

SARS-CoV-2 Viral Dynamics For Symptomatic People Living with HIV Requiring Hospitalization For COVID-19

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Reverse transcription PCR-based SARS-CoV-2 RNA detection from respiratory samples (e.g., nasopharynx [NP] is the standard for COVID-19 diagnosis);
Viral dynamics from clinical samples among PWH has not been studied

We had 48 PWH diagnosed with COVID-19 and 19 were hospitalized from March-July 2020

Table 1: Test results and Ct measurements

Patient	SX (d)	Test(T)#1* Ct1/Ct2	T#2 (+d)	T#3	T#4	T#5	T#6	T#7	T#8	T#9	T#10	T#11
1	5	16.7/16.2	NEG (+159)									
2	3	20.9/20.7	34.5/35 (+6)	29.9/30.3 (+8)	34.9/ND (+12)	36/37 (+15)	ND/ND (+18)	ND/ND (+19)	POS (+25)			
3	3	14.9/15	25.1/22.7 (+6)	34.5/31.1 (+25)	31.8/33.1 (+28)	36.6/38.7 (+42)	37/45 (+49)					
4	6	27.3/25.6	ND/ND (+9)									
5	3	34.1/37.1										
6	14	16.2/16	35/40.2 (+7)	ND (+40)								
7	3	11.8/11.4	16.6/15.1 (+5)	18/16.7 (+10)	24.7/24.2 (+13)	28.9/29 (+16)	29.5/29.9 (+19)	33.9/33.9 (+22)	29.8/30 (+25)	NEG (+28)	NEG (+31)	
8	7	32.5/32.7	ND/ND (+10)	ND/ND (+11)								
9	4	21.9/32.4										
10	5	18.5/17.1										
11	3	18.6/18.5	ND/36.7 (+19)	ND/ND (+22)	35.6/37.6 (+23)	35.1/35.7 (+26)	ND/ND (+29)	ND/ND (+30)	NEG (+136)			
12	3	18.7/18.1	ND (+120)									
13	3	28.3/25.6										
14	7	19.5/18.8	NEG (+34)									
15	4	42.5/neg	25.1/27 (+9)	ND (+30)	ND (+35)	NEG (+52)	ND (+57)	NEG (+80)	DET (+98)	NEG (+110)	NEG (+129)	NEG (+145)
16	7	34.6/31.4										
17	9	28.1/27.7										
18	9	26.9/26.7										
19	2	DET	NEG (+1)	DET (+2)								

*Patients confirmed to have COVID-19 at the time of admission by RT-PCR.

A variety of RNA gene targets are used by different manufacturers, with most tests targeting 1 or more of the envelope (*env*), nucleocapsid (*N*), spike (*S*), RNA-dependent RNA polymerase (*RdRp*), and *ORF1* genes.

LoD(NDU/ml)	Platform	Ct cutoff
18000	CDC	40
6000	DIASORIN	40
1800	BD max	40
5400	Cepheid	N/A
600	Panther	N/A
1800	COBAS	N/A
5400	Abbott ID	N/A

Fig. 1

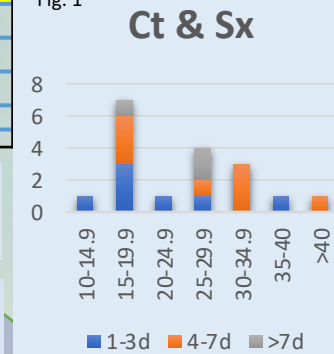


Table 2. Demographics for hospitalized PWH patients (n=19)

Median age (IQR)	58 (53-64)
Age ≥ 50yrs (%)	16 (84.2)
Women (%)	10 (52.6)
African Americans (%)	12 (63.2)
Years living with HIV (IQR)	15 (9.3-21.8)
Mean duration of symptoms (SX) in days (range)	5.9 (2-14)
History of AIDS diagnosis (%)	10 (52.6)
On ART (%)	18 (94.7)
CD4 count, median, (IQR)	827.9 (567.6-904.1)
Proportion VL < 200 copies (%)	18 (94.7)
Proportion requiring higher level of care, ICU or vent (%)	4 (21)

Conclusion:
SARS-CoV-2 detection patterns are variable among symptomatic patients with stable HIV disease hospitalized for COVID-19

Limitations: nonuniform PCR platform makes comparisons difficult; retrospective approach with no set protocol for testing and limited sampling

A total of **62 NP samples** were collected; 1-11 sequential NP samples were obtained per patient; 7 different platforms were used by the hospital clinical laboratory

We observed the ribonucleic acid (RNA) viral load (VL) measured in NP samples by cycle threshold (Ct) values as a measure of nucleic acid concentration or viral detection over time; **See Table 1**

Abbrev: T#(n) – test#; ND=not detected; DET=detected; NEG=negative; SX(d)=duration of symptoms; LoD=Limit of detection; Results reported per manufacturer’s procedure; All EUA testing