substantially following the rollout of COVID-19 vaccine delivery. As of June 8, 2021, about 1,831,588 Dallas County residents have received at least one COVID-19 vaccine dose and 910,067 are fully vaccinated. Recent county integration of immunization and case databases enabled identification and analysis of COVID-19 breakthrough infections.

Methods. A COVID-19 breakthrough infection was defined as a positive test (PCR or antigen) collected from an individual ≥14 days after receiving the full series of an FDA-authorized COVID-19 vaccine. Nationally, 10,262 vaccine breakthrough infections had been reported from 46 US states and territories, through April 2021. Vaccine breakthrough cases were reviewed and medical records abstracted to collect demographic information, clinical characteristics, and medical conditions. Data analysis was performed using R, version 4.0.2 (2020).

Results. Of the 700 vaccine breakthrough cases reported in Dallas County residents as of June 8, 2021, 304 (43%) were male and 396 (57%) female, with an average age of 53 years. The majority of the vaccine breakthrough cases were White (42%); 25% were Hispanic/Latino; and 20% were Black. Almost all breakthrough cases were confirmed with PCR testing, with 451 (64%) cases receiving the Pfizer vaccine. Of breakthrough cases, 49% were symptomatic; 52% (358) had underlying conditions including: tobacco use, obesity, or immunocompromised state; 68 (10%) were hospitalized; and 11 (1.6%) died. Whole genome sequencing was performed on 51 cases, with 14 (27.5%) variants identified, including eight B.1.1.7, two B.1.429 and one F.1 variants.

Conclusion. Despite the high levels of vaccine efficacy documented in US vaccine trials, COVID-19 breakthrough infections, though currently uncommon, do occur and are important to investigate. Ongoing close public health surveillance of variants is needed to discern changes in patterns of vaccine efficacy and characteristics of populations at greatest risk of severe disease from COVID-19.

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