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SARS-CoV-2 Transmission among Marine Recruits during Quarantine

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Abstract

Background: The efficacy of public health measures to control the transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has not been well studied in young adults.

Methods: We investigated SARS-CoV-2 infections among U.S. Marine Corps recruits who underwent a 2-week quarantine at home followed by a second supervised 2-week quarantine at a closed college campus that involved mask wearing, social distancing, and daily temperature and symptom monitoring. Study volunteers were tested for SARS-CoV-2 by means of quantitative polymerase-chain-reaction (qPCR) assay of nares swab specimens obtained between the time of arrival and the second day of supervised quarantine and on days 7 and 14. Recruits who did not volunteer for the study underwent qPCR testing only on day 14, at the end of the quarantine period. We performed phylogenetic analysis of viral genomes obtained from infected study volunteers to identify clusters and to assess the epidemiologic features of infections.

Results: A total of 1848 recruits volunteered to participate in the study; within 2 days after arrival on campus, 16 (0.9%) tested positive for SARS-CoV-2, 15 of whom were asymptomatic. An additional 35 participants (1.9%) tested positive on day 7 or on day 14. Five of the 51 participants (9.8%) who tested positive at any time had symptoms in the week before a positive qPCR test. Of the recruits who declined to participate in the study, 26 (1.7%) of the 1554 recruits with available qPCR results tested

positive on day 14. No SARS-CoV-2 infections were identified through clinical qPCR testing performed as a result of daily symptom monitoring. Analysis of 36 SARS-CoV-2 genomes obtained from 32 participants revealed six transmission clusters among 18 participants. Epidemiologic analysis supported multiple local transmission events, including transmission between roommates and among recruits within the same platoon.

Conclusions: Among Marine Corps recruits, approximately 2% who had previously had negative results for SARS-CoV-2 at the beginning of supervised quarantine, and less than 2% of recruits with unknown previous status, tested positive by day 14. Most recruits who tested positive were asymptomatic, and no infections were detected through daily symptom monitoring. Transmission clusters occurred within platoons. (Funded by the Defense Health Agency and others.).

Figures

Figure 1. Study Design for SARS-CoV-2 Testing...

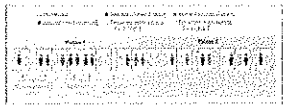

Figure 2. Local Transmission of SARS-CoV-2 during...

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