



# Some Quality Issues Discovered While Doing HIV- Telemedicine

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# Recent Telemedicine data from our program (HIV and Arizona Department of Corrections)

- Klotz SA, Chan CB, Bianchi S, Egurrola C, York LD. The Genie is out of the Bottle: Telemedicine is More Effective than Brick-and-Mortar Clinics in the Care of HIV-infected Outpatients. In Press: American Journal of Medicine; 2022.
- Klotz SA, Jernberg JB, Robbins RA. Commentary: Turn Healthcare Workers Loose with Outpatient Telemedicine-Let Them Decide its Fate; No Top-down Decisions on What it Can and Cannot Do. American Journal of Medicine, 2024; In Press.
- Klotz SA, Fimbres KR, York LD. Infectious Diseases Telemedicine to the Arizona Department of Corrections During SARS-CoV-2 Pandemic. A Short Report. Southwest J Pulm Crit Care Sleep. 2023;27(3):36-39.  
doi: <https://doi.org/10.13175/swjpcas038-23>
- Klotz, Stephen A. and Lawrence D. York. Recommendations for Routine HIV-1 RNA Testing Need Updating. Annals of Infectious Diseases & Preventative Medicine. October 2023; 2(2): 1006. <https://meddocsonline.org>

# **I. Public Health Emergency for SARS COV-2 Pandemic (2020-May 2023). Telemedicine issues**

- Hospital and Clinic functions were closed
- All outpatient care moved to Telemedicine
- And now we do only Telemedicine at present—no Brick-and-Mortar clinics
- Still trying to expand our footprint in Telemedicine

- 3 years of HIV-Telemedicine records to evaluate and as well as Telemedicine to the Arizona Department of Corrections (since 2006)

# I. Commentary regarding Telemedicine from an ID, Internal Medicine, and Pulmonary/Sleep Medicine Doctor

- We recently reported on HIV telemedicine clinics conducted over 3 years of the SARS-CoV-2 pandemic involving over **900 patient visits**.
- The most striking fact was the quality of outcomes achieved compared with in-person appointments. Utilizing telemedicine, **98.6% of the patients maintained sustained viral suppression**, the goal of antiretroviral therapy.
- Previously, our best rate was a response of 91% sustained viral suppression for patients physically attending clinics in-person.
- This remarkable achievement of nearly 99% sustained viral suppression was attained using telemedicine alone.

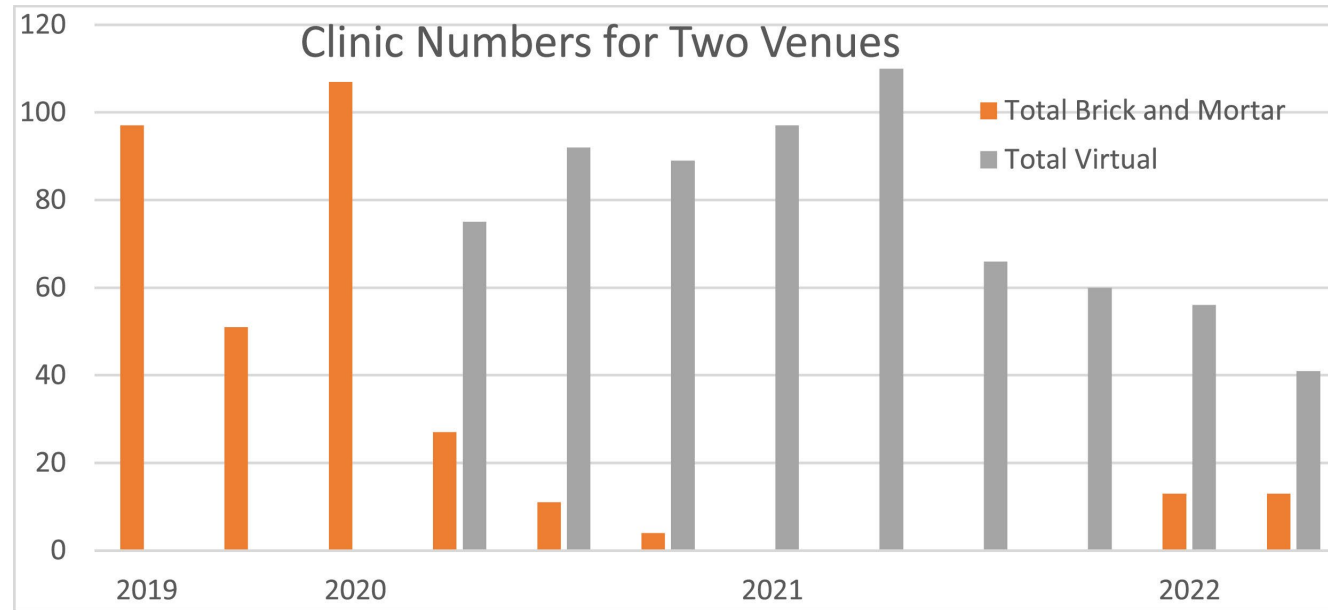
All Made Possible by Telemedicine.  
We have shown that:

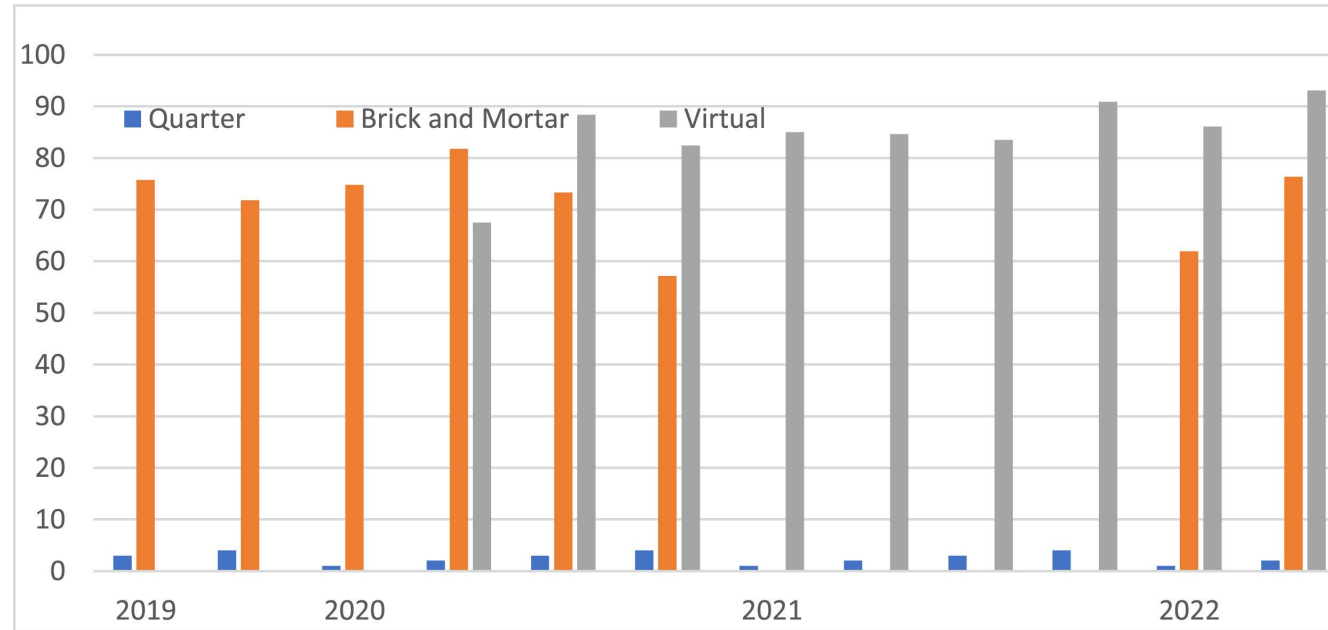
- Few Real Barriers Exist to Implementing Outpatient Telemedicine
- Outpatient Telemedicine Is Educational
- Virtual Visits vs. In-Person: the Financial Parity Issue

# II. Telemedicine performs better than Brick-and-Mortar Clinic

- Almost 99% suppression of HIV using Telemedicine
- ~90% attendance at clinics

- Best record beforehand was 91% suppression in Brick-and-Mortar Clinics
- 60% clinic attendance in Brick-and-Mortar





# III. Department of Corrections Telemedicine

- ID Consult for 45,000 incarcerated people in the state of Arizona
- Ongoing since 2006; 1-2 times/month
- Consults fell after start of Pandemic to 7 per clinic from 17 per clinic
- Normally most of the patients have HIV (~80%)

- The nature of complaints changed from HIV to:
- Osteomyelitis (bone disease)
- Right-sided infective endocarditis
- HCV
- HBV
- All associated with intravenous drug injection





## **Telemedicine expanded our competence in treating ID problems**

- These diseases are urgent problems, but all resolved successfully with Telemedicine
- This expanded our breadth of Telemedicine consults
- Department of Corrections is addressing all of these problems successfully

# IV. Doing away with “useless” routines—viral load tests



Viral load test developed in early 1990s and thought to be useful every 3-4 months 'til the present time



Today the HIV drugs are powerful and resistant to mutation



Getting blood tests is time consuming and expensive for patient and health system

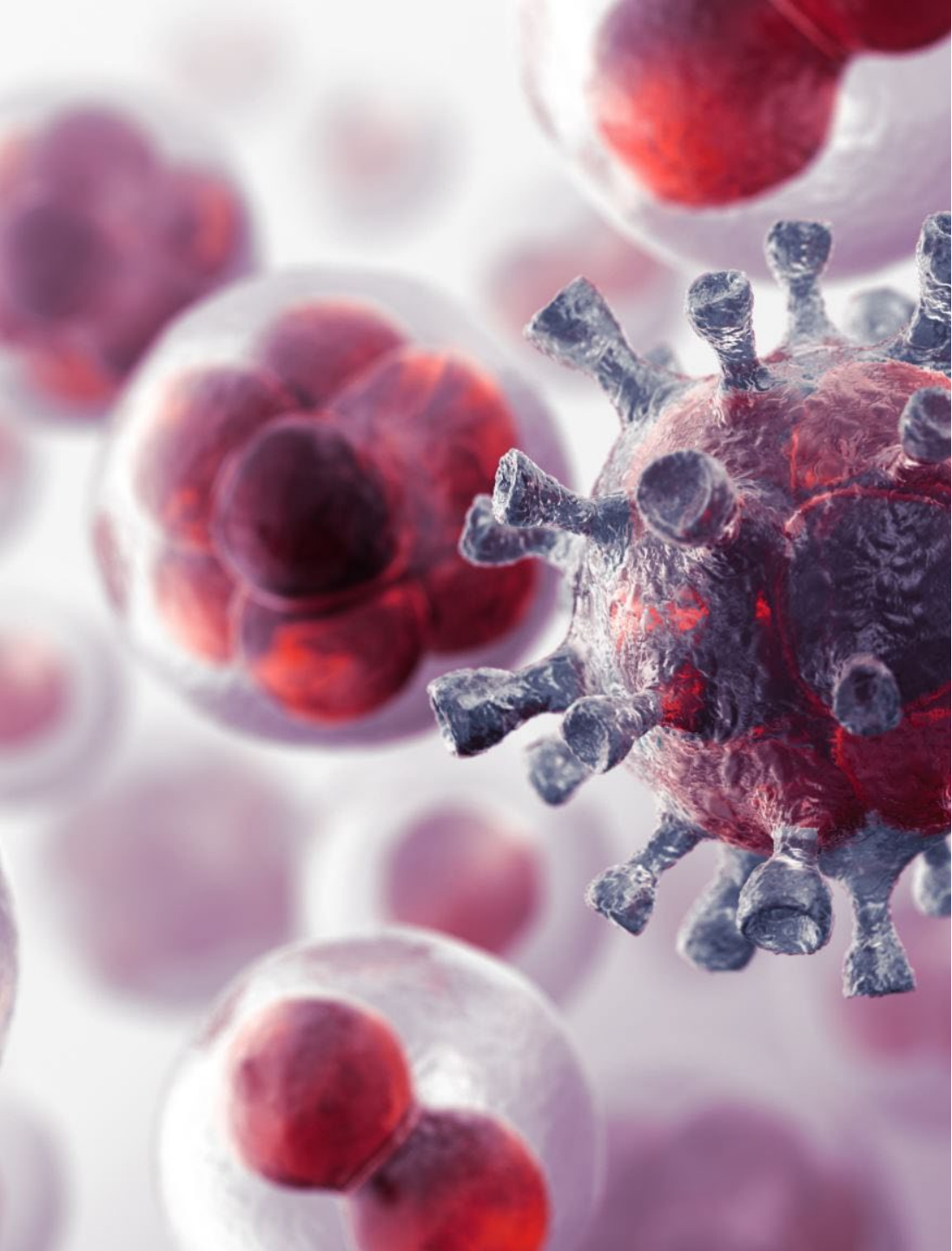
# We looked at 754 viral loads over a 4-year span

2022	2022	2022	2022
ND	ND	112	ND
ND	51		ND,ND
ND	ND		ND
ND		24	25, 109
48			ND,ND
ND,ND	ND	23,21	ND
ND		ND	40
ND,ND		ND,ND	964 ROM
ND	20,107		ND
ND,ND,ND	ND	85,95	ND,ND
200,000 New Dx	50		ND
ND,ND		107	ND,ND
90	ND	ND	ND,ND
30	ND	ND	ND
	210,630 ROM in hospital		20,107
ND	ND,ND	ND	ND
	ND	ND	ND
	ND	ND	ND
	ND,ND	85,95	ND
33		ND	2,900 Stopped
ND		ND,30,ND	ND
98	ND,ND	ND	
ND,ND	ND	ND	ND
ND	ND,ND	ND	ND
ND,ND	ND	ND	23,21
ND,ND,ND	ND,40	ND,ND	ND,70
ND		98	46
		ND,ND,ND	33
21,964 ROM		ND	ND
ND,ND		30, 630 ROM	ND
56	ND,ND,ND	ND	ND
ND	30	ND,ND,ND	ND
ND	ND,ND	ND	ND
107	ND	ND	ND,ND

**Table 1:** Viral load measurements for patients encountered in 2022 for the years 2019-2022.

	2022 (%)	2021 (%)	2020 (%)	2019 (%)	Total (%)
Viral Loads	210	257	160	127	754
Non Detectable Viral Loads	146 (70)	185 (72)	116 (72)	107 (84)	554 (74)
“Blips”	56 (27)	59 (23)	33 (21)	18 (14)	166 (22)
Viral Loads >200 copies	8 (4)	13 (5)	11 (7)	2 (2)	34 (4)
New diagnosis	1	8	4		13
Non-compliance	1	3	2	1	7
Ran out of medications	6	1	3	1	11
Stopped medications		1	1		2
Drug interaction			1*		1

Breakdown of reasons for patients with viral load >200 copies of RNA/ $\mu$ l. **Blips:** this refers to test results with >20 but <200 copies of HIV-1 RNA. \*: pantoprazole was added to a regimen of elvitegravir/cobicistat/emtricitabine/tenofovir (Genvoya) by an outside physician.



# Conclusion

- We have found that once patients have achieved viral suppression the interim history is the most rapid and accurate gauge of sustained viral suppression.
- This can be accomplished without routine viral load testing.
- Sustained viral suppression is the goal of therapy, and once achieved, persists unless ART is interrupted.
- Performing a viral load once a year is likely to be adequate. Its value lies in reassuring the patient, more so than the medical provider.

# How often to order viral load?

HIV Viral Load no more than once a year

It will re-assure patient that all is well



# Most important learning point!

- Telemedicine works best when programmatic, meaning Clinic Coordinator, Pharmacist and Physician were all on each call for 25 minutes. Everything is addressed for 1 year. Every participant has a set number of standard questions.

