Incidence

1- Incidence of venous thromboembolism in hospitalized patients with COVID-19

By:
Middeldorp, S (Middeldorp, Saskia) [1] ; Coppens, M (Coppens, Michiel) [1] ; van Haaps, TF (van Haaps, Thijs F.) [1] ; Foppen, M (Foppen, Merijn) [1] ; Vlaar, AP (Vlaar, Alexander P.) [2] ; Muller, MCA (Mueller, Marcella C. A.) [2] ; Bouman, CCS (Bouman, Catherine C. S.) [2] ; Beenen, LFM (Beenen, Ludo F. M.) [3] ; Kootte, RS (Kootte, Ruud S.) [4] ; Heijmans, J (Heijmans, Jarom) [4] ;
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Abstract

Background Coronavirus disease 2019 (COVID-19) can lead to systemic coagulation activation and thrombotic complications. Objectives To investigate the incidence of objectively confirmed venous thromboembolism (VTE) in hospitalized patients with COVID-19. Methods Single-center cohort study of 198 hospitalized patients with COVID-19. Results Seventy-five patients (38%) were admitted to the intensive care unit (ICU). At time of data collection, 16 (8%) were still hospitalized and 19% had died. During a median follow-up of 7 days (IQR, 3-13), 39 patients (20%) were diagnosed with VTE of whom 25 (13%) had symptomatic VTE, despite routine thrombosis prophylaxis. The cumulative incidences of VTE at 7, 14 and 21 days were 16% (95% CI, 10-22), 33% (95% CI, 23-43) and 42% (95% CI 30-54) respectively. For symptomatic VTE, these were 10% (95% CI, 5.8-16), 21% (95% CI, 14-30) and 25% (95% CI 16-36). VTE appeared to be associated with death (adjusted HR, 2.4; 95% CI, 1.02-5.5). The cumulative incidence of VTE was higher in the ICU (26% (95% CI, 17-37), 47% (95% CI, 34-58), and 59% (95% CI, 42-72) at 7, 14 and 21 days) than on the wards (any VTE and symptomatic VTE 5.8% (95% CI, 1.4-15), 9.2% (95% CI, 2.6-21), and 9.2% (2.6-21) at 7, 14, and 21 days). Conclusions The observed risk for VTE in COVID-19 is high,

particularly in ICU patients, which should lead to a high level of clinical suspicion and low threshold for diagnostic imaging for DVT or PE. Future research should focus on optimal diagnostic and prophylactic strategies to prevent VTE and potentially improve survival.

Keywords
Author Keywords
COVID-19critically illlow-molecular-weight heparinpulmonary embolismvenous thrombosis

Incidence

2- Incidence of thrombotic complications in critically ill ICU patients with COVID-19

By:
Klok, FA (Klok, F. A.) [1] ; Kruip, MJHA (Kruip, M. J. H. A.) [2] ; van der Meer, NJM (van der Meer, N. J. M.) [3] , [4] ; Arbous, MS (Arbous, M. S.) [5] ; Gommers, DAMPJ (Gommers, D. A. M. P. J.) [6] ; Kant, KM (Kant, K. M.) [7] ; Kaptein, FHJ (Kaptein, F. H. J.) [1] ; Van Paassen, J (Van Paassen, J.) [5] ; Stals, MAM (Stals, M. A. M.) [1] ; Huisman, MV (Huisman, M. V.) [1] ;
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Abstract

Introduction: COVID-19 may predispose to both venous and arterial thromboembolism due to excessive inflammation, hypoxia, immobilisation and diffuse intravascular coagulation. Reports on the incidence of thrombotic complications are however not available.
Methods: We evaluated the incidence of the composite outcome of symptomatic acute pulmonary embolism (PE), deep-vein thrombosis, ischemic stroke, myocardial infarction or systemic arterial embolism in all COVID-19 patients admitted to the ICU of 2 Dutch university hospitals and 1 Dutch teaching hospital.
Results: We studied 184 ICU patients with proven COVID-19 pneumonia of whom 23 died (13%), 22 were discharged alive (12%) and 139 (76%) were still on the ICU on April 5th 2020. All patients received at least standard doses thromboprophylaxis. The cumulative incidence of the composite outcome was 31% (95%CI 20-41), of which CTPA and/or ultrasonography confirmed VTE in 27% (95%CI 17-37%) and arterial thrombotic events in 3.7% (95%CI 0-8.2%). PE was the most frequent thrombotic complication (n = 25, 81%). Age (adjusted hazard ratio (aHR) 1.05/per year, 95%CI 1.004-1.01) and coagulopathy, defined as spontaneous prolongation of the prothrombin time > 3 s or activated partial thromboplastin time > 5 s (aHR 4.1, 95%CI 1.9-9.1), were independent predictors of thrombotic complications.
Conclusion: The 31% incidence of thrombotic complications in ICU patients with COVID-19 infections is remarkably high. Our findings reinforce the recommendation to strictly apply pharmacological thrombosis

prophylaxis in all COVID-19 patients admitted to the ICU, and are strongly suggestive of increasing the prophylaxis towards high-prophylactic doses, even in the absence of randomized evidence.

Keywords
Author Keywords
COVID-19Pulmonary embolismDeep vein thrombosisStrokeThromboprophylaxis

Incidence

3- Antibody Status and Incidence of SARS-CoV-2 Infection in Health Care Workers

By:
Lumley, SF (Lumley, S. F.) [1] , [2] ; O'Donnell, D (O'Donnell, D.) [2] ; Stoesser, NE (Stoesser, N. E.) [1] , [2] , [3] , [8] ; Matthews, PC (Matthews, P. C.) [1] , [2] , [3] , [8] ; Howarth, A (Howarth, A.) [2] ; Hatch, SB (Hatch, S. B.) [2] ; Marsden, BD (Marsden, B. D.) [2] , [4] ; Cox, S (Cox, S.) [1] ; James, T (James, T.) [1] ; Warren, F (Warren, F.) [1] ;
Group Author:
Oxford Univ Hosp Staff Testing Grp (Oxford Univ Hosp Staff Testing Grp)
(provided by Clarivate)

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Abstract

Background The relationship between the presence of antibodies to severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and the risk of subsequent reinfection remains unclear.
Methods We investigated the incidence of SARS-CoV-2 infection confirmed by polymerase chain reaction (PCR) in seropositive and seronegative health care workers attending testing of asymptomatic and symptomatic staff at Oxford University Hospitals in the United Kingdom. Baseline antibody status was determined by anti-spike (primary analysis) and anti-nucleocapsid IgG assays, and staff members were followed for up to 31 weeks. We estimated the relative incidence of PCR-positive test results and new symptomatic infection according to antibody status, adjusting for age, participant-reported gender, and changes in incidence over time.
Results A total of 12,541 health care workers participated and had anti-spike IgG measured; 11,364 were followed up after negative antibody results and 1265 after positive results, including 88 in whom seroconversion occurred during follow-up. A total of 223 anti-spike-seronegative health care workers had a positive PCR test (1.09 per 10,000 days at risk), 100 during screening while they were asymptomatic and

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123 while symptomatic, whereas 2 anti-spike-seropositive health care workers had a positive PCR test (0.13 per 10,000 days at risk), and both workers were asymptomatic when tested (adjusted incidence rate ratio, 0.11; 95% confidence interval, 0.03 to 0.44; P=0.002). There were no symptomatic infections in workers with anti-spike antibodies. Rate ratios were similar when the anti-nucleocapsid IgG assay was used alone or in combination with the anti-spike IgG assay to determine baseline status.

Conclusions The presence of anti-spike or anti-nucleocapsid IgG antibodies was associated with a substantially reduced risk of SARS-CoV-2 reinfection in the ensuing 6 months. (Funded by the U.K. Government Department of Health and Social Care and others.)

In a longitudinal study of seropositive and seronegative health care workers undergoing asymptomatic and symptomatic SARS-CoV-2 testing, the presence of anti-spike or anti-nucleocapsid IgG antibodies was associated with a substantially reduced risk of SARS-CoV-2 reinfection in the ensuing 6 months.

4- Increased incidence of candidemia in a tertiary care hospital with the COVID-19 pandemic

By:
Nucci, M (Nucci, Marcio) [1] ; Barreiros, G (Barreiros, Gloria) [1] ; Guimaraes, LF (Guimaraes, Luiz Felipe) [1] ; Deriquehem, VAS (Deriquehem, Vitor A. S.) [1] ; Castineiras, AC (Castineiras, Anna Carla) [1] ; Nouer, SA (Nouer, Simone A.) [1]
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Abstract

Background The incidence of candidemia in our hospital has been stable over an 18-year period (1.3 episodes per 1000 admissions). Since March 2020, we have observed an increase in cases of candidemia. Methods In March 2020, the hospital was prepared to receive patients with COVID-19, with cancellation of elective procedures, discharge of less sick patients and the activation of beds for COVID-19. We compared the incidence of candidemia in 2 periods: from January 2019 to February 2020 (period 1) and from March to September 2020 (period 2).
Results We diagnosed 41 episodes of candidemia, 16 in period 1 and 25 in period 2 (9 COVID-19 patients). Compared with non-COVID-19 patients, COVID-19 patients with candidemia were more likely to be under mechanical ventilation (100% vs. 34.4%, P < .001). The median number of monthly admissions in period 1 and 2 was 723 (interquartile range 655-836) and 523 (interquartile range 389-574), respectively. The incidence of candidemia (per 1000 admissions) was 1.54 in period 1 and 7.44 in period 2 (P < .001). In period 2, the incidence of candidemia (per 1000 admissions) was 4.76 if we consider only cases of candidemia in non-COVID-19 patients, 2.68 if we consider only cases of candidemia in COVID-19 patients and 14.80 considering only admissions of patients with COVID-19.

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Conclusions The increase in the incidence of candidemia in our hospital may be attributed to 2 factors: a reduction in the number of admissions (denominator) and the occurrence of candidemia in COVID-19 patients.

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candidemiaCandidadeep fungal infectionepidemiologysystemic infectioncandidemia
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5- Global, regional prevalence, incidence and risk factors of knee osteoarthritis in population-based studies

By:
Cui, AY (Cui, Aiyong) [1] ; Li, HZ (Li, Huizi) [1] ; Wang, DW (Wang, Dawei) [1] ; Zhong, JL (Zhong, Junlong) [1] ; Chen, YF (Chen, Yufeng) [1] ; Lu, HD (Lu, Huading) [1]

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Abstract

Background: Knee osteoarthritis (OA) is a major cause of disability in the elderly, however, there are few studies to estimate the global prevalence, incidence, and risk factors of knee OA.
Methods: For this study, we searched PUBMED, EMBASE and SCOPUS from inception to April 4, 2020, without language restriction. We identified eligible studies with information on the prevalence or incidence of knee OA in population-based observational studies and extracted data from published reports. We did randomeffects meta-analysis to generate estimates. This study was registered with PROSPERO (CRD42020181035).
Findings: Out of 9570 records identified, 88 studies with 10,081,952 participants were eligible for this study. The pooled global prevalence of knee OA was 16-0% (95% CI, 14-3%-17-8%) in individuals aged 15 and over and was 22-9% (95% CI, 19-8%-26-1%) in individuals aged 40 and over. Correspondingly, there are around 654-1 (95% CI, 565-6-745-6) million individuals (40 years and older) with knee OA in 2020 worldwide. The pooled global incidence of knee OA was 203 per 10,000 person-years (95% CI, 106-331) in individuals aged 20 and over. Correspondingly, there are around annual 86-7 (95% CI, 45-3-141-3) million individuals (20 years and older) with incident knee OA in 2020 worldwide. The prevalence and incidence varied substantially between individual countries and increased with age. The ratios of prevalence and incidence in females and males were 1-69 (95% CI, 1-59-1-80, p<0-00) and 1-39 (95% CI, 1-24-1-56, p<0-00), respectively.
Interpretation: Our study provides the global prevalence (16-0% [95% CI, 14-3%-17-8%]) and incidence (203 per 10,000 person-years [95% CI, 106-331]) of knee OA. These findings can be used to better assess

the global health burden of knee OA. Further prospective cohort studies are warranted to identify modifiable risk factors for providing effectively preventive strategies in the early stages of the disease. (C) 2020 The Author(s). Published by Elsevier Ltd.

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6- Incidence of Multisystem Inflammatory Syndrome in Children Among US Persons Infected With SARS-CoV-2

By:
Payne, AB (Payne, Amanda B.) [1] ; Gilani, Z (Gilani, Zunera) [1] ; Godfred-Cato, S (Godfred-Cato, Shana) [1] ; Belay, ED (Belay, Ermias D.) [1] ; Feldstein, LR (Feldstein, Leora R.) [1] ; Patel, MM (Patel, Manish M.) [1] ; Randolph, AG (Randolph, Adrienne G.) [2] , [3] ; Newhams, M (Newhams, Margaret) [2] ; Thomas, D (Thomas, Deepam) [4] ; Magleby, R (Magleby, Reed) [4] , [5] ;
Group Author:
MIS-C Incidence Authorship Grp (MIS-C Incidence Authorship Grp)
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Abstract

IMPORTANCE Multisystem inflammatory syndrome in children (MIS-C) is associated with recent or current SARS-CoV-2 infection. Information on MIS-C incidence is limited.
OBJECTIVE To estimate population-based MIS-C incidence per 1 000 000 person-months and to estimate MIS-C incidence per 1 000 000 SARS-CoV-2 infections in persons younger than 21 years.
DESIGN, SETTING, AND PARTICIPANTS This cohort study used enhanced surveillance data to identify persons with MIS-C during April to June 2020, in 7 jurisdictions reporting to both the Centers for Disease Control and Prevention national surveillance and to Overcoming COVID-19, a multicenter MIS-C study. Denominators for population-based estimates were derived from census estimates; denominators for incidence per 1 000 000 SARS-CoV-2 infections were estimated by applying published age- and month-specific multipliers accounting for underdetection of reported COVID-19 case counts. Jurisdictions included Connecticut, Georgia, Massachusetts, Michigan, New Jersey, New York (excluding New York City), and Pennsylvania. Data analyses were conducted from August to December 2020.

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EXPOSURES Race/ethnicity, sex, and age group (ie, similar to 5, 6-10, 11-15, and 16-20 years).
MAIN OUTCOMES AND MEASURES Overall and stratum-specific adjusted estimated MIS-C incidence per 1 000 000 person-months and per 1 000 000 SARS-CoV-2 infections.
RESULTS In the 7 jurisdictions examined, 248 persons with MIS-C were reported (median [interquartile range] age, 8 [4-13] years; 133 [53.6%] male; 96 persons [38.7%] were Hispanic or Latino; 75 persons [30.2%] were Black). The incidence of MIS-C per 1 000 000 person-months was 5.1 (95% CI, 4.5-5.8) persons. Compared with White persons, incidence per 1 000 000 personmonths was higher among Black persons (adjusted incidence rate ratio [aIRR], 9.26 [95% CI, 6.15-13.93]), Hispanic or Latino persons (aIRR, 8.92 [95% CI, 6.00-13.26]), and Asian or Pacific Islander (aIRR, 2.94 [95% CI, 1.49-5.82]) persons. MIS-C incidence per 1 000 000 SARS-CoV-2 infections was 316 (95% CI, 278-357) persons and was higher among Black (aIRR, 5.62 [95% CI, 3.68-8.60]), Hispanic or Latino (aIRR, 4.26 [95% CI, 2.85-6.38]), and Asian or Pacific Islander persons (aIRR, 2.88 [95% CI, 1.42-5.83]) compared with White persons. For both analyses, incidence was highest among children aged 5 years or younger (4.9 [95% CI, 3.7-6.6] children per 1 000 000 person-months) and children aged 6 to 10 years (6.3 [95% CI, 4.8-8.3] children per 1 000 000 person-months).
CONCLUSIONS AND RELEVANCE In this cohort study, MIS-C was a rare complication associated with SARS-CoV-2 infection. Estimates for population-based incidence and incidence among persons with infection were higher among Black, Hispanic or Latino, and Asian or Pacific Islander persons. Further study is needed to understand variability by race/ethnicity and age group.

Keywords
Keywords Plus
HOSPITALIZATION RATESDISEASESTATES

Incidence

7- Incidence of co-infections and superinfections in hospitalized patients with COVID-19: a retrospective cohort study

By:
Garcia-Vidal, C (Garcia-Vidal, Carolina) [1] ; Sanjuan, G (Sanjuan, Gemma) [1] ; Moreno-Garcia, E (Moreno-Garcia, Estela) [1] ; Puerta-Alcalde, P (Puerta-Alcalde, Pedro) [1] ; Garcia-Pouton, N (Garcia-Pouton, Nicole) [1] ; Chumbita, M (Chumbita, Mariana) [1] ; Fernandez-Pittol, M (Fernandez-Pittol, Mariana) [2] ; Pitart, C (Pitart, Cristina) [2] ; Inciarte, A (Inciarte, Alexy) [1] ; Bodro, M (Bodro, Marta) [1] ;
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Abstract

Objectives: To describe the burden, epidemiology and outcomes of co-infections and superinfections occurring in hospitalized patients with coronavirus disease 2019 (COVID-19).
Methods: We performed an observational cohort study of all consecutive patients admitted for >= 48 hours to the Hospital Clinic of Barcelona for COVID-19 (28 February to 22 April 2020) who were discharged or dead. We describe demographic, epidemiologic, laboratory and microbiologic results, as well as outcome data retrieved from electronic health records.
Results: Of a total of 989 consecutive patients with COVID-19, 72 (7.2%) had 88 other microbiologically confirmed infections: 74 were bacterial, seven fungal and seven viral. Community-acquired co-infection at COVID-19 diagnosis was uncommon (31/989, 3.1%) and mainly caused by Streptococcus pneumoniae and Staphylococcus aureus. A total of 51 hospital-acquired bacterial superinfections, mostly caused by Pseudomonas aeruginosa and Escherichia coli, were diagnosed in 43 patients (4.7%), with a mean (SD) time from hospital admission to superinfection diagnosis of 10.6 (6.6) days. Overall mortality was 9.8% (97/989). Patients with community-acquired co-infections and hospital-acquired superinfections had worse outcomes.

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Conclusions: Co-infection at COVID-19 diagnosis is uncommon. Few patients developed superinfections during hospitalization. These findings are different compared to those of other viral pandemics. As it relates to hospitalized patients with COVID-19, such findings could prove essential in defining the role of empiric antimicrobial therapy or stewardship strategies. (C) 2020 European Society of Clinical Microbiology and Infectious Diseases. Published by Elsevier Ltd. All rights reserved.

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Co-infectionsCOVID-19MortalitySARS-CoV-2Superinfections
Keywords Plus
INFLUENZA-A

Incidence

8- Association of Social and Demographic Factors With COVID-19 Incidence and Death Rates in the US

By:
Karmakar, M (Karmakar, Monita) [1] ; Lantz, PM (Lantz, Paula M.) [2] , [3] , [4] ; Tipirneni, R (Tipirneni, Renuka) [1] , [4]

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Abstract

Question Are population-level social factors associated with coronavirus disease 2019 (COVID-19) incidence and mortality? Findings In this cross-sectional study including 4 289 283 COVID-19 cases and 147 074 COVID-19 deaths, county-level sociodemographic risk factors as assessed by the Social Vulnerability Index were associated with greater COVID-19 incidence and mortality. Meaning These findings suggest that to address inequities in the burden of the COVID-19 pandemic, these sociodemographic risk factors and their root causes must be addressed.

Importance Descriptive data have revealed significant racial/ethnic disparities in coronavirus disease 2019 (COVID-19) cases in the US, but underlying mechanisms of disparities remain unknown. Objective To examine the association between county-level sociodemographic risk factors and US COVID-19 incidence and mortality. Design, Setting, and Participants This cross-sectional study analyzed the association between US county-level sociodemographic risk factors and COVID-19 incidence using mixed-effects negative binomial regression, and COVID-19 mortality using zero-inflated negative binomial regression. Data on COVID-19 incidence and mortality were collected from January 20 to July 29, 2020. The association of social risk factors with weekly cumulative incidence and mortality was also examined by interacting time with the index measures, using a random intercept to account for repeated measures. Main Outcomes and Measures Sociodemographic data from publicly available data sets, including the US Centers for Disease Control and Prevention's Social Vulnerability Index (SVI), which includes subindices of socioeconomic status, household composition and disability, racial/ethnic minority and English language proficiency status, and housing and transportation. Results As of July 29, 2020, there were a total of 4 289 283 COVID-19 cases and 147 074 COVID-19 deaths in the US. An increase of 0.1 point in SVI score was

associated with a 14.3% increase in incidence rate (incidence rate ratio [IRR], 1.14; 95% CI, 1.13-1.16; P < .001) and 13.7% increase in mortality rate (IRR, 1.14; 95% CI, 1.12-1.16; P < .001), or an excess of 87 COVID-19 cases and 3 COVID-19 deaths per 100 000 population for a SVI score change from 0.5 to 0.6 in a midsize metropolitan county; subindices were also associated with both outcomes. A 0.1-point increase in the overall SVI was associated with a 0.9% increase in weekly cumulative increase in incidence rate (IRR, 1.01; 95% CI, 1.01-1.01; P < .001) and 0.5% increase in mortality rate (IRR, 1.01; 95% CI, 1.01-1.01; P < .001). Conclusions and Relevance In this cross-sectional study, a wide range of sociodemographic risk factors, including socioeconomic status, racial/ethnic minority status, household composition, and environmental factors, were significantly associated with COVID-19 incidence and mortality. To address inequities in the burden of the COVID-19 pandemic, these social vulnerabilities and their root causes must be addressed. This cross-sectional study examines the county-level associations of sociodemographic risk factors with coronavirus disease 2019 incidence and mortality in the US.

Keywords
Keywords Plus
IMPACT

9- Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries

By:
Sung, H (Sung, Hyuna) [1] ; Ferlay, J (Ferlay, Jacques) [2] ; Siegel, RL (Siegel, Rebecca L.) [1] ; Laversanne, M (Laversanne, Mathieu) [2] ; Soerjomataram, I (Soerjomataram, Isabelle) [2] ; Jemal, A (Jemal, Ahmedin) [1] ; Bray, F (Bray, Freddie) [2]
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Abstract

This article provides an update on the global cancer burden using the GLOBOCAN 2020 estimates of cancer incidence and mortality produced by the International Agency for Research on Cancer. Worldwide, an estimated 19.3 million new cancer cases (18.1 million excluding nonmelanoma skin cancer) and almost 10.0 million cancer deaths (9.9 million excluding nonmelanoma skin cancer) occurred in 2020. Female breast cancer has surpassed lung cancer as the most commonly diagnosed cancer, with an estimated 2.3 million new cases (11.7%), followed by lung (11.4%), colorectal (10.0 %), prostate (7.3%), and stomach (5.6%) cancers. Lung cancer remained the leading cause of cancer death, with an estimated 1.8 million deaths (18%), followed by colorectal (9.4%), liver (8.3%), stomach (7.7%), and female breast (6.9%) cancers. Overall incidence was from 2-fold to 3-fold higher in transitioned versus transitioning countries for both sexes, whereas mortality varied <2-fold for men and little for women. Death rates for female breast and cervical cancers, however, were considerably higher in transitioning versus transitioned countries (15.0 vs 12.8 per 100,000 and 12.4 vs 5.2 per 100,000, respectively). The global cancer burden is expected to be 28.4 million cases in 2040, a 47% rise from 2020, with a larger increase in transitioning

(64% to 95%) versus transitioned (32% to 56%) countries due to demographic changes, although this may be further exacerbated by increasing risk factors associated with globalization and a growing economy. Efforts to build a sustainable infrastructure for the dissemination of cancer prevention measures and provision of cancer care in transitioning countries is critical for global cancer control.

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burdencancerepidemiologyincidencemortality
Keywords Plus
MIDDLE-INCOME COUNTRIESBODY-MASS INDEXDIFFERENTIATED THYROID-CANCERCOMPARATIVE MODELING ANALYSISSQUAMOUS-CELL CARCINOMASUB-SAHARAN AFRICAB-VIRUS-INFECTIONBREAST-CANCERCERVICAL-CANCERUNITED-STATES

Incidence

10- Relationship between SARS-CoV-2 infection and the incidence of ventilator-associated lower respiratory tract infections: a European multicenter cohort study

By:
Rouze, A (Rouze, Anahita) [1] , [2] ; Martin-Loeches, I (Martin-Loeches, Ignacio) [3] , [4] ; Povoa, P (Povoa, Pedro) [5] , [6] , [7] , [8] ; Makris, D (Makris, Demosthenes) [9] ; Artigas, A (Artigas, Antonio) [10] ; Bouchereau, M (Bouchereau, Mathilde) [1] ; Lambiotte, F (Lambiotte, Fabien) [11] ; Metzelard, M (Metzelard, Matthieu) [12] ; Cuchet, P (Cuchet, Pierre) [13] ; Geronimi, CB (Boulle Geronimi, Claire) [14] ;
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Abstract

Purpose Although patients with SARS-CoV-2 infection have several risk factors for ventilator-associated lower respiratory tract infections (VA-LRTI), the reported incidence of hospital-acquired infections is low. We aimed to determine the relationship between SARS-CoV-2 pneumonia, as compared to influenza pneumonia or no viral infection, and the incidence of VA-LRTI. Methods Multicenter retrospective European cohort performed in 36 ICUs. All adult patients receiving invasive mechanical ventilation > 48 h were eligible if they had: SARS-CoV-2 pneumonia, influenza pneumonia, or no viral infection at ICU admission. VA-LRTI, including ventilator-associated tracheobronchitis (VAT) and ventilator-associated pneumonia (VAP), were diagnosed using clinical, radiological and quantitative microbiological criteria. All VA-LRTI were prospectively identified, and chest-X rays were analyzed by at least two physicians. Cumulative incidence of first episodes of VA-LRTI was estimated using the Kalbfleisch and Prentice method, and compared using Fine-and Gray models. Results 1576 patients were included (568 in SARS-

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CoV-2, 482 in influenza, and 526 in no viral infection groups). VA-LRTI incidence was significantly higher in SARS-CoV-2 patients (287, 50.5%), as compared to influenza patients (146, 30.3%, adjusted sub hazard ratio (sHR) 1.60 (95% confidence interval (CI) 1.26 to 2.04)) or patients with no viral infection (133, 25.3%, adjusted sHR 1.7 (95% CI 1.2 to 2.39)). Gram-negative bacilli were responsible for a large proportion (82% to 89.7%) of VA-LRTI, mainly Pseudomonas aeruginosa, Enterobacter spp., and Klebsiella spp. Conclusions The incidence of VA-LRTI is significantly higher in patients with SARS-CoV-2 infection, as compared to patients with influenza pneumonia, or no viral infection after statistical adjustment, but residual confounding may still play a role in the effect estimates.

Keywords
Author Keywords
SARS-CoV-2COVID-19Ventilator-associated pneumoniaVentilator-associated tracheobronchitisCritical illness
Keywords Plus
ACQUISITION

Incidence

11- Global Incidence of Neurological Manifestations Among Patients Hospitalized With COVID-19-A Report for the GCS-NeuroCOVID Consortium and the ENERGY Consortium

By:
Chou, SHY (Chou, Sherry H. -Y.) [1] , [2] , [3] ; Beghi, E (Beghi, Ettore) [4] ; Helbok, R (Helbok, Raimund) [5] ; Moro, E (Moro, Elena) [6] ; Sampson, J (Sampson, Joshua) [7] ; Altamirano, V (Altamirano, Valeria) [1] ; Mainali, S (Mainali, Shraddha) [8] ; Bassetti, C (Bassetti, Claudio) [9] ; Suarez, JI (Suarez, Jose I.) [10] , [11] , [12] ; McNett, M (McNett, Molly) [13]
Group Authors:
GCS-NeuroCOVID Consortium (GCS-NeuroCOVID Consortium) ; Energy Consortium (Energy Consortium)
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Abstract

IMPORTANCE The COVID-19 pandemic continues to affect millions of people globally, with increasing reports of neurological manifestations but limited data on their incidence and associations with outcome.
OBJECTIVE To determine the neurological phenotypes, incidence, and outcomes among adults hospitalized with COVID-19.
DESIGN, SETTING, AND PARTICIPANTS This cohort study included patients with clinically diagnosed or laboratory-confirmed COVID-19 at 28 centers, representing 13 countries and 4 continents. The study was performed by the Global Consortium Study of Neurologic Dysfunction in COVID-19 (GCS-NeuroCOVID) from March 1 to September 30, 2020, and the European Academy of Neurology (EAN) Neuro-COVID Registry (ENERGY) from March to October 2020. Three cohorts were included: (1) the GCS-NeuroCOVID all COVID-19 cohort (n = 3055), which included consecutive hospitalized patients with COVID-19 with and without neurological manifestations; (2) the GCS-NeuroCOVID COVID-19 neurological cohort (n = 475), which comprised consecutive patients hospitalized with COVID-19 who had confirmed neurological

manifestations; and (3) the ENERGY cohort (n = 214), which included patients with COVID-19 who received formal neurological consultation.
EXPOSURES Clinically diagnosed or laboratory-confirmed COVID-19.
MAIN OUTCOMES AND MEASURES Neurological phenotypes were classified as self-reported symptoms or neurological signs and/or syndromes assessed by clinical evaluation. Composite incidence was reported for groups with at least 1 neurological manifestation. The main outcome measure was in-hospital mortality. RESULTS Of the 3055 patients in the all COVID-19 cohort, 1742 (57%) were men, and the mean age was 59.9 years (95% CI, 59.3-60.6 years). Of the 475 patients in the COVID-19 neurological cohort, 262 (55%) were men, and the mean age was 62.6 years (95% CI, 61.1-64.1 years). Of the 214 patients in the ENERGY cohort, 133 (62%) were men, and the mean age was 67 years (95% CI, 52-78 years). A total of 3083 of 3743 patients (82%) across cohorts had any neurological manifestation (self-reported neurological symptoms and/or clinically captured neurological sign and/or syndrome). The most common self-reported symptoms included headache (1385 of 3732 patients [37%]) and anosmia or ageusia (977 of 3700 patients [26%]). The most prevalent neurological signs and/or syndromes were acute encephalopathy (1845 of 3740 patients [49%]), coma (649 of 3737 patients [17%]), and stroke (222 of 3737 patients [6%]), while meningitis and/or encephalitis were rare (19 of 3741 patients [0.5%]). Presence of clinically captured neurologic signs and/or syndromes was associated with increased risk of in-hospital death (adjusted odds ratio [aOR], 5.99; 95% CI, 4.33-8.28) after adjusting for study site, age, sex, race, and ethnicity. Presence of preexisting neurological disorders (aOR, 2.23; 95% CI, 1.80-2.75) was associated with increased risk of developing neurological signs and/or syndromes with COVID-19.
CONCLUSIONS AND RELEVANCE In this multicohort study, neurological manifestations were prevalent among patients hospitalized with COVID-19 and were associated with higher in-hospital mortality. Preexisting neurological disorders were associated with increased risk of developing neurological signs and/or syndromes in COVID-19.

Keywords
Keywords Plus
COMPLICATIONS

Incidence

12- Incidence, co-occurrence, and evolution of long-COVID features: A 6-month retrospective cohort study of 273,618 survivors of COVID-19

By:
Taquet, M (Taquet, Maxime) [1] , [2] ; Dercon, Q (Dercon, Quentin) [1] ; Luciano, S (Luciano, Sierra) [3] ; Geddes, JR (Geddes, John R.) [1] , [2] ; Husain, M (Husain, Masud) [4] , [5] ; Harris, PJ (Harris, Paul J.) [1] , [2]
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Background
Long-COVID refers to a variety of symptoms affecting different organs reported by people following Coronavirus Disease 2019 (COVID-19) infection. To date, there have been no robust estimates of the incidence and co-occurrence of long-COVID features, their relationship to age, sex, or severity of infection, and the extent to which they are specific to COVID-19. The aim of this study is to address these issues.
Methods and findings
We conducted a retrospective cohort study based on linked electronic health records (EHRs) data from 81 million patients including 273,618 COVID-19 survivors. The incidence and co-occurrence within 6 months and in the 3 to 6 months after COVID-19 diagnosis were calculated for 9 core features of long-COVID (breathing difficulties/breathlessness, fatigue/ malaise, chest/throat pain, headache, abdominal symptoms, myalgia, other pain, cognitive symptoms, and anxiety/depression). Their co-occurrence network was also analyzed. Comparison with a propensity score-matched cohort of patients diagnosed with influenza during the same time period was achieved using Kaplan-Meier analysis and the Cox proportional hazard model. The incidence of atopic dermatitis was used as a negative control.
Among COVID-19 survivors (mean [SD] age: 46.3 [19.8], 55.6% female), 57.00% had one or more long-COVID feature recorded during the whole 6-month period (i.e., including the acute phase), and 36.55% between 3 and 6 months. The incidence of each feature was: abnormal breathing (18.71% in the 1- to

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180-day period; 7.94% in the 90- to 180-day period), fatigue/malaise (12.82%; 5.87%), chest/throat pain (12.60%; 5.71%), headache (8.67%; 4.63%), other pain (11.60%; 7.19%), abdominal symptoms (15.58%; 8.29%), myalgia (3.24%; 1.54%), cognitive symptoms (7.88%; 3.95%), and anxiety/depression (22.82%; 15.49%). All 9 features were more frequently reported after COVID-19 than after influenza (with an overall excess incidence of 16.60% and hazard ratios between 1.44 and 2.04, all $p < 0.001$), co-occurred more commonly, and formed a more interconnected network. Significant differences in incidence and co-occurrence were associated with sex, age, and illness severity. Besides the limitations inherent to EHR data, limitations of this study include that (i) the findings do not generalize to patients who have had COVI D 1 9 but were not diagnosed, nor to patients who do not seek or receive medical attention when experiencing symptoms of long-COVID; (ii) the findings say nothing about the persistence of the clinical features; and (iii) the difference between cohorts might be affected by one cohort seeking or receiving more medical attention for their symptoms.

Conclusions

Long-COVID clinical features occurred and co-occurred frequently and showed some specificity to COVI D 19, though they were also observed after influenza. Different long-COVID clinical profiles were observed based on demographics and illness severity.

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13- The Incidence of SARS-CoV-2 Reinfection in Persons With Naturally Acquired Immunity With and Without Subsequent Receipt of a Dose of BNT162b2 Vaccine

By:
Gazit, S (Gazit, Sivan) [1] , [2] ; Shlezinger, R (Shlezinger, Roei) [1] ; Perez, G (Perez, Galit) [2] ; Lotan, R (Lotan, Roni) [2] ; Peretz, A (Peretz, Asaf) [1] , [3] ; Ben-Tov, A (Ben-Tov, Amir) [1] , [4] ; Herzel, E (Herzel, Esma) [2] ; Alapi, H (Alapi, Hillel) [2] ; Cohen, D (Cohen, Dani) [4] ; Muhsen, K (Muhsen, Khitam) [4] ;
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Abstract
Background: There is insufficient evidence regarding the magnitude and durability of protection conferred by a com-bined effect of naturally acquired immunity after SARS-CoV-2 infection and vaccine-induced immunity. Objective: To compare the incidence rate of SARS-CoV-2 reinfection in previously infected persons to that of previ-ously infected persons who subsequently received a single dose of BNT162b2 messenger RNA vaccine. Design: A retrospective cohort study emulating a random-ized controlled target trial through a series of nested trials. Setting: Nationally centralized database of Maccabi Healthcare Services, Israel. Participants: Persons with documented SARS-CoV-2 infection who did not receive subsequent SARS-CoV-2 vaccination were compared with persons with documented SARS-CoV-2 infection who received a single dose of the BNT162b2 vaccine at least 3 months after infection. Intervention: Forty-one randomized controlled trials were emu-lated, in which 107413 Maccabi Healthcare Services' members aged 16 years and older were eligible for at least 1 trial. Measurements: SARS-CoV-2-related outcomes of infection, symptomatic disease, hospitalization, and death, between 2 March and 13 December 2021. Results: A statistically significant decreased risk (hazard ratio, 0.18 [95% CI, 0.15 to 0.20]) for reinfection was found among persons who were previously infected and then vaccinated versus those who were previously infected but remained unvaccinated. In addition, there was a decreased risk for symptomatic disease (hazard ratio, 0.24 [CI, 0.20 to 0.29]) among previously infected and vaccinated persons com -pared with those who were not vaccinated after infection. No COVID-19-related mortality

cases were found. Limitation: Hybrid protection against non-Delta variants could not be inferred. Conclusion: Persons previously infected with SARS-CoV-2 gained additional protection against reinfection and COVID-19 from a subsequent single dose of the BNT162b2 vaccine. Nonetheless, even without a subsequent vaccination, reinfec-tion appeared relatively rare. Primary Funding Source: None. Ann Intern Med. 2022;175:674-681. doi:10.7326/M21-4130 Annals.org For author, article, and disclosure information, see end of text. This article was published at Annals.org on 15 February 2022.

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Incidence

14- The effects of the national HPV vaccination programme in England, UK, on cervical cancer and grade 3 cervical intraepithelial neoplasia incidence: a register-based observational study

By:
Falcaro, M (Falcaro, Milena) [1] ; Castanon, A (Castanon, Alejandra) [1] ; Ndlela, B (Ndlela, Busani) [2] ; Checchi, M (Checchi, Marta) [3] ; Soldan, K (Soldan, Kate) [3] ; Lopez-Bernal, J (Lopez-Bernal, Jamie) [4] ; Elliss-Brookes, L (Elliss-Brookes, Lucy) [5] ; Sasieni, P (Sasieni, Peter) [1] , [6]
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Abstract

Background Human papillomavirus (HPV) immunisation with a bivalent vaccine (Cervarix) was introduced in England, UK, in Sept 1, 2008: routine vaccination was offered to girls aged 12-13 years with a catch-up programme for females aged 14-18 years in 2008-10. We quantified the early effect of this immunisation programme on cervical cancer and cervical carcinoma in situ, namely grade 3 cervical intraepithelial neoplasia (CIN3), registrations.

Methods In this observational study, we used an extension of the age-period-cohort Poisson model to estimate the relative risk of cervical cancer in three vaccinated cohorts compared with earlier cohorts that were not eligible for HPV vaccination. Data from a population-based cancer registry were extracted on Jan 26, 2021, and were assessed for diagnoses of cervical cancer and CIN3 from Jan 1, 2006 to June 30, 2019 in women aged 20-64 years and who were a resident in England. We used three vaccinated cohorts to account for differences in the school year in which the vaccine was offered and its national coverage. Adjustment for confounding was made using information on changes in cervical screening policy and historical events that affected cervical cancer incidence. Results were compared across models with different adjustments for confounders.

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Findings We used data from a total of 13.7 million-years of follow-up of women aged 20 years to younger than 30 years. The estimated relative reduction in cervical cancer rates by age at vaccine offer were 34% (95% CI 25-41) for age 16-18 years (school year 12-13), 62% (52-71) for age 14-16 years (school year 10-11), and 87% (72-94) for age 12-13 years (school year 8), compared with the reference unvaccinated cohort. The corresponding risk reductions for CIN3 were 39% (95% CI 36-41) for those offered at age 16-18 years, 75% (72-77) for age 14-16 years, and 97% (96-98) for age 12-13 years. These results remained similar across models. We estimated that by June 30, 2019 there had been 448 (339-556) fewer than expected cervical cancers and 17 235 (15 919-18 552) fewer than expected cases of CIN3 in vaccinated cohorts in England.

Interpretation We observed a substantial reduction in cervical cancer and incidence of CIN3 in young women after the introduction of the HPV immunisation programme in England, especially in individuals who were offered the vaccine at age 12-13 years. The HPV immunisation programme has successfully almost eliminated cervical cancer in women born since Sept 1, 1995.

Keywords

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MODELSREGRESSIONIMPACT

Incidence

15- Cancer incidence, mortality, and burden in China: a time-trend analysis and comparison with the United States and United Kingdom based on the global epidemiological data released in 2020

By:
Qiu, HB (Qiu, Haibo) [1] ; Cao, SM (Cao, Sumei) [2] ; Xu, RH (Xu, Ruihua) [3]
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Abstract

Background Cancer is one of the leading causes of death and a main economic burden in China. Investigating the differences in cancer patterns and control strategies between China and developed countries could provide reference for policy planning and contribute to improving cancer control measures. In this study, we reviewed the rates and trends of cancer incidence and mortality and disability-adjusted life year (DALY) burden in China, and compared them with those in the United States (US) and the United Kingdom (UK). Methods Cancer incidence, mortality, and DALY data for China, US and UK were obtained from the GLOBOCAN 2020 online database, Global Burden of Disease (GBD) 2019 study, and Cancer Incidence in Five Continents plus database (CI5 plus). Trends of cancer incidence and mortality in China, US, and UK were analyzed using Joinpoint regression models to calculate annual percent changes (APCs) and identify the best-fitting joinpoints. Results An estimated 4,568,754 newly diagnosed cancer cases and 3,002,899 cancer deaths occurred in China in 2020. Additionally, cancers resulted in 67,340,309 DALYs in China. Compared to the US and UK, China had lower cancer incidence but higher cancer mortality and DALY rates. Furthermore, the cancer spectrum of China was changing, with a rapid increase incidence and burden of lung, breast, colorectal, and prostate cancer in addition to a high incidence and heavy burden of liver, stomach, esophageal, and cervical cancer. Conclusions The cancer spectrum of China is changing from a developing country to a developed country. Population aging and increase of unhealthy

lifestyles would continue to increase the cancer burden of China. Therefore, the Chinese authorities should adjust the national cancer control program with reference to the practices of cancer control which have been well-established in the developed countries, and taking consideration of the diversity of cancer types by of different regions in China at the same time.

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Incidence

16- Cancer Incidence, Mortality, Years of Life Lost, Years Lived With Disability, and Disability-Adjusted Life Years for 29 Cancer Groups From 2010 to 2019 A Systematic Analysis for the Global Burden of Disease Study 2019

By:
Kocarnik, JM (Kocarnik, Jonathan M.) [1] ; Compton, K (Compton, Kelly) [1] ; Dean, FE (Dean, Frances E.) [1] ; Fu, WJ (Fu, Weijia) [1] ; Gaw, BL (Gaw, Brian L.) [1] ; Harvey, JD (Harvey, James D.) [1] ; Henrikson, HJ (Henrikson, Hannah Jacqueline) [2] , [3] ; Lu, D (Lu, Dan) [1] ; Pennini, A (Pennini, Alyssa) [1] ; Xu, RX (Xu, Rixing) [1] ;
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Abstract

IMPORTANCE The Global Burden of Diseases, Injuries, and Risk Factors Study 2019 (GBD 2019) provided systematic estimates of incidence, morbidity, and mortality to inform local and international efforts toward reducing cancer burden.

OBJECTIVE To estimate cancer burden and trends globally for 204 countries and territories and by Sociodemographic Index (SDI) quintiles from 2010 to 2019.

EVIDENCE REVIEW The GBD 2019 estimation methods were used to describe cancer incidence, mortality, years lived with disability, years of life lost, and disability-adjusted life years (DALYs) in 2019 and over the past decade. Estimates are also provided by quintiles of the SDI, a composite measure of educational attainment, income per capita, and total fertility rate for those younger than 25 years. Estimates include 95% uncertainty intervals (UIs).

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FINDINGS In 2019, there were an estimated 23.6 million (95% UI, 22.2-24.9 million) new cancer cases (17.2 million when excluding nonmelanoma skin cancer) and 10.0 million (95% UI, 9.36-10.6 million) cancer deaths globally, with an estimated 250 million (235-264 million) DALYs due to cancer. Since 2010, these represented a 26.3%(95% UI, 20.3%-32.3%) increase in new cases, a 20.9%(95% UI, 14.2%-27.6%) increase in deaths, and a 16.0% (95% UI, 9.3%-22.8%) increase in DALYs. Among 22 groups of diseases and injuries in the GBD 2019 study, cancer was second only to cardiovascular diseases for the number of deaths, years of life lost, and DALYs globally in 2019. Cancer burden differed across SDI quintiles. The proportion of years lived with disability that contributed to DALYs increased with SDI, ranging from 1.4%(1.1%-1.8%) in the low SDI quintile to 5.7%(4.2%-7.1%) in the high SDI quintile. While the high SDI quintile had the highest number of new cases in 2019, the middle SDI quintile had the highest number of cancer deaths and YDALYs. From 2010 to 2019, the largest percentage increase in the numbers of cases and deaths occurred in the low and low-middle SDI quintiles.

CONCLUSIONS AND RELEVANCE The results of this systematic analysis suggest that the global burden of cancer is substantial and growing, with burden differing by SDI. These results provide comprehensive and comparable estimates that can potentially inform efforts toward equitable cancer control around the world.

Keywords

Keywords Plus

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