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BRIEF REPORT

Aiming for Zero: Reducing Transmission of Coronavirus Disease 2019 in the D.C. Department of Corrections

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Background. Washington, District of Columbia lowered severe acute respiratory syndrome coronavirus 2 transmission in its large jail while community incidence was still high.

Methods. Coordinated clinical and operational interventions brought new cases to near zero.

Results. Aggressive infection control and underlying jail architecture can promote correctional coronavirus disease 2019 management.

Conclusions. More intensive monitoring could help confirm that in-house transmission is truly zero.

Keywords. COVID-19; infection control; inmate; jail; SARS-CoV-2.

Jails, short-term facilities housing mostly persons awaiting trial, experience massive throughputs of potentially exposed staff, contractors, visitors, and new intakes from the community [1]. Nineteen times more individuals pass through jails in the United States compared with prisons, that is, long-term facilities for persons serving felony sentences [2]. Dormitory housing in many jails has been associated with lower suicide risk [3]; however, close human proximity increases airborne transmission risks. Chronic illness prevalence among incarcerated persons exceeds that of the general population [4], thus increasing their vulnerability to life-threatening complications from coronavirus disease 2019 (COVID-19).

Prepandemic, the District of Columbia Department of Corrections (DCDOC) averaged a daily population (in jails, the term "population" generally refers to those in custody, and does not include those who work in the facility) of 1800 in either single-person (we use person-first language in this manuscript rather than terms like "detainee"; see https://www.ncchc.org/use-of-humanizing-language-in-correctional-health-care) cells or 2-person cells, in 2 buildings: the Central Detention Facility and the Correctional Treatment Facility [5]. Approximately 50% of the population are unadjudicated; less than 15% are serving sentences. The remaining are held for federal authorities. Given the high churn (median lengths of stay of 24 days for men and 13 days for women) and a high rate of comorbidities (34%), the COVID-19 pandemic presented an unprecedented challenge to ensuring the health of incarcerated individuals. This report outlines the operational and clinical measures DCDOC adopted to detect, treat, and prevent infections (Supplement Table 1), and it analyzes their cumulative impact on transmission.

METHODS

To eliminate severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission, the DCDOC followed Centers for Disease Control and Prevention (CDC) recommended infection control and testing measures [6, 7]. Mandatory intake quarantine commenced in March 2020, and mandatory nose and mouth coverings for staff and residents began in April 2020. Others have recommended decarceration [8, 9]. Starting on March 18, 2020, the DCDOC worked with adjudicating agencies to swiftly implement decarceration measures, resulting in 500 fewer persons housed by May 4, 2020.

In March 2020, DCDOC began instituting enhanced procedures for accessing medical care to improve identification of individuals with COVID-19 and connect them to care. All quarantined residents received twice-daily temperature checks, sick call turnaround time was expedited, and residents were encouraged to seek testing during chronic care and other routine medical visits. See Supplement Table 2 for details.

Testing initially focused on symptomatic individuals. Appreciation for the role of asymptomatic infection in transmission grew as the pandemic progressed. The DCDOC implemented contact tracing in April 2020. Beginning June 9, 2020, all new entrants received both simultaneous point-of-care and laboratory-based molecular testing for SARS-CoV-2 at intake. Before release from entry quarantine, persons were tested via laboratory-based real-time polymerase chain reaction (PCR) a

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second time. All laboratory-based molecular testing specimens were sent off site for analysis.

Two mass testing events with rapid result turnaround were conducted in collaboration with the DC Department of Health (DCDOH) to identify asymptomatic infections. The DCDOC implemented a novel strategy to identify housing units that exhibited a high growth in the number of infections that was sustained over several weeks as candidates for mass testing (see Supplement). The DC Government COVID-19 Surveillance data was accessed for data on community cases [10].

Clinical care for residents infected with SARS-CoV-2 was standardized to provide consistent data for clinical decision making. The DCDOC implemented a robust clinical triage and care process that enhanced the likelihood of successful recovery from COVID-19 in the correctional setting. A medical team consisting of a nurse and 1 to 2 providers conducted twice-daily rounds on all patients identified with active infection. Temperature, heart rate, blood pressure, and pulse oximetry were assessed for each patient at each visit. A provider would then obtain an interval-focused history including symptom development or abatement and perform an examination. Patients exhibiting signs of deterioration were either moved to the medical infirmary for closer monitoring or, for more concerning presentations such as a falling pulse oximetry, sent to a local emergency department for further evaluation. The team used twice-daily huddles and a written sign-out process to communicate findings and concerns during clinical handoffs.

Institutional Review Board and Patient Consent Statement

As nonhuman subjects research, this study did not need approval by an Institutional Review Board. It did not include factors necessitating patient consent. This manuscript describes public health practice, rather than human subjects research.

RESULTS

Of the 1445 SARS-CoV-2 PCR tests administered at DCDOC between March 15, 2020 and July 28, 2020, 208 (14.4%) were SARS-CoV-2 positive. The mean age of persons diagnosed with COVID-19 was 35 years, compared with the mean of 32 years for the jail as a whole. The percentage who were male (96.2%) and African American (85.6%) mirrored the demographics of the jail (see Supplement Table 1). Figure 1 shows measures implemented to reduce transmission risk. The DCDOC's infection prevention strategy included the following: enhanced cleaning protocols, frequent messaging emphasizing proper mask use, social distancing, and hand hygiene; educating both staff and

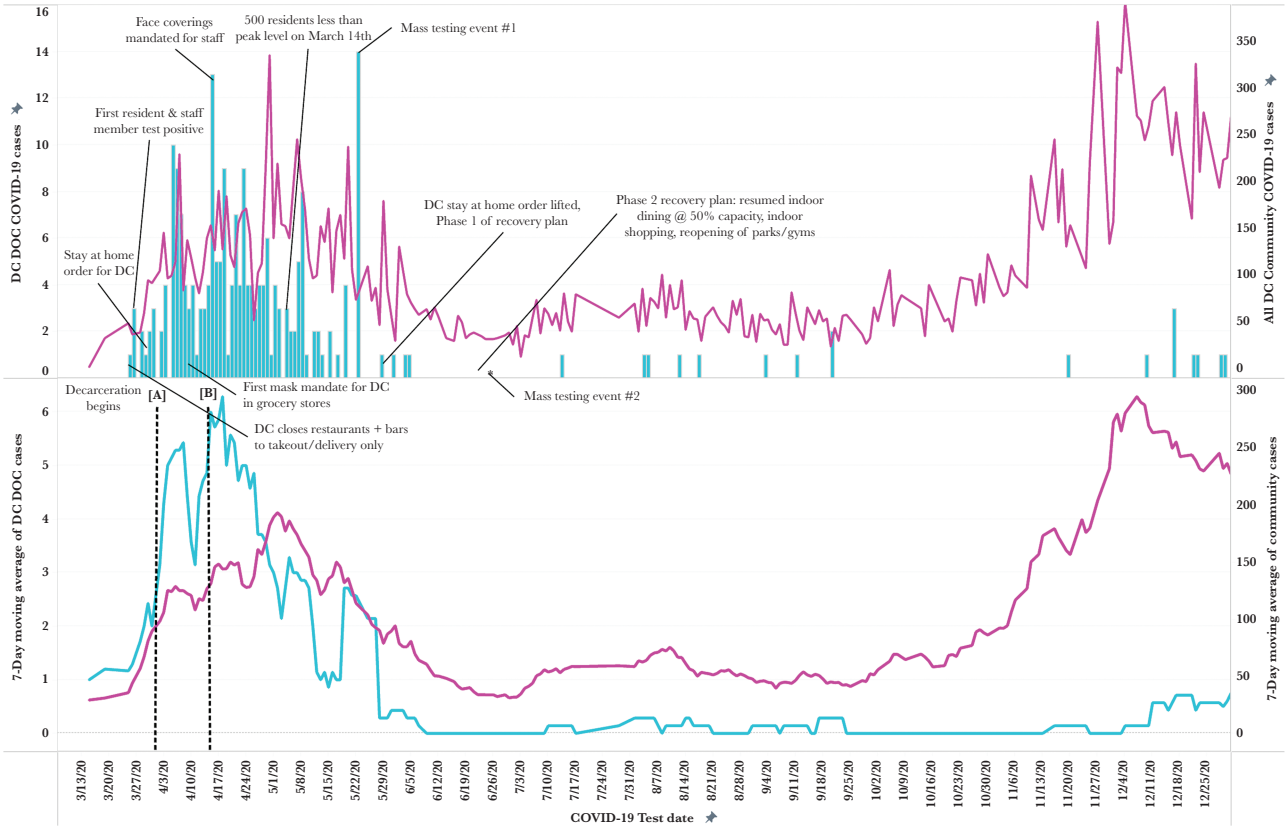

Figure 1. Diagnosed cases of coronavirus disease 2019 (COVID-19) in District of Columbia (DC) (magenta) and DC Department of Corrections (DCDOC) (cyan) in March through December 2020.

residents about the virus, its transmission, and infection prevention; screening and temperature checks for all persons at facility entrances; and aggressive case finding and providing sick leave for staff experiencing symptoms.

The COVID-19 identification pathways enabled the detection of 163 SARS-CoV-2 PCR-positive cases and 111 persons with negative tests from March 15, 2020 to May 6, 2020. During this time frame, temperature checks and urgent care encounters were the most productive COVID-19 identification pathways, accounting for 15.8% of all tests and the identification of 52.4% of all cases (see Supplement Table 3). Cocirculating respiratory pathogens were likely widespread within the jail before mask wearing was universal, and the underappreciation for asymptomatic infection early in the pandemic was associated with the high prevalence of symptoms up until late spring. From May 7, 2020 onward, 29 of 45 (64.4%) of diagnosed infections were symptomatic.

Mass testing results affirmed the effectiveness of a hot spot testing strategy in limiting outbreaks. By examining the sustained growth rates by cellblock, we were able to specify where to administer tests in Mass Testing Event 1 (May 22, 2020). Fourteen asymptomatic cases were identified from 303 PCR-tested individuals (4.6%). On the day of the first mass testing event, the population comprised 1330 residents in the jail; 303 of 1330 represented 23%, or approximately one quarter of the population. A similar methodology used in Mass Testing Event 2 (June 28, 2020) identified 0 cases/87 tested (Figure 1). The jail population on the second mass testing day was 1263. The 87 individuals tested represented a more focused 7% testing of areas where transmission was suspected. As of July 28, 2020, overall, 201 of 208 (96.6%) cases recovered at DCDOC facilities, with 1 death (the infected individual was transferred to a local hospital for treatment in early April where they succumbed after 7 days of care), 18 hospitalizations, and 6 released before exiting isolation. Outcome categories are not mutually exclusive. Analysis was conducted using EpiEstim version 2.2-3 [11–13], in R version 3.6.2. Retrospective estimation of the time-varying reproduction number using 7-day-shifted epidemic curve in the 2 DCDOC facilities illustrates how infection control suppressed SARS-CoV-2 transmission potential (see Supplement: Technical Appendix and Supplement Figure 1 for details).

Despite persistence of community SARS-CoV-2 infection, the DCDOC was able to reduce autochthonous transmission to zero in the later months of 2020 (Figure 1). Beyond July 28, 2020, DCDOC continued to extensively test officers and entering residents. Spot surveillance of asymptomatic individuals contributed to surveillance efforts. Testing before release (n = 60), going to court (n = 161), or transfer to another facility (n = 4) revealed no ongoing transmission in-house in the last 5 months of 2020. From July 29 to December 31, 2020, 2507 tests were conducted; of these, 2490 (99.3%) were negative and only 17 (0.68%) were positive—all from entrants (Figure 1). Since July 2020, the surveillance system has identified only a single cluster of persons who acquired COVID-19 in-house, from January 27 to February 1, 2021, within a single housing unit. The outbreak, believed to have originated from a staff member, spread to 9 persons of the 89 tested in the housing block (10.1%) before ending.

DISCUSSION

The DCDOC's ability to suppress within-facility transmission while community transmission persisted suggests that effectively implemented infection control works in jails (Figure 1). Moreover, moderate COVID-19 infection can be monitored and treated successfully in jails.

Cell-based (rather than dormitory) architecture and partnership with DCDOH enhanced the effectiveness of infection control measures. Specific infection control measures such as (1) decarceration, (2) isolation, quarantine, and social distancing, (3) mask usage, and (4) screening for asymptomatic infection were effective in reducing transmission within the jail and appear to be associated with the diminution of the epidemic curve (Figure 1).

The robust clinical triage and care process implemented facilitated positive clinical outcomes among jail residents. Despite high prevalence of comorbidities, only 1 death occurred. The DCDOH assigned priority rating 1b to immunizing both jail staff and population and commenced vaccination in January 2021, which will further decrease the risk of in-jail transmission. Successive cohorts of entrants will receive ongoing offers of vaccination.

CONCLUSIONS

The DCDOC's ability to successfully reduce cases to near zero provides an important example of effective COVID-19 management in US correctional facilities. To confirm that spread of infection in the jail is truly zero, and not an artefact of inadequate surveillance, the DCDOH and DCDOC are exploring more intense monitoring via a wastewater surveillance system [14].

Supplementary Data

Supplementary materials are available at *Open Forum Infectious Diseases* online. Consisting of data provided by the authors to benefit the reader, the posted materials are not copyedited and are the sole responsibility of the authors, so questions or comments should be addressed to the corresponding author.

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