

### INTRODUCTION

- Combining rapid antigen and RT-PCR tests optimizes detection of COVID-19 compared with either test alone.
- During the Omicron surge, in November 2021, the Atlanta VA Health Care System (AVAHCS) initiated combination testing for all patients admitted from the emergency department (ED) to the inpatient wards.
- We retrospectively reviewed combination test performance and the impact of discordant test results on ED disposition and patient characteristics.

### METHODS

- Initial Analysis:** We assessed concordance of antigen (Abbott BinaxNow) and RT-PCR (either Cepheid Gene Xpert or Roche Cobas 6800) tests performed within 24 hours of each other (i.e., combination test-pair) for all patients during November 25, 2021–January 27, 2022 and calculated test characteristics of the antigen test compared with RT-PCR as the gold standard.
- ED Discordant Test Results Analysis:** For those patients evaluated in the ED who had discordant results, we first determined ED disposition, then performed standardized medical record reviews for those patients with discordant results who were admitted to determine clinical history, hospital course and disposition.

### SARS CoV-2 ADMISSION ALGORITHM

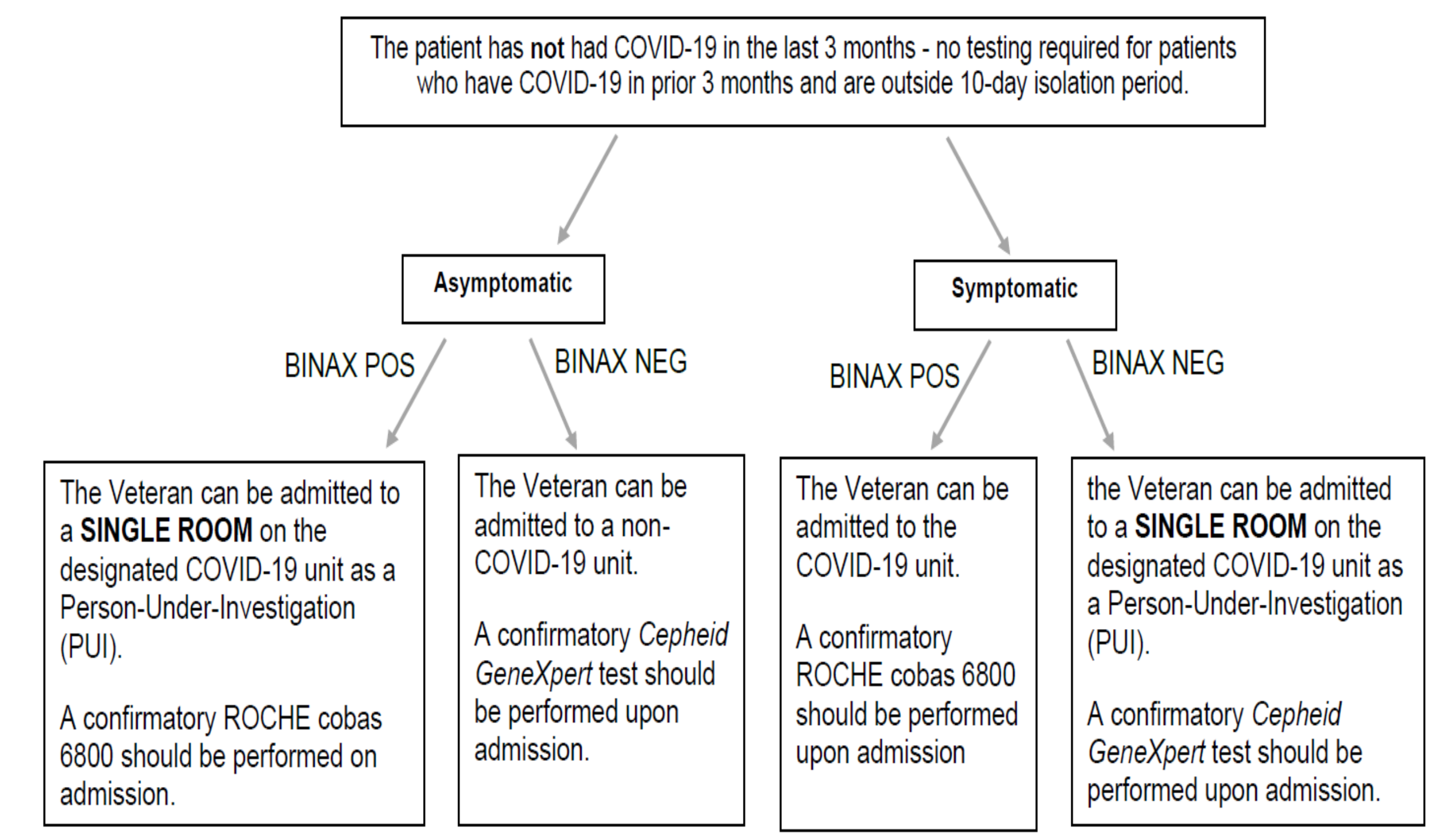


Figure 1: Combination Antigen and RT-PCR Testing Algorithm for Patients in the Emergency Department, Atlanta VA Healthcare System

### RESULTS: INITIAL ANALYSIS

- Of 836 combination test-pairs, 112 (13%) were discordant, of which 111 were antigen-negative/RT-PCR positive.
- Sensitivity of the antigen test was 50%, specificity was 100%, positive predictive value 99%, and negative predictive value was 85%.

### RESULTS: ED DISCORDANT TEST RESULTS

- Of 68 patients evaluated in the ED who had antigen-negative/RT-PCR positive results, 21 (31%) were admitted to the hospital.

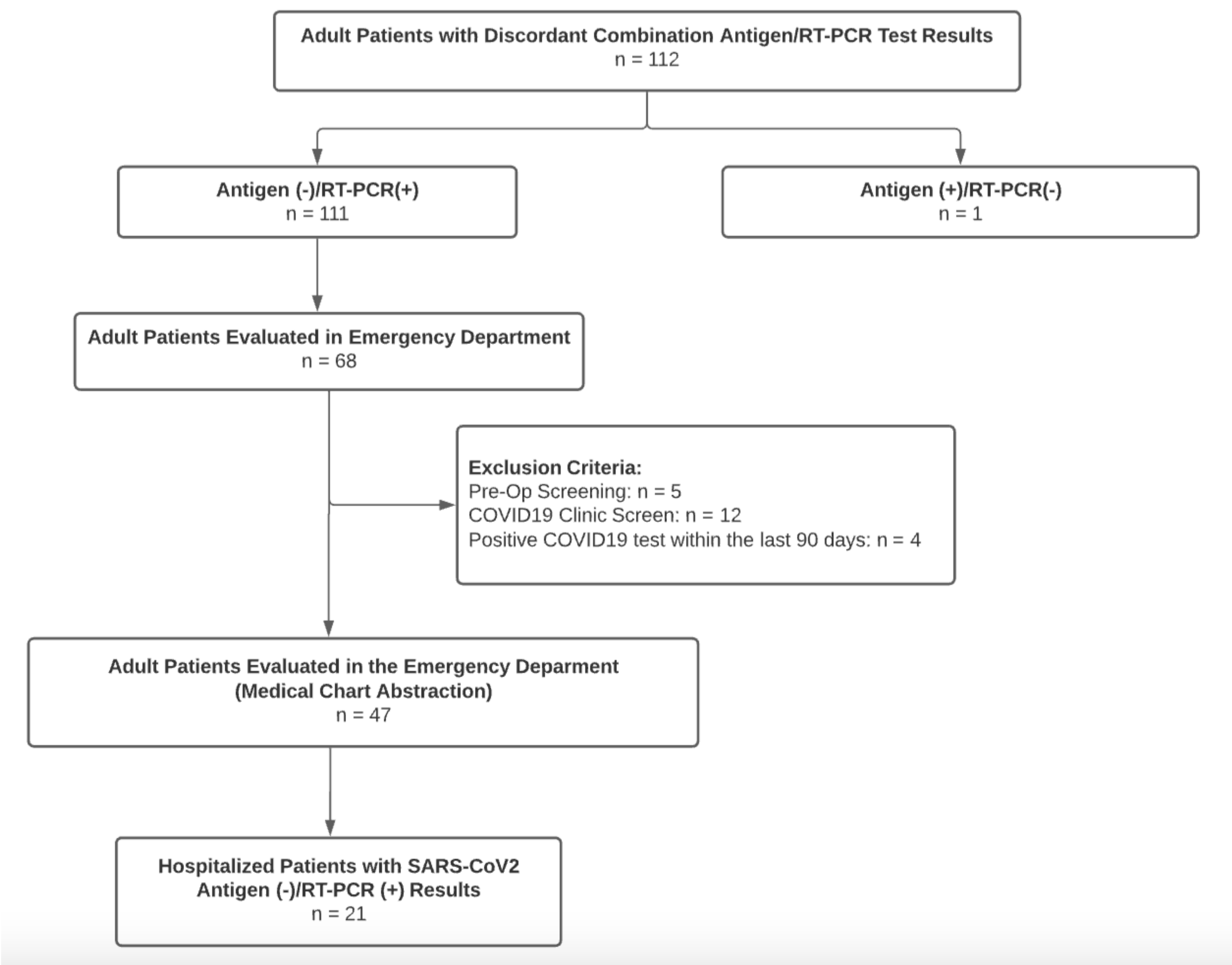


Figure 2: Results Flow Diagram of ED Discordant Test Results

### RESULTS: HOSPITALIZED PATIENT CHARACTERISTICS: DEMOGRAPHICS & SYMPTOMOLOGY

#### Demographics (n = 21):

- Median age: 62.50 years (41-99), male (90%) and African-American (62%)
- 95% had more than one chronic medical condition
- 57% were not vaccinated against COVID-19

#### Symptomology (n = 21):

- 81% of patients at the time of ED evaluation were experiencing symptoms
- Median days to symptom onset: 2 days (0-21).
- Most common symptoms experienced: Shortness of breath (62%), fevers, nasal congestion, post-nasal drip or cough (48%).

### RESULTS: HOSPITAL COURSE & DISPOSITION

Hospital Course & Disposition	Antigen-negative/RT-PCR-positive (n = 21)
<b>Admission to ICU</b>	
Yes	6 (29%)
No	15 (71%)
<b>Median Duration of Stay</b>	
1-7 days	15 (71%)
7+ days	5 (24%)
<b>Patients That Required Treatment During Admission</b>	
<b>Distribution of Treatments (n = 14)</b>	
Required supplemental oxygen therapy	7 (50%)
Remdesivir	9 (64%)
Steroid therapy (dexamethasone or prednisone)	9 (64%)
Antibiotics	6 (43%)
Tocilizumab	1 (7%)
Baricitinib	1 (7%)
Regeneron	1 (7%)
Paxlovid	0 (0%)
<b>Disposition Status (n = 21)</b>	
Home	17 (81%)
Skilled Nursing facility	2 (10%)
Death	1 (5%)

Table 1: Characteristics of Discordant Hospitalized Patients (n = 21)

#### Hospital Course:

- 29% required admission to the intensive care unit (ICU)
- Median Duration of Stay: 4.5 days (1-26)
- 71% had a 1–7-day duration of stay
- Most common treatments: steroid therapy (64%), remdesivir (64%), or required supplemental oxygen therapy (50%)

#### Disposition:

- 81% of patients were discharged home

### CONCLUSIONS

- The sensitivity of antigen testing was 50% compared to RT-PCR among patients tested across AVAHCS, consistent with published literature.
- Even though the majority of discordant test result patients were not hospitalized, 29% of hospitalized patients did require intensive care. This suggests that these patients could have been potentially missed if rapid-antigen test alone was used in their triage process through the ED.
- Based on facility type and resources, combination testing instead of antigen-only testing for patients triaged for hospital admission can be considered to facilitate appropriate isolation precautions and treatment considerations

