

BACKGROUND

Rapid scale up of testing to detect Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) is essential to direct clinical management, optimize infection control actions, and guide public health response efforts to mitigate the spread of Coronavirus Disease 2019 (COVID-19). As the largest integrated health care system in the United States, the Veterans Health Administration (VHA) supports the laboratory-based detection of COVID-19 in a network of 172 medical centers across the country.

METHODS

SARS-CoV-2 testing data from VHA databases were analyzed to assess SARS-CoV-2 detection characteristics. Testing capacity was calculated by multiplying the number of inventoried instruments available for SARS-CoV-2 detection by estimates of instrument-specific maximum throughput with the assumption that instruments would be operational for 16 hours a day, that 75% of capacity would be dedicated to SARS-CoV-2 tests, and that specimen preparation and result reporting time would be no greater than 1 hour per run.

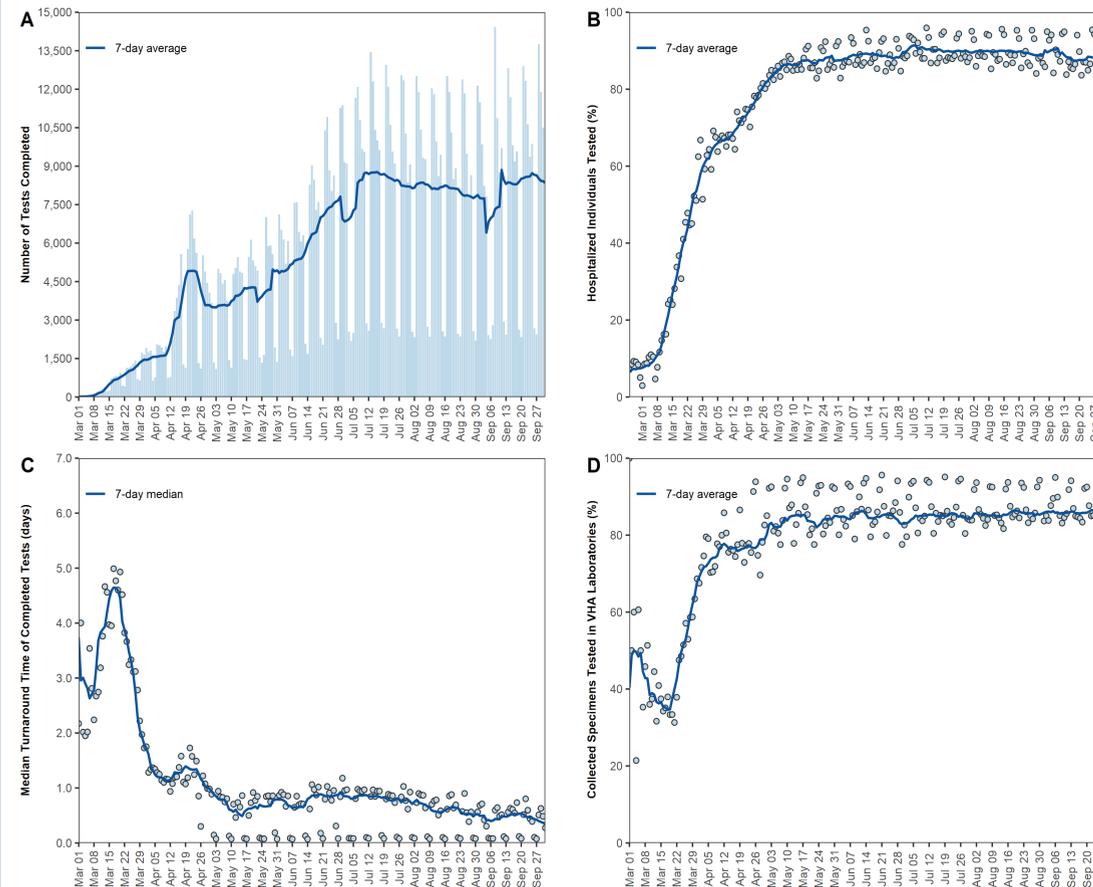
RESULTS

From March 01, 2020 to September 30, 2020, 1,175,244 Emergency Use Authorization approved RT-PCR tests for SARS-CoV-2 on more than 7 different assay platforms were conducted among 660,642 individuals attending VHA facilities; 39,951 individuals (6.0%) tested positive. During this period:

1. The average rate of tests completed for SARS-CoV-2 increased to more than 8,000 per day (Figure 1A),
2. The percentage of hospitalized individuals who were tested for SARS-CoV-2 increased to more than 80% (Figure 1B),
3. The median turnaround time from specimen collected to result reported decreased to less than 1 day (Figure 1C), and
4. The percentage of SARS-CoV-2 clinical specimens collected in VHA facilities that were tested at VHA laboratories as opposed to external laboratories increased to more than 80% (Figure 1D).

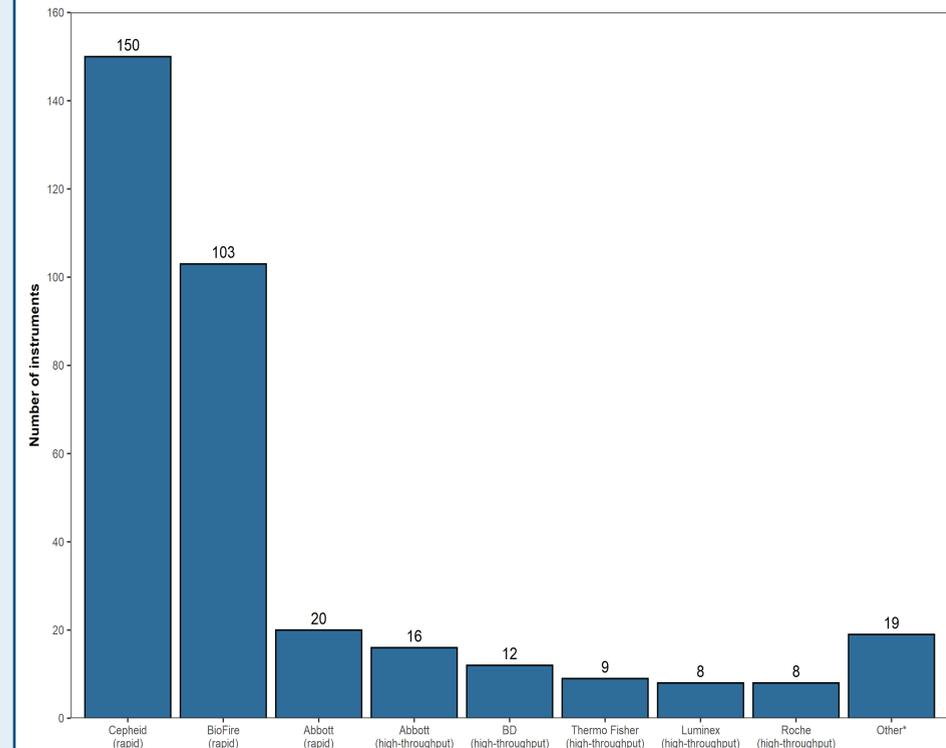
Based on inventories of high-throughput and rapid diagnostic instruments (Figure 2), VHA could perform up to 18,000 tests for SARS-CoV-2 per day.

Figure 1. Performance metrics for SARS-CoV-2 testing across VHA facilities, March 01-September 30, 2020



A) Number of daily tests for SARS-CoV-2 completed. B) Percentage of hospitalized Veterans tested for SARS-CoV-2. C). Median turnaround time of completed tests for SARS-CoV-2 from specimen collection to result reported. D) Percentage of SARS-CoV-2 specimens collected in VHA facilities that were tested in VHA laboratories.

Figure 2. Distribution of instruments to detect SARS-CoV-2 across VHA facilities



* Includes Hologic, Vela, Roche (rapid), Diasorin, and GenMark instruments.

CONCLUSIONS

Key metrics of laboratory performance for SARS-CoV-2 detection, including test turnaround time, percentage of hospitalized individuals tested, and overall testing volume improved substantially in VHA during the first 7 months of testing during the pandemic. Ongoing efforts seek to enhance just-in-time diagnostic capacity, ensure continuity of specimen collection supplies and laboratory consumables, further reduce testing in external laboratories, and minimize gaps in access to testing facilities.