** May 2020

**Publication Type(s):** Article

**PubMedID:** 32470153

Available at [Journal of medical virology](https://go.openathens.net/redirector/nhs?url=https%3A%2F%2Fonlinelibrary.wiley.com%2Fdoi%2Ffull%2F10.1002%2Fjmv.26070) - from Wiley Online Library Medicine and Nursing Collection 2019 - NHS

Available at [Journal of medical virology](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

**Abstract:**OBJECTIVE: To investigate the inflammatory factors and lymphocyte subsets which play an important role in the course of severe COVID-19. METHOD(S): A total of 27 patients with severe COVID-19 who were admitted to Tongji Hospital in Wuhan from 1 to 21 February 2020 were recruited to the study. The characteristics of interleukin (IL)-1beta, IL-2 receptor (IL-2R), IL-6, IL-8, IL-10, tumor necrosis factor (TNF)-alpha, C-reactive protein (CRP), serum ferritin and procalcitonin (PCT), and lymphocyte subsets of these patients were retrospectively compared before and after treatment. RESULT(S): Before treatment, there was no significant difference in most inflammatory factors (IL-1beta, IL-2R, IL-6, IL-8, IL-10, CRP and serum ferritin) between male and female patients. Levels of IL-2R, IL-6, TNF-alpha and CRP decreased significantly after treatment, followed by IL-8, IL-10 and PCT. Serum Ferritin was increased in all patients before treatment, but did not decrease significantly after treatment. IL-1beta was normal in most patients before treatment. Lymphopenia was common among these patients with severe COVID-19. Analysis of lymphocyte subsets showed that CD4+ and particularly CD8+ T lymphocytes increased significantly after treatment. However, B lymphocytes and natural killer cells showed no significant changes after treatment. CONCLUSION(S): A pro-inflammatory response and decreased level of T lymphocytes were associated with severe COVID-19. This article is protected by copyright. All rights reserved.

**Database:** EMBASE

**16. Neutrophil to Lymphocyte Ratio as Prognostic and Predictive Factor in Patients with Coronavirus Disease 2019: A Retrospective Cross-sectional Study**

**Author(s):** Yan X.; Zhu F.; Tang S.; Deng Y.; Wang H.; Chen R.; Yu Z.; Li Y.; Shang J.; Zeng L.; Zhao J.; Guan C.; Dong X.; Li D.; Li F.; Liu J.; Wang X.; Gong W.; Huang X.; Zheng W.; Nie S.; Yan J.; Liu Q.; Chen H.; Zhang Y.-J.

**Source:** Journal of medical virology; May 2020

**Publication Date:** May 2020

**Publication Type(s):** Article

**PubMedID:** 32458459

Available at [Journal of medical virology](https://go.openathens.net/redirector/nhs?url=https%3A%2F%2Fonlinelibrary.wiley.com%2Fdoi%2Ffull%2F10.1002%2Fjmv.26061) - from Wiley Online Library Medicine and Nursing Collection 2019 - NHS

Available at [Journal of medical virology](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [Journal of medical virology](https://onlinelibrary.wiley.com/doi/pdfdirect/10.1002/jmv.26061) - from Unpaywall

**Abstract:**OBJECTIVE: This retrospective study was designed to explore whether neutrophil to lymphocyte ratio (NLR) is a prognostic factor in patients with coronavirus disease 2019 (covid-19). METHOD(S): A cohort of patients with covid-19 admitted to the Tongren Hospital of Wuhan University from January 11, 2020 to March 3, 2020 was retrospectively analyzed. Patients with hematologic malignancy were excluded. The NLR was calculated by dividing the neutrophil count by the lymphocyte count. NLR values were measured at the time of admission. The primary outcome was all-cause in-hospital mortality. A multivariate logistic analysis was performed. RESULT(S): 1004 patients with covid-19 were included in this study. The mortality rate was 4.0% (40 cases). The median age of nonsurvivors (68 years) was significantly older than survivors (62 years). Male sex was more predominant in nonsurvival group (27; 67.5%) than in the survival group (466; 48.3%). NLR value of nonsurvival group (median 49.06, IQR 25.71-69.70) was higher than that of survival group (median 4.11, IQR 2.44-8.12, P < 0.001). In multivariate logistic regression analysis, after adjusting for confounding factors, NLR > 11.75 was significantly correlated with all-cause in-hospital mortality (OR = 44.351, 95% CI = 4.627-425.088). CONCLUSION(S): These results suggest that the NLR at hospital admission is associated in-hospital mortality among patients with covid-19. Therefore, the NLR appears to be a significant prognostic biomarker of outcomes in critically ill patients with covid-19. However, further investigation is needed to validate this relationship with data collected prospectively. This article is protected by copyright. All rights reserved.

**Database:** EMBASE

**17. CT differential diagnosis of COVID-19 and non-COVID-19 in symptomatic suspects: A practical scoring method**

**Author(s):** Luo L.; Luo Z.; Zhou C.; He J.; Lyu J.; Shen X.; Jia Y.

**Source:** BMC Pulmonary Medicine; May 2020; vol. 20 (no. 1)

**Publication Date:** May 2020

**Publication Type(s):** Article

**PubMedID:** 32381057

Available at [BMC pulmonary medicine](https://bmcpulmmed.biomedcentral.com/articles/10.1186/s12890-020-1170-6) - from BioMed Central

Available at [BMC pulmonary medicine](http://europepmc.org/search?query=(DOI:10.1186/s12890-020-1170-6)) - from Europe PubMed Central - Open Access

Available at [BMC pulmonary medicine](http://search.ebscohost.com/login.aspx?direct=true&scope=site&site=ehost-live&db=mdc&AN=32381057) - from EBSCO (MEDLINE Complete)

Available at [BMC pulmonary medicine](http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2004&res_id=xri:pqm&req_dat=xri:pqil:pq_clntid=47856&rft_val_fmt=ori/fmt:kev:mtx:journal&genre=article&issn=1471-2466&volume=20&issue=1&spage=129) - from ProQuest (Health Research Premium) - NHS Version

Available at [BMC pulmonary medicine](https://bmcpulmmed.biomedcentral.com/track/pdf/10.1186/s12890-020-1170-6) - from Unpaywall

**Abstract:**Background: Although typical and atypical CT image findings of COVID-19 are reported in current studies, the CT image features of COVID-19 overlap with those of viral pneumonia and other respiratory diseases. Hence, it is difficult to make an exclusive diagnosis. Method(s): Thirty confirmed cases of COVID-19 and forty-three cases of other aetiology or clinically confirmed non-COVID-19 in a general hospital were included. The clinical data including age, sex, exposure history, laboratory parameters and aetiological diagnosis of all patients were collected. Seven positive signs (posterior part/lower lobe predilection, bilateral involvement, rounded GGO, subpleural bandlike GGO, crazy-paving pattern, peripheral distribution, and GGO +/-consolidation) from significant COVID-19 CT image features and four negative signs (only one lobe involvement, only central distribution, tree-in-bud sign, and bronchial wall thickening) from other non-COVID-19 pneumonia were used. The scoring analysis of CT features was compared between the two groups (COVID-19 and non-COVID-19). Result(s): Older age, symptoms of diarrhoea, exposure history related to Wuhan, and a lower white blood cell and lymphocyte count were significantly suggestive of COVID-19 rather than non-COVID-19 (p < 0.05). The receiver operating characteristic (ROC) curve of the combined CT image features analysis revealed that the area under the curve (AUC) of the scoring system was 0.854. These cut-off values yielded a sensitivity of 56.67% and a specificity of 95.35% for a score > 4, a sensitivity of 100% and a specificity of 23.26% for a score > 0, and a sensitivity of 86.67% and a specificity of 67.44% for a score > 2. Conclusion(s): With a simple and practical scoring system based on CT imaging features, we can make a hierarchical diagnosis of COVID-19 and non-COVID-19 with different management suggestions.Copyright © 2020 The Author(s).

**Database:** EMBASE

**18. Lymphopenia in severe coronavirus disease-2019 (COVID-19): Systematic review and meta-analysis**

**Author(s):** Huang I.; Pranata R.

**Source:** Journal of Intensive Care; May 2020; vol. 8 (no. 1)

**Publication Date:** May 2020

**Publication Type(s):** Review

Available at [Journal of intensive care](https://jintensivecare.biomedcentral.com/articles/10.1186/s40560-020-00453-4) - from BioMed Central

Available at [Journal of intensive care](http://europepmc.org/search?query=(DOI:10.1186/s40560-020-00453-4)) - from Europe PubMed Central - Open Access

Available at [Journal of intensive care](http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2004&res_id=xri:pqm&req_dat=xri:pqil:pq_clntid=47856&rft_val_fmt=ori/fmt:kev:mtx:journal&genre=article&issn=2052-0492&volume=8&issue=1&spage=36) - from ProQuest (Health Research Premium) - NHS Version

Available at [Journal of intensive care](https://jintensivecare.biomedcentral.com/track/pdf/10.1186/s40560-020-00453-4) - from Unpaywall

**Abstract:**Objective: Clinical and laboratory biomarkers to predict the severity of coronavirus disease 2019 (COVID-19) are essential in this pandemic situation of which resource allocation must be urgently prepared especially in the context of respiratory support readiness. Lymphocyte count has been a marker of interest since the first COVID-19 publication. We conducted a systematic review and meta-analysis in order to investigate the association of lymphocyte count on admission and the severity of COVID-19. We would also like to analyze whether patient characteristics such as age and comorbidities affect the relationship between lymphocyte count and COVID-19. Method(s): Comprehensive and systematic literature search was performed from PubMed, SCOPUS, EuropePMC, ProQuest, Cochrane Central Databases, and Google Scholar. Research articles in adult patients diagnosed with COVID-19 with information on lymphocyte count and several outcomes of interest, including mortality, acute respiratory distress syndrome (ARDS), intensive care unit (ICU) care, and severe COVID-19, were included in the analysis. Inverse variance method was used to obtain mean differences and its standard deviations. Maentel-Haenszel formula was used to calculate dichotomous variables to obtain odds ratios (ORs) along with its 95% confidence intervals. Random-effect models were used for meta-analysis regardless of heterogeneity. Restricted-maximum likelihood random-effects meta-regression was performed for age, gender, cardiac comorbidity, hypertension, diabetes mellitus, COPD, and smoking. Result(s): There were a total of 3099 patients from 24 studies. Meta-analysis showed that patients with poor outcome have a lower lymphocyte count (mean difference - 361.06 muL [- 439.18, - 282.95], p < 0.001; I 2 84%) compared to those with good outcome. Subgroup analysis showed lower lymphocyte count in patients who died (mean difference - 395.35 muL [- 165.64, - 625.07], p < 0.001; I 2 87%), experienced ARDS (mean difference - 377.56 muL [- 271.89, - 483.22], p < 0.001; I 2 0%), received ICU care (mean difference - 376.53 muL [- 682.84, - 70.22], p = 0.02; I 2 89%), and have severe COVID-19 (mean difference - 353.34 muL [- 250.94, - 455.73], p < 0.001; I 2 85%). Lymphopenia was associated with severe COVID-19 (OR 3.70 [2.44, 5.63], p < 0.001; I 2 40%). Meta-regression showed that the association between lymphocyte count and composite poor outcome was affected by age (p = 0.034). Conclusion(s): This meta-analysis showed that lymphopenia on admission was associated with poor outcome in patients with COVID-19.Copyright © 2020 The Author(s).

**Database:** EMBASE

**19. Intensive care risk estimation in COVID-19 pneumonia based on clinical and imaging parameters: Experiences from the munich cohort**

**Author(s):** Burian E.; Jungmann F.; Kaissis G.A.; Lohofer F.K.; Makowski M.R.; Braren R.F.; Spinner C.D.; Lahmer T.; Treiber M.; Geisler F.; Huber W.; Schmid R.M.; Dommasch M.; Schneider G.; Protzer U.; Schwaiger M.

**Source:** Journal of Clinical Medicine; May 2020; vol. 9 (no. 5)

**Publication Date:** May 2020

**Publication Type(s):** Article

Available at [Journal of clinical medicine](http://europepmc.org/search?query=(DOI:10.3390/jcm9051514)) - from Europe PubMed Central - Open Access

Available at [Journal of clinical medicine](https://www.mdpi.com/2077-0383/9/5/1514/pdf) - from Unpaywall

**Abstract:**The evolving dynamics of coronavirus disease 2019 (COVID-19) and the increasing infection numbers require diagnostic tools to identify patients at high risk for a severe disease course. Here we evaluate clinical and imaging parameters for estimating the need of intensive care unit (ICU) treatment. We collected clinical, laboratory and imaging data from 65 patients with confirmed COVID-19 infection based on polymerase chain reaction (PCR) testing. Two radiologists evaluated the severity of findings in computed tomography (CT) images on a scale from 1 (no characteristic signs of COVID-19) to 5 (confluent ground glass opacities in over 50% of the lung parenchyma). The volume of affected lung was quantified using commercially available software. Machine learning modelling was performed to estimate the risk for ICU treatment. Patients with a severe course of COVID-19 had significantly increased interleukin (IL)-6, C-reactive protein (CRP), and leukocyte counts and significantly decreased lymphocyte counts. The radiological severity grading was significantly increased in ICU patients. Multivariate random forest modelling showed a mean +/- standard deviation sensitivity, specificity and accuracy of 0.72 +/- 0.1, 0.86 +/- 0.16 and 0.80 +/- 0.1 and a receiver operating characteristic-area under curve (ROC-AUC) of 0.79 +/- 0.1. The need for ICU treatment is independently associated with affected lung volume, radiological severity score, CRP, and IL-6.Copyright © 2020 by the authors. licensee MDPI, Basel, Switzerland.

**Database:** EMBASE

**20. Prediction models for diagnosis and prognosis of covid-19 infection: Systematic review and critical appraisal**

**Author(s):** Wynants L.; Smits L.J.M.; Van Calster B.; De Vos M.; Steyerberg E.W.; Bonten M.M.J.; Debray T.P.A.; Moons K.G.M.; Schuit E.; Van Smeden M.; Collins G.S.; Haller M.C.; Heinze G.; Wallisch C.; Riley R.D.; Snell K.I.E.

**Source:** The BMJ; Apr 2020; vol. 369

**Publication Date:** Apr 2020

**Publication Type(s):** Article

**PubMedID:** 32265220

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Available at [BMJ](https://www.bmj.com/content/bmj/369/bmj.m1328.full.pdf) - from Unpaywall

**Abstract:**AbstractObjective To review and critically appraise published and preprint reports of prediction models for diagnosing coronavirus disease 2019 (covid-19) in patients with suspected infection, for prognosis of patients with covid-19, and for detecting people in the general population at risk of being admitted to hospital for covid-19 pneumonia. Design Rapid systematic review and critical appraisal. Data sources PubMed and Embase through Ovid, Arxiv, medRxiv, and bioRxiv up to 24 March 2020. Study selection Studies that developed or validated a multivariable covid-19 related prediction model. Data extraction At least two authors independently extracted data using the CHARMS (critical appraisal and data extraction for systematic reviews of prediction modelling studies) checklist; risk of bias was assessed using PROBAST (prediction model risk of bias assessment tool). Results 2696 titles were screened, and 27 studies describing 31 prediction models were included. Three models were identified for predicting hospital admission from pneumonia and other events (as proxy outcomes for covid-19 pneumonia) in the general population; 18 diagnostic models for detecting covid-19 infection (13 were machine learning based on computed tomography scans); and 10 prognostic models for predicting mortality risk, progression to severe disease, or length of hospital stay. Only one study used patient data from outside of China. The most reported predictors of presence of covid-19 in patients with suspected disease included age, body temperature, and signs and symptoms. The most reported predictors of severe prognosis in patients with covid-19 included age, sex, features derived from computed tomography scans, C reactive protein, lactic dehydrogenase, and lymphocyte count. C index estimates ranged from 0.73 to 0.81 in prediction models for the general population (reported for all three models), from 0.81 to more than 0.99 in diagnostic models (reported for 13 of the 18 models), and from 0.85 to 0.98 in prognostic models (reported for six of the 10 models). All studies were rated at high risk of bias, mostly because of non-representative selection of control patients, exclusion of patients who had not experienced the event of interest by the end of the study, and high risk of model overfitting. Reporting quality varied substantially between studies. Most reports did not include a description of the study population or intended use of the models, and calibration of predictions was rarely assessed. Conclusion Prediction models for covid-19 are quickly entering the academic literature to support medical decision making at a time when they are urgently needed. This review indicates that proposed models are poorly reported, at high risk of bias, and their reported performance is probably optimistic. Immediate sharing of well documented individual participant data from covid-19 studies is needed for collaborative efforts to develop more rigorous prediction models and validate existing ones. The predictors identified in included studies could be considered as candidate predictors for new models. Methodological guidance should be followed because unreliable predictions could cause more harm than benefit in guiding clinical decisions. Finally, studies should adhere to the TRIPOD (transparent reporting of a multivariable prediction model for individual prognosis or diagnosis) reporting guideline. Systematic review registration Protocol https://osf.io/ehc47/, registration https://osf.io/wy245.Copyright © © Author(s) (or their employer(s)) 2019. Re-use permitted under CC BY. No commercial re-use. See rights and permissions. Published by BMJ.

**Database:** EMBASE

**21. Lymphopenia predicts disease severity of COVID-19: a descriptive and predictive study.**

**Author(s):** Tan, Li; Wang, Qi; Zhang, Duanyang; Ding, Jinya; Huang, Qianchuan; Tang, Yi-Quan; Wang, Qiongshu; Miao, Hongming

**Source:** Signal transduction and targeted therapy; Mar 2020; vol. 5 (no. 1); p. 33

**Publication Date:** Mar 2020

**Publication Type(s):** Research Support, Non-u.s. Gov't Letter

**PubMedID:** 32296069

Available at [Signal transduction and targeted therapy](http://www.nature.com/articles/doi:10.1038/s41392-020-0148-4) - from Nature (Open Access)

Available at [Signal transduction and targeted therapy](http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2004&res_id=xri:pqm&req_dat=xri:pqil:pq_clntid=47856&rft_val_fmt=ori/fmt:kev:mtx:journal&genre=article&issn=2059-3635&volume=5&issue=1&spage=33) - from ProQuest (Health Research Premium) - NHS Version

Available at [Signal transduction and targeted therapy](https://www.nature.com/articles/s41392-020-0148-4.pdf) - from Unpaywall

**Database:** Medline

**22. Predictive factors for pneumonia development and progression to respiratory failure in MERS-CoV infected patients**

**Author(s):** Ko J.-H.; Park G.E.; Lee J.Y.; Cho S.Y.; Ha Y.E.; Kang C.-I.; Chung D.R.; Song J.-H.; Peck K.R.; Kang J.-M.; Kim Y.-J.; Huh H.J.; Ki C.-S.; Jeong B.-H.; Park J.; Chung C.R.

**Source:** Journal of Infection; Nov 2016; vol. 73 (no. 5); p. 468-475

**Publication Date:** Nov 2016

**Publication Type(s):** Article

**PubMedID:** 27519621

Available at [The Journal of infection](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [The Journal of infection](http://www.journalofinfection.com/article/S0163445316302092/pdf) - from Unpaywall

**Abstract:**Background After the 2015 Middle East respiratory syndrome (MERS) outbreak in Korea, prediction of pneumonia development and progression to respiratory failure was emphasized in control of MERS outbreak. Methods MERS-CoV infected patients who were managed in a tertiary care center during the 2015 Korean MERS outbreak were reviewed. To analyze predictive factors for pneumonia development and progression to respiratory failure, we evaluated clinical variables measured within three days from symptom onset. Results A total of 45 patients were included in the study: 13 patients (28.9%) did not develop pneumonia, 19 developed pneumonia without respiratory failure (42.2%), and 13 progressed to respiratory failures (28.9%). The identified predictive factors for pneumonia development included age >=45 years, fever >=37.5 degreeC, thrombocytopenia, lymphopenia, CRP >= 2 mg/dL, and a threshold cycle value of PCR less than 28.5. For respiratory failure, the indicators included male, hypertension, low albumin concentration, thrombocytopenia, lymphopenia, and CRP >= 4 mg/dL (all P < 0.05). With >= two predictive factors for pneumonia development, 100% of patients developed pneumonia. Patients lacking the predictive factors did not progress to respiratory failure. Conclusion For successful control of MERS outbreak, MERS-CoV infected patients with >= two predictive factors should be intensively managed from the initial presentation.Copyright © 2016 The British Infection Association

**Database:** EMBASE

**23. What caused lymphopenia in SARS and how reliable is the lymphokine status in glucocorticoid-treated patients?**

**Author(s):** Panesar, N S

**Source:** Medical hypotheses; Aug 2008; vol. 71 (no. 2); p. 298-301

**Publication Date:** Aug 2008

**Publication Type(s):** Journal Article

**PubMedID:** 18448259

Available at [Medical hypotheses](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [Medical hypotheses](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7131352) - from Unpaywall

**Abstract:**Severe Acute Respiratory Syndrome (SARS) outbreak in 2002-03 caused morbidity in over 8000 individuals and mortality in 744 in 29 countries. Lymphopenia along with neutrophilia was a feature of SARS, as it is in respiratory syncytial virus (RSV) and Ebola infections, to name a few. Direct infestation of lymphocytes, neutrophils and macrophages by SARS coronavirus (CoV) has been debated as a cause of lymphopenia, but there is no convincing data. Lymphopenia can be caused by glucocorticoids, and thus any debilitating condition has the potential to induce lymphopenia via stress mechanism involving the hypothalamic-pituitary-adrenal axis. Cortisol levels are elevated in patients with RSV and Ebola, and cortisol was higher in SARS patients with lymphopenia before any steroid therapy. Glucocorticoids also down-regulate the production of proinflammatory lymphokines. Because of the insidious presentation, SARS was treated with antibacterial, antiviral and supra-physiological doses of glucocorticoids. Treatment with glucocorticoids complicated the issue regarding lymphopenia, and certainly calls into question the status of lymphokines and their prognostic implications in SARS.

**Database:** Medline

**24. Mechanisms of lymphocyte loss in SARS coronavirus infection.**

**Author(s):** Chan, P K S; Chen, G G

**Source:** Hong Kong medical journal = Xianggang yi xue za zhi; Aug 2008; vol. 14

**Publication Date:** Aug 2008

**Publication Type(s):** Research Support, Non-u.s. Gov't Comparative Study Journal Article

**PubMedID:** 18708670

Available at [Hong Kong medical journal = Xianggang yi xue za zhi](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

**Abstract:**1. Human lymphocytes and monocytes are not permissive to productive SARS coronavirus (SARS-CoV) infection in vitro. 2. Challenge of lymphocytes and monocytes with infectious SARS-CoV, inactivated virions, and receptor-binding fragment of spike protein does not trigger apoptosis. 3. Direct infection/interaction between viruses and lymphocytes/monocytes is unlikely to be the cause of lymphopaenia in SARS patients. 4. Lymphopaenia in SARS patients is likely to result from indirect mechanisms secondary to the viral infection.

**Database:** Medline

**25. A correlation between the severity of lung lesions on radiographs and clinical findings in patients with severe acute respiratory syndrome.**

**Author(s):** Wan, Yung-Liang; Tsay, Pei-Kwei; Cheung, Yun-Chung; Chiang, Ping-Cherng; Wang, Chun-Hua; Tsai, Ying-Huang; Kuo, Han-Ping; Tsao, Kuo-Chien; Lin, Tzou-Yien

**Source:** Korean journal of radiology; 2007; vol. 8 (no. 6); p. 466-474

**Publication Date:** 2007

**Publication Type(s):** Journal Article

**PubMedID:** 18071276

Available at [Korean journal of radiology](http://europepmc.org/search?query=(DOI:10.3348/kjr.2007.8.6.466)) - from Europe PubMed Central - Open Access

Available at [Korean journal of radiology](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [Korean journal of radiology](http://www.kjronline.org/Synapse/Data/PDFData/0068KJR/kjr-8-466.pdf) - from Unpaywall

**Abstract:**OBJECTIVEThe purpose of this study was to quantify lesions on chest radiographs in patients with severe acute respiratory syndrome (SARS) and analyze the severity of the lesions with clinical parameters.MATERIALS AND METHODSTwo experienced radiologists reviewed chest radiographs of 28 patients with SARS. Each lung was divided into upper, middle, and lower zones. A SARS-related lesion in each zone was scored using a four-point scale: zero to three. The mean and maximal radiographic scores were analyzed statistically to determine if the scorings were related to the laboratory data and clinical course.RESULTSForward stepwise multiple linear regression showed that the mean radiographic score correlated most significantly with the number of hospitalized days (p < 0.001). The second most significant factor was the absolute lymphocyte count (p < 0.001) and the third most significant factor was the number of days of intubation (p = 0.025). The maximal radiographic score correlated best with the percentage of lymphocytes in a leukocyte count (p < 0.001), while the second most significant factor was the number of hospitalized days (p < 0.001) and the third most significant factor was the absolute lymphocyte count (p = 0.013). The mean radiographic scores of the patients who died, with comorbidities and without a comorbidity were 11.1, 6.3 and 2.9, respectively (p = 0.032). The corresponding value for maximal radiographic scores were 17.7, 9.7 and 6.0, respectively (p = 0.033).CONCLUSIONThe severity of abnormalities quantified on chest radiographs in patients with SARS correlates with the clinical parameters.

**Database:** Medline

**26. Effects of severe acute respiratory syndrome (SARS) coronavirus infection on peripheral blood lymphocytes and their subsets.**

**Author(s):** He, Zhongping; Zhao, Chunhui; Dong, Qingming; Zhuang, Hui; Song, Shujing; Peng, Guoai; Dwyer, Dominic E

**Source:** International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases; Nov 2005; vol. 9 (no. 6); p. 323-330

**Publication Date:** Nov 2005

**Publication Type(s):** Research Support, Non-u.s. Gov't Journal Article

**PubMedID:** 16095942

Available at [International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases](https://linkinghub.elsevier.com/retrieve/pii/S120197120500072X?goto=sd) - from ScienceDirect Please click on 'Sign in' and then on 'OpenAthens' for the site to recognise your Athens account and provide access to the full range of issues.

Available at [International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [International journal of infectious diseases : IJID : official publication of the International Society for Infectious Diseases](http://www.ijidonline.com/article/S120197120500072X/pdf) - from Unpaywall

**Abstract:**INTRODUCTIONSevere acute respiratory syndrome (SARS) caused large outbreaks of atypical pneumonia in 2003, with the largest localized outbreak occurring in Beijing, China. Lymphopenia was prominent amongst the laboratory abnormalities reported in acute SARS.METHODSThe effect of SARS on peripheral blood lymphocytes and their subsets was examined in 271 SARS coronavirus-infected individuals.RESULTSThere was a significant decrease in the CD45+, CD3+, CD4+, CD8+, CD19+ and CD16+/56+ cell counts over the five weeks of the SARS illness although CD4+/CD8+ ratios did not change significantly. The lymphopenia was prolonged, reaching a nadir during days 7-9 in the second week of illness before returning towards normal after five weeks, with the lowest mean CD4+ cell count of 317 cellsx10(6)/L at day 7, and CD8+ cell count of 239 cellsx10(6)/L at day 8. Patients with more severe clinical illness, or patients who died, had significantly more profound CD4+ and CD8+ lymphopenia.DISCUSSIONLymphopenia is a prominent part of SARS-CoV infection and lymphocyte counts may be useful in predicting the severity and clinical outcomes. Possible reasons for the SARS-associated lymphopenia may be direct infection of lymphocytes by SARS-CoV, lymphocyte sequestration in the lung or cytokine-mediated lymphocyte trafficking. There may also be immune-mediated lymphocyte destruction, bone marrow or thymus suppression, or apoptosis.

**Database:** Medline

**27. A prediction rule for clinical diagnosis of severe acute respiratory syndrome.**

**Author(s):** Ho, P L; Chau, P H; Yip, P S F; Ooi, G C; Khong, P L; Ho, J C; Wong, P C; Ko, C; Yan, C; Tsang, K W

**Source:** The European respiratory journal; Sep 2005; vol. 26 (no. 3); p. 474-479

**Publication Date:** Sep 2005

**Publication Type(s):** Journal Article

**PubMedID:** 16135731

Available at [The European respiratory journal](http://erj.ersjournals.com/lookup/doi/10.1183/09031936.05.1076704) - from HighWire - Free Full Text

Available at [The European respiratory journal](http://www.uhl-library.nhs.uk/directpages/gh.html) - from Glenfield Hospital Library Local Print Collection [location] : Glenfield Library.

Available at [The European respiratory journal](http://www.uhl-library.nhs.uk/directpages/uhlarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from NULJ library) - click this link for more information Local Print Collection [location] : UHL Libraries On Request (Free).

Available at [The European respiratory journal](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [The European respiratory journal](https://erj.ersjournals.com/content/erj/26/3/474.full.pdf) - from Unpaywall

**Abstract:**A prospective study was undertaken to identify clinical, radiographical, haematological and biochemical profiles of severe acute respiratory syndrome (SARS) patients. A prediction rule, which demarcates low from high risk patients for SARS in an outbreak situation was developed. A total of 295 patients with unexplained respiratory illnesses, admitted to Queen Mary Hospital, Hong Kong SAR, China, in March to July 2003, were evaluated for clinical, radiological, haematological and alanine transaminase (ALT) data daily for 3 days after hospitalisation. In total, 44 cases were subsequently confirmed to have SARS by RT-PCR (68.2%) and serology (100%). The scoring system of attributing 11, 10, 3, 3 and 3 points to the presence of independent risk factors, namely: epidemiological link, radiographical deterioration, myalgia, lymphopenia and elevated ALT respectively, generated high and low-risk (total score 11-30 and 0-10, respectively) groups for SARS. The sensitivity and specificity of this prediction rule in positively identifying a SARS patient were 97.7 and 81.3%, respectively. The positive and negative predictive values were 47.8 and 99.5%, respectively. The prediction rule appears to be helpful in assessing suspected patients with severe acute respiratory syndrome at the bedside, and should be further validated in other severe acute respiratory syndrome cohorts.

**Database:** Medline

**28. Comparative study of patients with and without SARS who fulfilled the WHO SARS case definition.**

**Author(s):** Chang, Shang-Miao; Liu, Ching-Lung; Kuo, Hsu-Tah; Chen, Pei-Jan; Lee, Chun Ming; Lin, Fung-J; Lin, Ching-Chi; Lee, Chao-Hsien; Lu, Yen-Ta

**Source:** The Journal of emergency medicine; May 2005; vol. 28 (no. 4); p. 395-402

**Publication Date:** May 2005

**Publication Type(s):** Research Support, Non-u.s. Gov't Comparative Study Journal Article

**PubMedID:** 15837019

Available at [The Journal of emergency medicine](http://www.uhl-library.nhs.uk/directpages/uhlarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from NULJ library) - click this link for more information Local Print Collection [location] : UHL Libraries On Request (Free).

Available at [The Journal of emergency medicine](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [The Journal of emergency medicine](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7135563) - from Unpaywall

**Abstract:**To differentiate severe acute respiratory syndrome (SARS) from non-SARS illness, we retrospectively compared 53 patients with probable SARS and 31 patients with non-SARS who were admitted to Mackay Memorial Hospital from April 27 to June 16, 2003. Fever (> 38 degrees C) was the earliest symptom (50/53 SARS vs. 5/31 non-SARS, p < 0.0001), preceding cough by a mean of 4.5 days. The initial chest X-ray study was normal in 22/53 SARS cases versus 5/31 non-SARS cases. SARS patients with an initially normal chest X-ray study developed infiltrates at a mean of 5 +/- 3.44 days after onset of fever (21/22 SARS vs. 0/5 non-SARS). Rapid radiographic progression of unifocal involvement to multifocal infiltrates was seen in 22 of 24 SARS vs. 0 of 26 non-SARS patients (p < 0.0001). Pleural effusion was not present in any SARS patients but was seen in 6 of 26 non-SARS cases (p < 0.0001). Initial lymphopenia, thrombocytopenia, and elevated lactate dehydrogenase were all more common in SARS than non-SARS (p < 0.0001). They may help differentiate SARS from non-SARS if a reliable and rapid diagnostic test is not available.

**Database:** Medline

**29. Thrombocytopenia in patients with severe acute respiratory syndrome (review).**

**Author(s):** Yang, Mo; Ng, Margaret H L; Li, Chi Kong

**Source:** Hematology (Amsterdam, Netherlands); Apr 2005; vol. 10 (no. 2); p. 101-105

**Publication Date:** Apr 2005

**Publication Type(s):** Journal Article Review

**PubMedID:** 16019455

Available at [Hematology (Amsterdam, Netherlands)](http://search.ebscohost.com/login.aspx?direct=true&scope=site&site=ehost-live&db=mdc&AN=16019455) - from EBSCO (MEDLINE Complete)

Available at [Hematology (Amsterdam, Netherlands)](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [Hematology (Amsterdam, Netherlands)](https://www.tandfonline.com/doi/pdf/10.1080/10245330400026170?needAccess=true) - from Unpaywall

**Abstract:**Severe Acute Respiratory Syndrome (SARS) has been recognized as a new human infectious disease caused by a novel coronavirus (SARS-CoV). Hematological changes in patients with SARS were common, including notably lymphopenia and thrombocytopenia. While the former is the result of decreases in CD4+ or CD8+ T-lymphocytes related to the onset of disease or use of glucocorticoids, the latter may involve a number of potential mechanisms. Although the development of autoimmune antibodies or immune complexes triggered by viral infection may play a significant role in inducing thrombocytopenia, SARS-CoV may also directly infect hematopoietic stem/progenitor cells, megakaryocytes and platelets inducing their growth inhibition and apoptosis. Moreover, the increased consumption of platelets and/or the decreased production of platelets in the damaged lungs are a potential alternative mechanism that can contribute to thrombocytopenia in severe critical pulmonary conditions, which has been rarely revealed and will be discussed.

**Database:** Medline

**30. Early clinical predictors of severe acute respiratory syndrome in the emergency department**

**Author(s):** Wong W.N.; Sek A.C.H.; Lau R.F.L.; Li K.M.; Leung J.K.S.; Tse M.L.; Ng A.H.W.; Stenstrom R.J.

**Source:** Canadian Journal of Emergency Medicine; 2004; vol. 6 (no. 1); p. 12-21

**Publication Date:** 2004

**Publication Type(s):** Article

Available at [CJEM](http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2004&res_id=xri:pqm&req_dat=xri:pqil:pq_clntid=47856&rft_val_fmt=ori/fmt:kev:mtx:journal&genre=article&issn=1481-8035&volume=6&issue=1&spage=12) - from ProQuest (Health Research Premium) - NHS Version

Available at [CJEM](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [CJEM](https://www.cambridge.org/core/services/aop-cambridge-core/content/view/CC589782319C700BC55904F186D38B7A/S148180350000885Xa.pdf/div-class-title-early-clinical-predictors-of-severe-acute-respiratory-syndrome-in-the-emergency-department-div.pdf) - from Unpaywall

**Abstract:**Objectives: To assess the association of diagnostic predictors available in the emergency department (ED) with the outcome diagnosis of severe acute respiratory syndrome (SARS). Method(s): This retrospective cohort study describes all patients from the Amoy Garden complex who presented to an ED SARS screening clinic during a 2-month outbreak. Clinical and diagnostic predictors were recorded, along with ED diagnoses. Final diagnoses were established independently based on diagnostic tests performed after the ED visit. Associations of key predictors with the final diagnosis of SARS were described. Result(s): Of 821 patients, 205 had confirmed SARS, 35 undetermined SARS and 581 non-SARS. Multivariable logistic regression showed that the strongest predictors of SARS were abnormal chest x-ray (odds ratio [OR] = 17.4), subjective fever (OR = 9.7), temperature > 38degreeC (OR = 6.4), myalgias (OR = 5.5), chills and rigors (OR = 4.0) and contact exposure (OR = 2.6). In a subset of 176 patients who had a complete blood cell count performed, the strongest predictors were temperature > = 38degreeC (OR = 15.5), lymphocyte count < 1000 (OR = 9.3) and abnormal chest x-ray (OR = 5.7). Diarrhea was a powerful negative predictor (OR = 0.03) of SARS. Conclusion(s): Two components of the World Health Organization case definition - fever and contact exposure - are helpful for ED decision-making, but respiratory symptoms do not discriminate well between SARS and non-SARS. Emergency physicians should consider the presence of diarrhea, chest x-ray findings, the absolute lymphocyte count and the platelet count as significant modifiers of disease likelihood. Prospective validation of these findings in other clinical settings is desirable.

**Database:** EMBASE

**31. Establishing a clinical decision rule of severe acute respiratory syndrome at the emergency department.**

**Author(s):** Wang, Tzong-Luen; Jang, Tsrang-Neng; Huang, Chien-Hsien; Kao, Shang-Jyh; Lin, Chor-Ming; Lee, Fang-Niarn; Liu, Cheng-Yao; Chong, Chee-Fah; Lin, Chu-Mei; Dorji, Harnod; Teng, Hsueh-Ju; Chang, Hang

**Source:** Annals of emergency medicine; Jan 2004; vol. 43 (no. 1); p. 17-22

**Publication Date:** Jan 2004

**Publication Type(s):** Journal Article

**PubMedID:** 14707935

Available at [Annals of emergency medicine](https://linkinghub.elsevier.com/retrieve/pii/S0196064403008254?goto=sd) - from ScienceDirect Click on 'Athens' links to activate your UHL access to full text content, Please click on 'Sign in' and then on 'OpenAthens' for the site to recognise your Athens account and provide access to the full range of issues.

Available at [Annals of emergency medicine](http://www.uhl-library.nhs.uk/directpages/uhlarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from NULJ library) - click this link for more information Local Print Collection [location] : UHL Libraries On Request (Free).

Available at [Annals of emergency medicine](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [Annals of emergency medicine](http://www.annemergmed.com/article/S0196064403008254/pdf) - from Unpaywall

**Abstract:**STUDY OBJECTIVEIn the absence of reliable rapid confirmatory tests during severe acute respiratory syndrome (SARS) endemics, we designed a 2-phase cohort study to establish a scoring system for SARS and to evaluate whether it could improve the sensitivity and specificity of the World Health Organization (WHO) criteria.METHODSAccording to the clinical characteristics and initial laboratory findings of 175 suspected cases defined by the WHO criteria (20 confirmed as cases of SARS) in 3 university teaching hospitals in Taipei between March 1 and April 20, 2003, the scoring system for SARS was designed by multivariate analysis and stepwise logistic regression as the simple arithmetic sum of point values assigned to 7 parameters. We thereafter applied the scoring system for SARS to the consecutive 232 patients (the validation group) who met the WHO criteria of suspected cases from April 21 to May 22, 2003. Final diagnosis of SARS was determined by the results of real-time polymerase chain reaction and paired serum.RESULTSThe scoring system for SARS was defined as radiographic findings of multilobar or bilateral infiltrates (3 points), sputum monocyte predominance (3 points), lymphocytopenia (2 points), history of exposure (1 point), lactate dehydrogenase more than 450 U/L (1 point), C-reactive protein more than 5.0 mg/dL (1 point), and activated partial prothrombin time more than 40 seconds (1 point). Of the validation group, 60 patients (group A) were confirmed as having cases of SARS, and the other 172 (group B) patients tested negative for SARS. The total points of the scoring system for SARS at initial presentation were significantly higher in the SARS group (median 9; range 6 to 11) than in the non-SARS group (median 4; range 3 to 7; P<.001). At the cutoff value of 6 points, the sensitivity and specificity of the scoring system for SARS in diagnosing SARS were 100% and 93%, respectively. The positive and negative predictive values of the scoring system for SARS were 83% and 100%, respectively.CONCLUSIONThe scoring system for SARS can provide a rapid and reliable clinical decision to help emergency physicians detect cases of SARS more accurately in the endemic area.

**Database:** Medline

**32. [Predictors associated with clinical deterioration in SARS patients].**

**Author(s):** Yan, Jie; Feng, Xin; Tian, Jing-hua; Xie, Yao; Yao, Jun; He, Zhong-ping; Xu, Dao-zhen

**Source:** Zhonghua shi yan he lin chuang bing du xue za zhi = Zhonghua shiyan he linchuang bingduxue zazhi = Chinese journal of experimental and clinical virology; Sep 2003; vol. 17 (no. 3); p. 222-224

**Publication Date:** Sep 2003

**Publication Type(s):** Research Support, Non-u.s. Gov't English Abstract Journal Article

**PubMedID:** 15340562

Available at [Zhonghua shi yan he lin chuang bing du xue za zhi = Zhonghua shiyan he linchuang bingduxue zazhi = Chinese journal of experimental and clinical virology](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

**Abstract:**BACKGROUNDTo study the predictive factors associated with clinical deterioration in SARS patients.METHODSThe clinical data of 60 SARS patients were analyzed by logistic regression and Cox's proportional hazards analysis.RESULTSIn logistic regression models, both older age (P=0.009) and severe lymphopenia (P=0.004) were significant predictors of clinical deterioration. In Cox's proportional hazard models, severe lymphopenia was significant predictor associated with prolongation of stay in hospital.CONCLUSIONOlder age and severe lymphopenia seem to be statistically significant for predicting the clinical deterioration in SARS patients.

**Database:** Medline

**33. Role of absolute lymphocyte count in the screening of patients with suspected SARS.**

**Author(s):** Yuen, Eddie; Kam, Chak Wah; Rainer, Timothy H

**Source:** Emergency medicine (Fremantle, W.A.); Aug 2003; vol. 15 (no. 4); p. 395-396

**Publication Date:** Aug 2003

**Publication Type(s):** Letter Clinical Trial

**PubMedID:** 14631711

Available at [Emergency medicine (Fremantle, W.A.)](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [Emergency medicine (Fremantle, W.A.)](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7163475) - from Unpaywall

**Database:** Medline

**34. Haematological manifestations in patients with severe acute respiratory syndrome: retrospective analysis.**

**Author(s):** Wong, Raymond S M; Wu, Alan; To, K F; Lee, Nelson; Lam, Christopher W K; Wong, C K; Chan, Paul K S; Ng, Margaret H L; Yu, L M; Hui, David S; Tam, John S; Cheng, Gregory; Sung, Joseph J Y

**Source:** BMJ (Clinical research ed.); Jun 2003; vol. 326 (no. 7403); p. 1358-1362

**Publication Date:** Jun 2003

**Publication Type(s):** Journal Article

**PubMedID:** 12816821

Available at [BMJ (Clinical research ed.)](https://go.openathens.net/redirector/nhs?url=https%3A%2F%2Fwww.bmj.com%2Flookup%2Fdoi%2F10.1136%2Fbmj.326.7403.1358) - from BMJ Journals - NHS

Available at [BMJ (Clinical research ed.)](http://gateway.proquest.com/openurl?ctx_ver=Z39.88-2004&res_id=xri:pqm&req_dat=xri:pqil:pq_clntid=47856&rft_val_fmt=ori/fmt:kev:mtx:journal&genre=article&issn=0959-8138&volume=326&issue=7403&spage=1358) - from ProQuest (Health Research Premium) - NHS Version

Available at [BMJ (Clinical research ed.)](http://www.uhl-library.nhs.uk/directpages/gh.html) - from Glenfield Hospital Library Local Print Collection

Available at [BMJ (Clinical research ed.)](http://www.uhl-library.nhs.uk/directpages/lgh.html) - from Leicester General Hospital Library Local Print Collection

Available at [BMJ (Clinical research ed.)](http://www.uhl-library.nhs.uk/directpages/uhlblarticles.html) - from Available to NHS staff on request from UHL Libraries & Information Services (from non-NHS library) - click this link for more information Local Print Collection [location] : British Library via UHL Libraries - please click link to request article.

Available at [BMJ (Clinical research ed.)](https://www.bmj.com/content/bmj/326/7403/1358.full.pdf) - from Unpaywall

**Abstract:**OBJECTIVESTo evaluate the haematological findings of patients with severe acute respiratory syndrome (SARS).DESIGNAnalysis of the demographic, clinical, and laboratory characteristics of patients with SARS.SETTINGPrince of Wales Hospital, Hong Kong. Subjects All patients with a diagnosis of SARS between 11 March and 29 March 2003 who had no pre-existing haematological disorders.MAIN OUTCOME MEASURESClinical end points included the need for intensive care and death. Univariate and multivariate analyses were performed to examine factors associated with adverse outcome.RESULTS64 male and 93 female patients were included in this study. The most common findings included lymphopenia in 153 (98%) of the 157 patients, neutrophilia in 129 (82%), thrombocytopenia in 87 patients (55%), followed by thrombocytosis in 77 (49%), and isolated prolonged activated partial thromboplastin time in 96 patients (63%). The haemoglobin count dropped by more than 20 g/l from baseline in 95 (61%) patients. Four patients (2.5%) developed disseminated intravascular coagulation. Lymphopenia was shown in haemato-lymphoid organs at postmortem examination. Multivariate analysis showed that advanced age and a high concentration of lactate dehydrogenase at presentation were independent predictors of an adverse outcome. Subsets of peripheral blood lymphocytes were analysed in 31 patients. The counts of CD4 positive and CD8 positive T cells fell early in the course of illness. Low counts of CD4 and CD8 cells at presentation were associated with adverse outcomes.CONCLUSIONSAbnormal haematological variables were common among patients with SARS. Lymphopenia and the depletion of T lymphocyte subsets may be associated with disease activity.

**Database:** Medline

Strategy 863547

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| --- | --- | --- | --- |
| **#** | **Database** | **Search term** | **Results** |
| 1 | Medline | LYMPHOPENIA/ | 3914 |
| 2 | Medline | (lymphopeni\* OR lymphocytopeni\*).ti,ab | 8518 |
| 3 | Medline | (1 OR 2) | 10360 |
| 4 | Medline | (coronavir\*).ti,ab | 18126 |
| 5 | Medline | (corona ADJ vir\*).ti,ab | 503 |
| 6 | Medline | (covid-19).ti,ab | 16425 |
| 7 | Medline | (sars-cov\*).ti,ab | 6901 |
| 8 | Medline | (wuhan ADJ2 corona\*).ti,ab | 71 |
| 9 | Medline | exp CORONAVIRIDAE/ OR exp "CORONAVIRIDAE INFECTIONS"/ | 20881 |
| 10 | Medline | (2019-nCoV).ti,ab | 584 |
| 11 | Medline | (cv19 OR cv-19).ti,ab | 66 |
| 12 | Medline | ("novel coronavirus" OR ncov OR "novel betacov" OR "novel betacoronavirus").ti,ab | 2693 |
| 13 | Medline | (4 OR 5 OR 6 OR 7 OR 8 OR 9 OR 10 OR 11 OR 12) | 38402 |
| 14 | Medline | (3 AND 13) | 290 |
| 15 | Medline | "PREDICTIVE VALUE OF TESTS"/ | 200716 |
| 16 | Medline | "REPRODUCIBILITY OF RESULTS"/ | 394622 |
| 17 | Medline | (valid\* OR reliab\*).ti,ab | 1091511 |
| 18 | Medline | (15 OR 16 OR 17) | 1475904 |
| 19 | Medline | (14 AND 18) | 9 |
| 20 | Medline | exp "SENSITIVITY AND SPECIFICITY"/ | 578565 |
| 21 | Medline | (14 AND 20) | 7 |
| 22 | Medline | exp "LYMPHOCYTE COUNT"/ | 39355 |
| 23 | Medline | (13 AND 22) | 58 |
| 24 | Medline | ANIMALS/ NOT HUMANS/ | 4663099 |
| 25 | Medline | 23 not 24 | 37 |
| 26 | EMBASE | LYMPHOCYTOPENIA/ | 21918 |
| 27 | EMBASE | (lymphopeni\* OR lymphocytopeni\*).ti,ab | 14367 |
| 28 | EMBASE | "LYMPHOCYTE COUNT"/ | 43747 |
| 29 | EMBASE | (26 OR 27 OR 28) | 66306 |
| 30 | EMBASE | (coronavir\*).ti,ab | 23857 |
| 31 | EMBASE | (corona ADJ vir\*).ti,ab | 673 |
| 32 | EMBASE | (covid-19).ti,ab | 15131 |
| 33 | EMBASE | (sars-cov\*).ti,ab | 8055 |
| 34 | EMBASE | (wuhan ADJ2 corona\*).ti,ab | 32 |
| 35 | EMBASE | (2019-nCoV).ti,ab | 574 |
| 36 | EMBASE | (cv19 OR cv-19).ti,ab | 103 |
| 37 | EMBASE | ("novel coronavirus" OR ncov OR "novel betacov" OR "novel betacoronavirus").ti,ab | 2841 |
| 38 | EMBASE | exp CORONAVIRIDAE/ OR exp "CORONAVIRIDAE INFECTION"/ | 29099 |
| 39 | EMBASE | (30 OR 31 OR 32 OR 33 OR 34 OR 35 OR 36 OR 37 OR 38) | 48893 |
| 40 | EMBASE | (29 AND 39) | 819 |
| 41 | EMBASE | "PREDICTIVE VALIDITY"/ | 8272 |
| 42 | EMBASE | "PREDICTIVE VALUE OF TESTS"/ | 96775 |
| 43 | EMBASE | "PREDICTIVE VALUE"/ | 170056 |
| 44 | EMBASE | REPRODUCIBILITY/ OR "REPRODUCIBILITY OF RESULTS"/ | 216456 |
| 45 | EMBASE | (valid\* OR reliab\*).ti,ab | 1490915 |
| 46 | EMBASE | (41 OR 42 OR 43 OR 44 OR 45) | 1763940 |
| 47 | EMBASE | (40 AND 46) | 25 |
| 48 | EMBASE | ANIMALS/ NOT HUMANS/ | 939068 |
| 49 | EMBASE | 40 not 48 | 817 |