antagonistic feelings depending on the experiences of each person. This strategy may engender fear, mistrust, solidarity, and/or empathy in different scenarios and among different people.[5] The disclosure of statistical data about the efficacy of social isolation practices does not guarantee that the real benefits or harms of epidemiological surveillance will be understood. The structure of these truths is a fragile one, and the responses of different cultures may not be predictable or standardized. Indexes related to the efficiency of the social isolation strategy tend to reinforce the idea of isolation as the most appropriate alternative, thus imposing the truth on the populations constrained.[6] Thus, when thought of as a global recommendation that is confirmed as "numerically appropriate," the social isolation discourse subjectifies the individuals who, for different reasons, are pressured to comply with the norm.

There are reasons to make social isolation more flexible. Reasons supported by other statistical data that highlight possible problems caused by this practice (eg, anxiety, economic downturn, and domestic violence) might lead to a different strategy, even if it is not "the best choice." Individuals live and are inseparable from their environments, therefore, experience different spatialities. Thus, the places they live produce different ways of being.[4] Thus, far from an attempt to question the validity of social isolation, the importance of questioning the effects of such a biopolitical strategy emerges. Whether a biopolitical strategy that recommends social isolation, as it is occurring, will be successful in preventing the spread of the disease remains unknown, and the real impact, in all spheres of life of different individuals, remains uncertain. Isolation of populations may successfully prevent the spread of infection but may also result in tensions and the deterioration of the public mental health.

Acknowledgments.

Financial support. No financial support was provided relevant to this article.

Conflicts of interest. All authors report no conflicts of interest relevant to this article.

References

1. Hessel Dias VMC, Cunha, CA, Vidal CFL, *et al.* Guidelines on the diagnosis, treatment and isolation of patients with COVID-19. *J Infect Control* 2020;9:58–77.
2. Carneiro M, Trench FJP, Waib LF, *et al.* H1N1 Influenza 2009: review of the first pandemic of the XXI century. *Revista AMRIGS* 2010;54: 206–213.
3. Carneiro M, Bercini MA, da Silva Lara B, *et al.* The influenza A/H1N1 pandemic in southern Brazil. *Infect Control Hosp Epidemiol* 2011;32:1235–1237.
4. Darsie C, Weber DL. Disease and space control: issues about dispersion and isolation in pandemic times? *J Infect Control* 2020;9:47–48.
5. Areosa VC, Gaedke MA. The COVID-19 pandemic, social isolation, and scientific journals. *J Infect Control* 2020;9:134–135.
6. Foucault M. Du gouvenrnement des vivants. Cours au Collège de France, 1970–1980; About the Beginning of the Hermeneutics of the Self. Two Lectures at Dartmouth, 1980.

An outbreak of coronavirus disease 2019 (COVID-19) in hematology staff via airborne transmission

Lisa Saidel-Odes MD[1,2], Lior Nesher MD[2], Ronit Nativ RN, MPH[3] and Abraham Borer[1,2]

[1]Infection Control and Hospital Epidemiology Unit, Soroka University Medical Center and the Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer-Sheva, Israel, [2]Infectious Diseases Unit, Soroka University Medical Center and the Faculty of Health Sciences, Ben-Gurion University of the Negev, Beer-Sheva, Israel and [3]Infection Control and Hospital Epidemiology Unit, Soroka University Medical Center, Beer-Sheva, Israel

To the Editor—Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) has caused the coronavirus disease 2019 (COVID-19) pandemic. The most common type of transmission is through large respiratory droplet particles. The 2 other accepted modes of SARS-CoV-2 transmission are direct contact and through inhaling aerosols.[1,2] At the beginning of the pandemic, airborne transmission was recognized only for aerosol-generating procedures (AGPs) in healthcare settings. Since then, the World Health Organization and the scientific community are evaluating whether SARS-CoV-2 also spreads through aerosols in the absence of AGPs, particularly in indoor settings with poor ventilation.[3]

Hematopoietic cell transplantation (HCT) and cellular therapy recipients are unique populations at increased risk for complications from SARS-CoV-2.[4] Currently, limited data exist on the epidemiology, clinical manifestations, and optimal management of COVID-19 in this patient population. Patients who have tested positive for COVID-19 should be isolated in negative-pressure room if available or in a neutral-pressure room.[5]

Our index case, a 48-year-old immunocompromised man with multiple myeloma IgA κ, underwent an autologous stem-cell transplant on September 21, 2020. He tested positive for SARS-CoV-2 on a screening test 3 days later, and the cycle threshold (Ct) value was 15. He developed a high temperature and a dry cough, and a computed tomography scan demonstrated bilateral ground-glass opacities consistent with COVID-19. Treatment included convalescent plasma, remdesivir, and antibiotics. AGPs were not performed. He was discharged on October 8, and a nasal swab for SARS-CoV-2 PCR was still positive with a Ct value of 19.

The transplant unit includes 6 positive-pressure isolation rooms with high-efficiency particulate air (HEPA) filters; each has an anteroom with self-closing doors that cannot be opened simultaneously. Patient rooms are built to primarily assure patients

Author for correspondence: Dr Lisa Saidel-Odes, E-mail: lisasod@clalit.org.il

Cite this article: Saidel-Odes L, *et al.* (2022). An outbreak of coronavirus disease 2019 (COVID-19) in hematology staff via airborne transmission. *Infection Control & Hospital Epidemiology*, 43: 405–407, https://doi.org/10.1017/ice.2020.1431

Table 1. Interview Questions, Cases Versus Controls

Variable	Cases (N = 7), mean ± SD	Controls (N = 30), mean ± SD	*P* Value	RR [95% CI]
Time (minutes) spent in the transplant unit's corridor/nurse station	201 ± 208	55 ± 133	.018	7.2 [1.22–42.49)
Number of entrances to the index patient's room	1.5 ± 1.5	1.45 ± 1.62	.865	
Time (minutes) spent in the index patient's room	29 ± 38	15 ± 17	.119	

Note. SD, standard deviation.

safely; the pressure cascade from the patient room to the anteroom and from the anteroom to the corridor protects the patients but exposes healthcare professionals (HCPs), even when positive-pressure is neutralized.

The following measures were applied following the diagnosis of the index case: (1) positive-pressure neutralization in the index patient's isolation room; (2) HCP treating the index patient donned airborne PPE (nonpermeable gown, N95 respirator, face shield, and gloves) before entering his isolation room and removed the airborne PPE in the anteroom; (3) the index case was confined to his room and wore a surgical mask during HCP visits; (4) all other work in the transplant unit, outside the index patient's room, continued while donning droplet PPE according to our institutional policy; and (5) patients and HCPs were screened for SARS-CoV-2 twice weekly. From October 1 through October 8, of 37 HCPs, 7 (19%) tested positive for SARS-CoV-2: 2 doctors, 4 nurses, and 1 housekeeping worker.

A case-control study was conducted, including phone interviews with all the units' HCPs and verification of HCP SARS-CoV-2 nasopharyngeal swab test results. Cases were HCPs who tested positive for SARS-CoV-2; controls were HCPs who tested negative. Phone interviews included the following questions: (1) How long were you present in the transplant-unit corridor or nurses' station during your shift? (2) Did you enter the index patient's room. And if yes, (3) how long were you present in the room? Staff members did not sit together in eating areas, and no out-of-work staff gatherings took place. Our univariate analysis revealed that cases were present significantly more than controls in the transplant unit's corridor or nurses' station (relative risk [RR], R = 7.2; 95% CI, 1.22–42.49; *P* = .018) but not in the index patient's room, Table 1.

Preventing the spread of SARS-CoV-2 requires rapid identification and isolation of infectious people, especially those with a high viral load because they have potential to become superspreaders.[6] HCT recipients may be at an even higher risk for a complicated course resulting from viral infections in general and COVID-19 infection in particular. Our transplant unit's patient rooms are large rooms with closed windows, positive-pressure, and HEPA filtration, and each has an anteroom with 20 air exchanges per hour. Units must balance the risk of other major pathogens (ie, invasive molds) against the risk of COVID-19 when deciding whether the unit's airflow should be modified. Reducing the positive pressure in isolation rooms could lead to poorly ventilated spaces that facilitate aerosol transmission.

In HCT recipients infected with other human coronaviruses, there is an association between initial high viral loads and prolonged viral shedding.[7] Shedding duration is an important determinant of viral infectivity and transmissibility. Ct value, a measure of the SARS-CoV-2 viral load, is inversely related to viral load. Our index case was diagnosed with a Ct value of 15; 2 weeks later, his Ct value was still only 19, which probably enhanced the viral spread in the transplant unit.

Because aerosols are carried by air currents and dispersed by diffusion and air turbulence, aerosols from infected persons may pose an inhalation threat even at considerable distances in enclosed spaces, particularly if there is poor ventilation.[8] Providing sufficient and effective ventilation together with airborne infection control is of paramount importance.[2]

In our COVID-19 outbreak, 2 of the 7 infected HCPs had no direct contact with the index case. All worked in the transplant unit corridor or nurses' station while wearing droplet PPE. The corridor or nurses' station is an enclosed space with no open windows. The anterooms of the isolation rooms open into this space. Outdoor air enters the unit's corridor through an air handling unit, ventilation air is provided by a heating, ventilating, and air-conditioning system. It is highly probable that HCPs inhaled SARS-CoV-2 aerosols through their surgical masks while working in this area for the most part of their shift.

Although molecular data are not available, airborne transmission appears to be the only plausible explanation for this outbreak. We are of the opinion that additional airborne precautions should be taken for further reduction of infection risk.

Acknowledgments. We would like to thank the infection control unit for their assistance in the epidemiological investigation.

Financial support. All authors report no financial support.

Conflict of interest. All authors report no conflicts of interest relevant to this article.

References

1. Morawska L, Tang JW, Bahnfleth W, *et al.* How can airborne transmission of COVID-19 indoors be minimized? *Environ Int* 2020;142:105832.
2. Morawska L, Milton DK. It is time to address airborne transmission of coronavirus disease 2019 (COVID-19). *Clin Infect Dis* 2020;71:2311–2313.
3. Transmission of SARS-CoV-2: implications for infection prevention precautions: scientific brief. World Health Organization website. www.who.int/news-room/commentaries/detail/transmission-of-sars-cov-2-implications-for-infection-prevention-precautions. Published July 9, 2020. Accessed January 4, 2021.
4. Waghmare A, Abidi MZ, Boeckh M, *et al.* Guidelines for COVID-19 management in hematopoietic cell transplantation and cellular therapy recipients. *Biol Blood Marrow Transplant* 2020;26:1983–1994.
5. COVID-19 rapid guideline: haematopoietic stem cell transplantation. NICE guideline. UK National Institute for Healthcare Excellence website.

www.nice.org.uk/guidance/ng164. Published April 1, 2020. Accessed January 5, 2021.

6. Tom MR, Mina MJ. To interpret the SARS-CoV-2 test, consider the cycle threshold value. *Clin Infect Dis* 2020;19:2252–2254.
7. Bullard J, Dust K, Funk D, *et al.* Predicting SARS-CoV-2 from diagnostic samples. *Clin Infect Dis* 2020. doi: 10.1093/cid/ciaa638.
8. Meselson M. Droplet and Aerosols in the transmission of SARS-CoV-2 Correspondence. *N Engl J Med* 2020;382:2063.

Seroprevalence of severe acute respiratory coronavirus virus 2 (SARS-CoV-2) antibodies by risk of exposure in a community health system

Jeffrey J. Fletcher MD, MS, FAAN[1,4], Eric C. Feucht MD[1], Peter Y. Hahn MD[1], Theresa N. McGoff MS[3], Del J. Dehart MD[2], Mohamad E. El Mortada MD[2] and Ronald G. Grifka MD[3]

[1]Metro Health University of Michigan Health, Critical Care Medicine, Wyoming, Michigan, [2]Metro Health University of Michigan Health, Infectious Disease, Wyoming, Michigan, [3]Metro Health University of Michigan Health, Department of Research, Wyoming, Michigan and [4]Department of Neurosurgery, University of Michigan Medical School, Ann Arbor, Michigan

To the Editor—Healthcare workers (HCWs) experience various levels of exposure to severe acute respiratory coronavirus virus 2 (SARS-CoV-2); however, evidence is limited on if any subsets of staff are at higher risk of acquiring coronavirus disease 2019 (COVID-19) disease compared to others or the general community. Current knowledge on the significance of "level of exposure" is limited due to (1) data obtained largely during surges, (2) data from major healthcare systems (generalizability), (3) lack of adjustment for exposures outside the health system or for compliance with public health and PPE recommendations, and (4) focusing on only high-risk clinical providers.[1-5] Accordingly, we performed a cross-sectional analysis evaluating the seroprevalence of SARS-CoV-2 antibodies in HCWs in a community health system in region of moderate disease burden. The study was approved by the Metro-Health University of Michigan Health Institutional Review Board and consent was obtained electronically.

Kent County, Michigan (population 650,000), experienced a "moderate surge" in coronavirus cases during mid-May through June 2020. At the time of the study the county had reported >180 deaths and >8,000 cases, with a prevalence of 1,380 per 100,000 population. The health system is comprised of a 210-bed community-based teaching hospital with multiple outpatient centers, urgent care, and surgery centers. COVID-19 units were established on March 11, 2020, along with policies for extended N95 mask use, eye protection, limited staff entrances, staff screening, and restricted visitor policies. On April 10, all emergency department encounters required staff to wear an N95 mask. Universal mask use for all staff was implemented on May 4. No PPE shortages occurred.

Survey invitations were sent via e-mail. Participants were excluded if they were <18 years of age or reported active COVID-19. An orthogonal testing algorithm was utilized (August 17–September 4, 2020) via the Siemens Atellica Total Antibody instrument (100% sensitivity and 99.8 specificity) followed by a confirmatory high-sensitivity enzyme-linked immunosorbent assay, immunoglobulin G ELISA (Eagle Bioscience, 100% sensitivity and 88.7% specificity).

For the primary outcome, we investigated whether working on a COVID-19 unit, predicted seropositivity to SARS-CoV-2 antibodies after adjusting for risk of exposure outside of work and compliance with PPE use. Secondary outcomes included modeling if a "clinical provider" or if "perceived high risk of COVID-19 exposure" at work predicted seroprevalence. We investigated whether the seroprevalence in HCWs differed from the community using the 95% confidence interval for Michigan during the study period as determined by the Centers for Disease Control and Prevention (CDC, 3%–6%).[6]

We used SAS version 9.4 software (SAS Institute, Cary, NC) for statistical analyses. Continuous variables were compared with 2-tailed t tests or the Wilcoxon rank-sum test, as appropriate. Categorical variables were compared using the χ^2 or the Fisher exact test. The 95% confidence interval for seroprevalence was calculated using the asymptotic approximation method. Multivariate logistic regression models were used to evaluate odds of seropositivity for SARS-CoV-2 antibodies by risk of exposure at work. $P < .05$ was considered significant.

Overall, 1,385 HCWs participated (45%). Demographics and bivariate analysis are listed in Table 1. The seroprevalence was 1.88% (95% CI, 1.16%–2.59%); significantly lower than the lower bounds of the community 95% confidence interval ($P = .014$). For HCWs to have had a significantly higher prevalence, the true community population prevalence would have had to have been <1.35% (1-sided P value = .045). We detected no difference in the seroprevalence of SARS-CoV-2 antibodies when exposure risk was modeled as working in a COVID-19 unit (adjusted OR, 1.7; 95% CI, 0.75–3.86) or working as a clinical provider (adjusted OR, 1.89; 95% CI, 0.83–4.29). However, when risk of exposure was modeled as "perceived high risk of work exposure" a significant increased risk of seropositivity was detected (adjusted OR, 3.4; 95% CI, 1.45–8.01).

We failed to demonstrate an increased risk of infection with COVID-19 among staff at the highest risk of exposure within a community health system during a time of moderate community

Author for correspondence: Jeffrey J. Fletcher E-mail: Jeffrey.fletcher@metrogr.org

Cite this article: Fletcher JJ, *et al.* (2022). Seroprevalence of severe acute respiratory coronavirus virus 2 (SARS-CoV-2) antibodies by risk of exposure in a community health system. *Infection Control & Hospital Epidemiology*, 43: 407–409, https://doi.org/10.1017/ice.2020.1438