

COVID-19 in Congregate Settings: A Literature Review

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Abstract

Purpose: Virginia has numerous and varying congregate living facilities, to include correctional facilities, skilled nursing facilities, and 13 state-operated mental/behavioral health/rehabilitation facilities. The purpose of this literature review is to review COVID-19 trends in congregate settings and identify suggested mitigation efforts.

Methods: The target population for the literature search was individuals in congregate living facilities. Both correctional facilities and nursing homes were included as congregate settings.

Findings: Studies reviewed reported on disease transmission, the use of universal and serial testing, and reported additional information. Early and frequent testing to guide resident cohorting and exclusion of individuals from work was recommended. This includes the testing of asymptomatic individuals. Pre-emptive testing was associated with significant lower overall disease prevalence in one study.

Conclusions: Researchers across studies recommended testing early and often to inform prompt cohorting of infected individuals and to guide infection control measure. As such, early and frequent testing of individuals living and working in congregate settings is an important tool in controlling the spread of COVID-19.

Recommendations: In addition to frequent and early testing, further research regarding the spread and control of COVID-19 within Virginia congregate living facilities is recommended to inform future mitigation efforts.

Background

The COVID-19 case rate as of June 5, 2020 for prisoners was 5.5 times higher than the US population case rate (Saloner et al., 2020). Evaluation of COVID-19 management at congregate living facilities and evaluation of facility case rates is necessary to determine how to adequately mitigate the spread of this disease in congregate settings.

The SARS-CoV-2 virus and the accompanying clinical syndrome, COVID-19, was identified by the World Health Organization on February 11, 2020, in Wuhan, China (CDC, 2020b). Person-to-person spread of the virus through respiratory droplets is significantly increased in spaces where individuals are less than 6 feet from one another (CDC, 2020b). As such, maintaining an appropriate distance is a challenge for individuals in congregate living facilities, such as nursing homes, prisons, detention centers, and rehabilitation centers. Individuals who are incarcerated or detained work, study, live, eat and participate in activities of daily living together, creating ample opportunity for virus proliferation (CDC, 2020a). Additionally, those individuals may transfer between facilities, have medical, legal, or family visits, or staff interactions; all of these create opportunities for virus introduction into the facility (CDC, 2020a).

Forty correctional facilities fall under the onus of the Virginia Department of Corrections (Virginia Department of Corrections, n.d.). The total number of incarcerated individuals in major Virginia correctional facilities as of December 2020 totaled 21,324 (Virginia Department of Corrections, 2020). Data from the Centers for Medicare and Medicaid Services (CMS) in 2015 counted 284 nursing homes in Virginia, with a majority (51.8%) having 100-199 beds (CMS, 2015). On February 4, 2020, just under 10% of reported COVID-19 in Virginia were associated with outbreaks in long-term care facilities, correctional facilities, and other congregate settings

(VDH, 2020). Additionally, the Commonwealth of Virginia currently provides care to individuals in 12 of 13 facilities for a variety of needs: individuals with psychiatric diagnoses, individuals with intellectual disabilities, individuals civilly committed for behavioral rehabilitation, and those seeking substance abuse services (Virginia Department of Behavioral Health and Developmental Services, n.d.).

Purpose

The purpose of this literature review was to review COVID-19 trends in congregate settings and identify suggested mitigation efforts.

Methods

The target population for the literature search was individuals in congregate living facilities. Both correctional facilities and nursing homes were included as congregate settings for this literature review. Eligibility criteria for articles included full-text availability, English language, and publication from January-December 2020. The following search terms were combined in the APA PsychInfo database, in the following format (covid-19 or coronavirus or 2019-ncov or sars-cov-2 or cov-19 AND corrections or prison or jail or incarceration) and (covid-19 or coronavirus or 2019-ncov or sars-cov-2 or cov-19 AND nursing homes or care homes or long-term care or residential care or aged care facility and mitigation or prevention or reduction). The National Criminal Justice Reference Service (NCJRS) database was also searched for (correctional facility or prison or jail or imprisonment or incarceration AND covid-19 or coronavirus or 2019-ncov or sars-cov-2 or cov-19). Additionally, the following terms were combined to search CINAHL; (corrections or prison or jail or incarceration AND covid-19 or coronavirus or 2019-ncov or sars-cov-2 or cov-19) and (covid-19 or coronavirus or 2019-ncov or sars-cov-2 or cov-19 AND nursing homes or care homes or long-term care or residential care or

aged care facility AND mitigation or prevention or reduction). From the combined searches, 207 total results were returned and titles screened for relevance. Twenty-two relevant titles had abstracts reviewed, and from those, 13 articles were included in this literature review.

Opinion/commentary pieces, studies including home-based participants, those evaluating quality of life issues or social support for policies, and studies outside the United States were excluded from this literature review (Figure 1).

Figure 1. Flow chart of article retrieval and selection

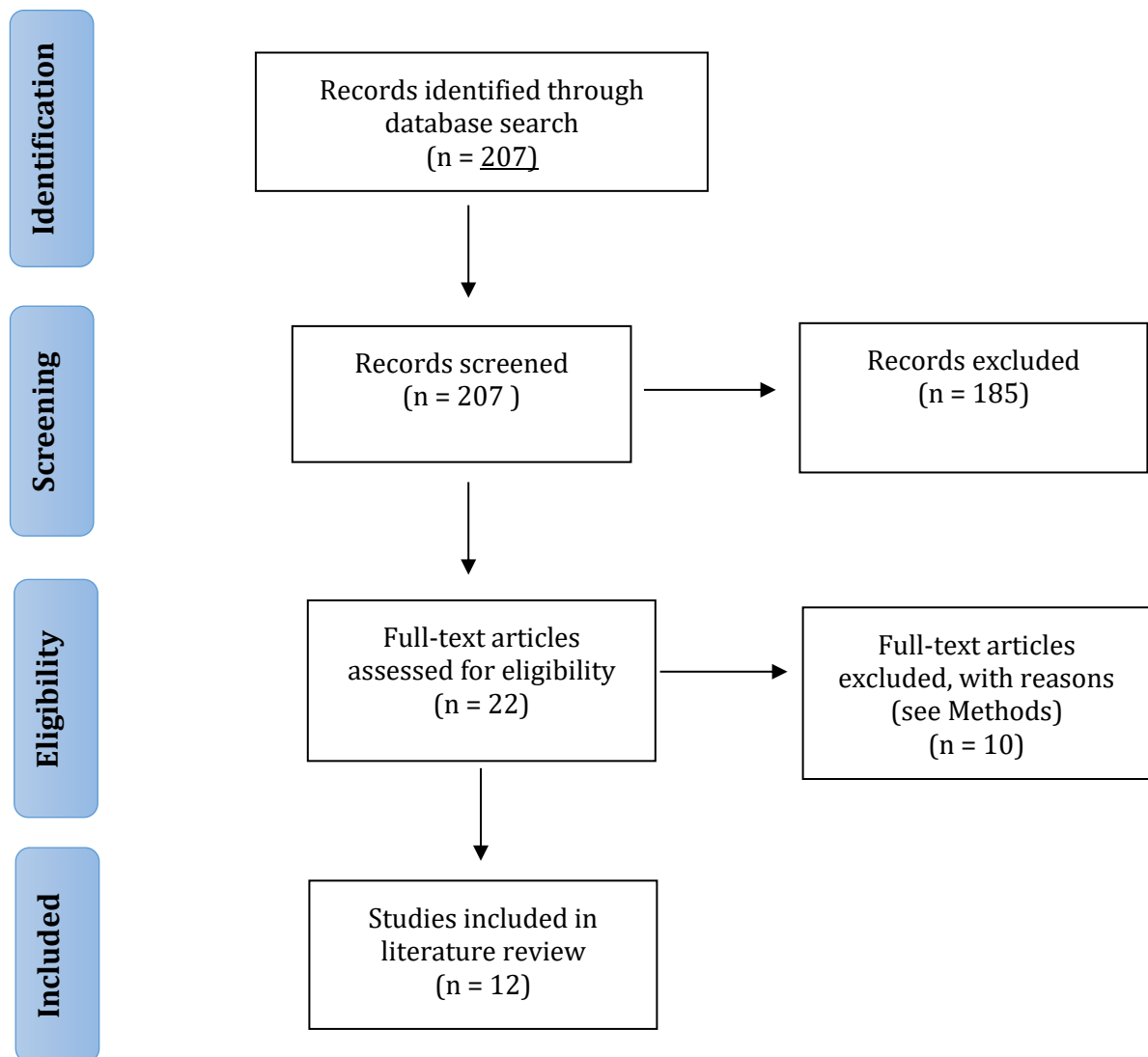


Figure 1. PRISMA flow chart for article retrieval and selection. Adapted from Preferred Reporting Items for Systematic Reviews and Meta-analyses (Moher, Liberati, Tetzlaff, & Altman, 2009).

Findings

Studies reviewed reported on disease transmission, the use of universal and serial testing, and reported additional information.

Transmission

An epidemiologic investigation from a nursing home in Washington in the beginning of the COVID-19 pandemic in the U.S. highlights the deadly potential of SARS-CoV-2 in a long-term care facility. After an index case at Facility A in Washington was identified on February 28, 129 total positive cases were identified by March 9; of those, the case fatality rates were 27.2 % among residents, 7.1 % among visitors, and 0% among health care providers (McMichael et al., 2020). Regarding community incidence relating to facility incidence, in a study of 125 nursing homes, Hatfield et al. (2020) found no association between cumulative county incidence and odds of identifying a nursing home case.

In a point prevalence survey at a state psychiatric facility, Callaghan et al. (2020), reported hospital implemented admission screening and infection control and prevention appeared to mitigate the spread of infection to other residents and staff after the admission of two SARS-CoV-2 residents in April 2020. While this study is limited due to point prevalence and lack of staff participation, researchers indicated that infection control and prevention measures are important due to the linkage of psychiatric facilities to other facilities with higher SARS-CoV-2 risk (Callaghan et al., 2020). Davlantes et al.(2020) gave a case report of Puerto Rico's prison system avoiding any outbreak through stringent screening and cohorting of inmates, with only 0.3% of 8,619 inmates testing positive for immunoglobulin G antibodies (indicative of past infection) and 0.0% testing positive for immunoglobulin M antibodies (indicative of recent or current infection).

Universal testing

Findings from mass or universal testing in nursing homes or correctional facilities were reported in three studies. In a study of 16 jails and prisons from six jurisdictions (41,454 total persons studied), Hagan et al. (2020) reported that symptom-based testing underestimates the number of SARS-CoV-2 cases in a facility. In their study, mass testing increased known cases revealed a median 12.1-fold increase over symptom-based testing alone. Hatfield et al. (2020) studied 288 nursing homes in six U.S. jurisdictions and found the number of days from first known case to completion of facility-wide testing was a median of 29.5 days; each additional day was associated with 1.3 more cases. From this study, it was suggested that early facility-wide testing after the first known cases improved the feasibility and effectiveness of cohorting (Hatfield et al., 2020). McBee et al. (2020) echoed these suggestions in a study of West Virginia nursing homes.

Serial testing

Multiple studies reported on serial testing. Njuguna et al. (2020) discussed the significance of serial testing in Louisiana correctional facilities after finding 25% of 98 individuals quarantined for close contact with a case had positive results after one or two negative tests. Additionally, 45% of RT-PCR individuals were not symptomatic, with study authors making similar recommendations for testing to inform prompt cohorting of infectious individuals (Njuguna et al., 2020). Sanchez et al. (2020) made similar recommendations for serial testing to guide early cohorting and infection prevention and control measures in their study of serial testing in Detroit nursing homes. Taylor et al. (2020) echoed those recommendations and included testing of healthcare personnel in skilled nursing facilities to guide exclusion from work. Researchers further suggested serial testing of all residents and

health care providers until no new cases are detected after 14 days, infection prevention and control education, flexible medical leave, and personal protective equipment (Taylor et al., 2020). Telford et al. (2020) studied preemptive testing in relation to COVID-19 infections in long-term care facilities in Fulton, Georgia and found that preemptive testing resulted in lower overall prevalence when compared to response testing (testing due to known cases). The difference between the groups was found to be significant: response group: residents positive, 28% initially and 42.4 % on follow-up testing, staff positive, 7.4% and 11.8% on follow-up testing (Telford et al., 2020). Pre-emptive group residents were positive 0.5% initially, and 1.5% on follow-up testing; staff positives were 1.0% and 1.7% on follow up testing (Telford et al., 2020). Recommendations throughout the studies on serial testing included early and repeated testing to guide prompt cohorting and proper infection prevention and control education.

Additional Data and Implications

Evaluation of aggregate data by Wallace et al. (2020a) from correctional facilities in 54 jurisdictions showed a response rate of 69%, with 86% of responding jurisdictions reporting at least one positive case. While this data was evaluated relatively early in the pandemic, Wallace et al. (2020a) acknowledged testing and daily symptom screening as important mitigation strategies, and cited staff movement in and out of the facility to the community as a concern for transmission into other facilities. An additional study by Wallace et al. (2020b) evaluated data collected using the COVID-10 Management Assessment and Response Tool (CMAR) in Louisiana detention facilities. COVID-19 hospitalization and death rates for detainees and staff were nearly identical in this report (Wallace et. al., 2020b). Additionally, some facilities reported isolating infected individuals for longer than 14 days or using test-based instead of time-based release from isolation, increasing use of resources (Wallace et al., 2020b).

Conclusions

Individuals residing in congregate settings face an increased risk to contract COVID-19 due to difficulties maintaining social distance and the droplet transmission of the virus (CDC, 2020a). Based on this literature review, early and frequent testing of individuals living and working in congregate settings is an important tool in controlling the spread of COVID-19. Researchers across studies recommended testing early and often to inform prompt cohorting of infected individuals and to guide infection control measures. One study found that pre-emptive testing resulted in lower overall prevalence of COVID-19 cases when compared to testing in response to known cases. Testing in other studies revealed a significant percentage of asymptomatic cases, further supporting routine, facility-wide testing to identify and cohort or exclude individuals from work. Additionally, one study highlighted serial testing of individuals quarantined for close contact, as a positive test was preceded by one to two negative tests. Beyond testing, Taylor et al. (2020) went further to make recommendations regarding recommended duration of testing after detection of the last positive case, sick leave for employees, infection prevention and control education, and personal protective equipment. Another study identified increased use of resources due to extensive isolation periods and use of test-based release from isolation.

Available literature for this review included data from relatively early in the pandemic. Approaches to infection control in congregate settings may have changed since this review was completed, and literature may now reflect recommendations in addition to early and frequent testing.

Recommendations

Early and frequent testing per CDC and VDH guidelines is recommended for congregate settings. Further data collection from Virginia congregate living facilities regarding cases, morbidity, mortality, employee and resident infection control education, testing compliance, and personal protective equipment availability and use is recommended to understand the impact of these measures on the spread of COVID-19 in such facilities. This data can guide future mitigation efforts in order decrease morbidity and mortality in congregate settings in the Commonwealth. Additionally, it is recommended that facility clinicians and decision-makers be provided with the most-up-to date information regarding testing, quarantine, and isolation in order to minimize resident time away from intended activities and to avoid unnecessary use of resources.

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