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Purpose: Analysis of the frequency of transmission SARS-CoV2 in different age groups and locations allows to identify risks of transmission, influencing on the spread of COVID-19 in the population and to strengthen the control on pandemic

Methods & Materials: Epidemiological analysis of contacts with primary cases of COVID-19 and secondary cases of infection for 6 months of 2020 in the different age groups was performed on the data of epidemiological surveillance system in 190,856 COVID-19 patients and 146,996 their contacts

Results: Patients with mild form of disease had the main proportion of contact - 50.6 %, moderate form - 45.8%. The proportion of contacts in patients with severe form was only 3.6%.

Group aged 41-64 years had the highest number of cases (44.4%) and contacts (44,5%), aged 18-40 years - 30.2% of cases and 34.2% of contacts; 0-6 years - 2.7% of cases and 1,9% of contacts, 7-17 - 4,0 % of the cases and 3.1% of the contact. The number of contact persons was directly related to the number of secondary cases of the disease in all age groups: at the age of 0-6 years - 3.5 %, 7-17 years - 5,8 %, 18-40- 33,9%, 41-64 - 42,1%, 65 and older -14.7%.

Patients of all age groups mainly contacted with healthy people in domestic focuses: the age group 0-17 years accounted for 65.9% of contacts, 18-40 years - 63.9%, 41-64 years - 64.2% over 65 years - 65.18%, respectively.

The frequency of contacts at work was the highest at the age of 18-40 years – 9.0% and 41-64 years - 9.0%, but were significantly less than contacts in everyday (family) life - 63.8% and 64.2%, respectively.

Conclusion: The most active transmission of infection is carried out by patients aged 18-64 years, carrying the disease in mild and moderate-severe form. Secondary transmission of COVID-19 most of all is active in household foci in all age groups. In the age groups of 18-64 years, the transmission of infection in the workplace is also important. These results of analysis can be used to optimize prevention measures against COVID-19.

https://doi.org/10.1016/j.ijid.2021.12.124

PS07.08 (310)

Determination of SARS-CoV-2 Contamination in a Neonatal Intensive Care Unit (NICU) Environment Using Droplet Digital PCR (ddPCR)

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Purpose: Neonatal infections with SARS-CoV-2 are thought to be less contagious than in older children and adults. The transmission of SARS-CoV-2 from neonates and their environment has not been well studied. Droplet Digital PCR (ddPCR) is an emerging and sensitive technology that can aid infection control investigations. We sought to document surface contamination within the immediate environment of a preterm neonate with congenital COVID-19 using ddPCR.

Methods & Materials: On day 5 of life, a total of 23 environmental samples were collected in Eswabs (Amies media) based on proximity to the neonate, from the inside (7) and outside (16) of the neonate's incubator for ddPCR analysis. Samples were extracted, using an in-house method and each extract was run for reverse-transcription ddPCR measurement using the Bio-Rad SARS-CoV-2 ddPCR Kit. The 96-well RT-ddPCR ready plate was loaded into the QX200 Droplet Reader (Bio-Rad, Pleasanton, CA). The fluorescence intensity of each droplet was measured, and droplets were determined to be positive or negative for gene targets (N1, N2).

Results: All samples collected from outside of the incubator were negative.These included: a stethoscope hanging outside of the incubator, nearby keyboard/mouse, wireless phone receiver, barcode scanner, blood culture bottles, pens/pencils, light switches, weigh scale, countertop/shelf, cart with drawers and incubator port release clips. Samples collected from inside the incubator were positive for SARS-CoV-2. These results reported in copies per microlitre (cp/µL) extract included: the swaddle cloth (0.4 N2), sheets behind the neonate's head (11.4 N1, 16.9 N2), cardiorespiratory and saturation monitor leads and cables near the neonate's head (2.8 N1,4.5 N2), near the neonate's feet (2.1 N1, 3.7 N2), and nametags hanging on a panel (1.0 N1,1.2 N2). The highest levels were noted from the neonate's drool (25.2 N1, 35.2 N2).

Conclusion: The presence of SARS-CoV-2 was confirmed by ddPCR in environmental samples inside the incubator confirming the ability of the neonate to spread the virus in close quarters. No virus was identified outside of the incubator which suggests appropriate hand hygiene and disinfection of environmental surfaces. ddPCR appears to be a useful tool for investigating the potential role of fomites in COVID-19 transmission

https://doi.org/10.1016/j.ijid.2021.12.125

PS07.09 (666)

Clinical and epidemiological assessment of the epidemic process of covid-19 in hostels depending on the type of their planning arrangement

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Purpose: During the COVID-19 pandemic, people living in dormitories became one of the most vulnerable groups of the population involved in the process of focal morbidity.

Aim: To analyze the clinical and epidemiological features of the manifestation of the epidemic process of COVID-19 in hostels, depending on the type of their planning arrangement.

Methods & Materials: A prospective analytical study of 350 foci of COVID-19 formed in hostels in Moscow in the period from 04.12.2020 to 06.23.2020 with 3,228 cases in total.

Results: The epidemic process in the corridor-type dormitories (CTB) had an earlier development, the first foci of COVID-19 began to form as early as 04/12/2020, which was 7 days ahead of the formation of foci in block-type dormitories (BCD). The average growth rate in the corridor-type dormitories was 8.4%, which was 5.3 times higher than the corresponding indicator in block-type dormitories. The prevalence rate was 1.5 times higher in the corridor-type dormitories. From 04/12/2020 to 06/23/2020, the number of COVID-19 infected in the block-type dormitories was significantly less than in the corridor-type dormitories: there were 4 cases of infection per 100 guests of the block-type dormitories, while in the corridor-type dormitories there were 10 cases of COVID-19 per

100 residents. The prevalence rate of severe COVID-19 in block-type dormitories was 1.1%, while in corridor-type dormitories the studied coefficient was 11 times higher and averaged 11.6%.

Conclusion: The type of planning arrangement of collective housing organizations is a fundamental factor influencing on the course of epidemic process of COVID-19 in dormitories. The complex of necessary anti-epidemic measures aimed at localizing

https://doi.org/10.1016/j.ijid.2021.12.126

PS07.10 (472)

No Difference in the Incubation Period of COVID-19 in Different Gender, Ages, and Epidemic Periods in South Korea

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Purpose: The incubation period is an important epidemiologic characteristic of infectious diseases in determining the quarantine period. In South Korea, there still have been debates about the quarantine period of coronavirus 2019 (COVID-19). Furthermore, the differences in the incubation period of COVID-19 by age and gender are still not well understood.

Methods & Materials: We collected data on COVID-19 cases published by the South Korean public health authorities. Using this data, we estimated the incubation period by fitting three different distributions (Weibull, gamma, and log-normal) by gender, age group, and the different epidemic periods of COVID-19. We divided our study into two epidemic periods (First epidemic wave: 28 January 2020 – 18 April 2020, Second epidemic wave: 19 April 2020 – 30 August 2020). We used the Wilcoxon test to assess for any significant differences between the incubation periods by gender, epidemic period, and age group. We selected the best-fit model by comparing the Akaike Information Criterion. All analyses were done in R version 3.6.1 and level of significance was set at p-value < 0.05.

Results: The log-normal model was best fitted in the study. The estimated median incubation period using the log-normal model was 4.6 days (95% confidence interval: 1.19 - 1.34), and the 95th percentile was 11.74 days. There was no significant difference in incubation period between males and females ($P = 0.42$), as well as with the epidemic periods ($P = 0.77$).

Conclusion: This study provides evidence for the median incubation period for COVID-19 of approximately 4.6 days. Our work brings out more evidence of the incubation period for COVID-19 and shows that it may be prudent to continue with the current 14-day quarantine policy.

https://doi.org/10.1016/j.ijid.2021.12.127

PS07.11 (593)

Detection of SARS-CoV-2 IgM Antibodies in Febrile Patients From an Endemic Region of Dengue and Chikungunya

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Purpose: The rapid expansion of the novel SARS-CoV-2 virus has raised serious public health concerns due to the possibility of misdiagnosis in regions where arboviral diseases are endemic. We performed the first study in northern Peru to describe the detection SARS-CoV-2 IgM antibodies in febrile patients from an endemic zone for dengue virus (DENV) and chikungunya virus (CHIKV).

Methods & Materials: A cross-sectional study was performed in febrile patients attending primary healthcare centers from April 2020 through March 2021. This study was carried out jointly with the national surveillance system for the etiological identification of acute febrile illness (AFI). Patients are included if they attended outpatient clinics with AFI (axillary temperature greater than or equal to 38°C in the previous 7 days) along with one or more of the following symptoms: headache, myalgias, arthralgias, retro-ocular pain, lumbar pain, arthritis, nausea, rash, among others. Serum samples were collected from each patient, for the molecular and serological detection of DENV and CHIKV by RT-PCR and IgM ELISA-based assay, respectively. Also, the detection of IgM antibodies against SARS-CoV-2 with an ELISA-based assay was performed.

Results: 464 patients were included during the study period, of which 188 (40.51%) were positive for one pathogen, meanwhile 32 (6.90%) presented co-infections between 2 or more pathogens. The majority of patients with monoinfections were positive for SARS-CoV-2 IgM with 73.40%, followed by DENV 18.09% and CHIKV 8.51%. The most frequent co-infection was DENV + SARS-CoV-2 with 65.63%, followed by DENV + CHIKV and DENV + CHIKV + SARS-CoV-2, both with 12.50%. The presence of polyarthralgias in hands ($p<0.01$) and feet ($p=0.05$) were more frequently reported in patients with CHIKV monoinfection. Also conjunctivitis was more common in patients positive for SARS-CoV-2 IgM ($p<0.01$). The rest of the symptoms were similar among all the study groups.