Utilizing Durable Viral Load Suppression to Address the Opioid Epidemic Among Persons Living With HIV, 12891

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BACKGROUND

When considering the development of targeted clinical interventions based on viral suppression for People Living with HIV (PLWH) within large, urban-based settings, special considerations must be given to subpopulations with co-occurring Substance Use Disorder (SUD). The traditional clinical biomarker of the patient's most recent VL does not give correlative insight into a patient's behavior and multifactorial risks over an extended period of time.

Recent studies have shown that longitudinal viral load analysis over a 1-2 year span proves to be more effective when assessing long-term adherence of ART and overall stability of suppression compared to single viral load measurements [1]. This analysis can effectively be conducted by utilizing the Durable Viral Load Suppression (DVLS) metric, paired with accurate data reporting systems/methodologies.

Additional studies have examined the performance of DVLS across patient populations disproportionately affected by the opioid epidemic and found that PLWH who misused opioids have achieved DVLS markedly less than those who did not report illicit substance use [2]. Continuous monitoring of DVLS as part of a program's quality management plan serves to be a prospective data-driven assessment tool for measuring treatment adherence among dual-diagnosed PLWH with Substance Use Disorder.

METHODS

Cooper EIP Expanded Care (CEEC) Center, an urban hospital based clinic in Camden NJ, utilizes CAREWare, a Ryan White HIV/AIDS Programs database and Epic EMR for data integration, storage, and reporting of HIV healthcare metrics and outcomes. The following figure is an overview of how data is extracted from both systems.
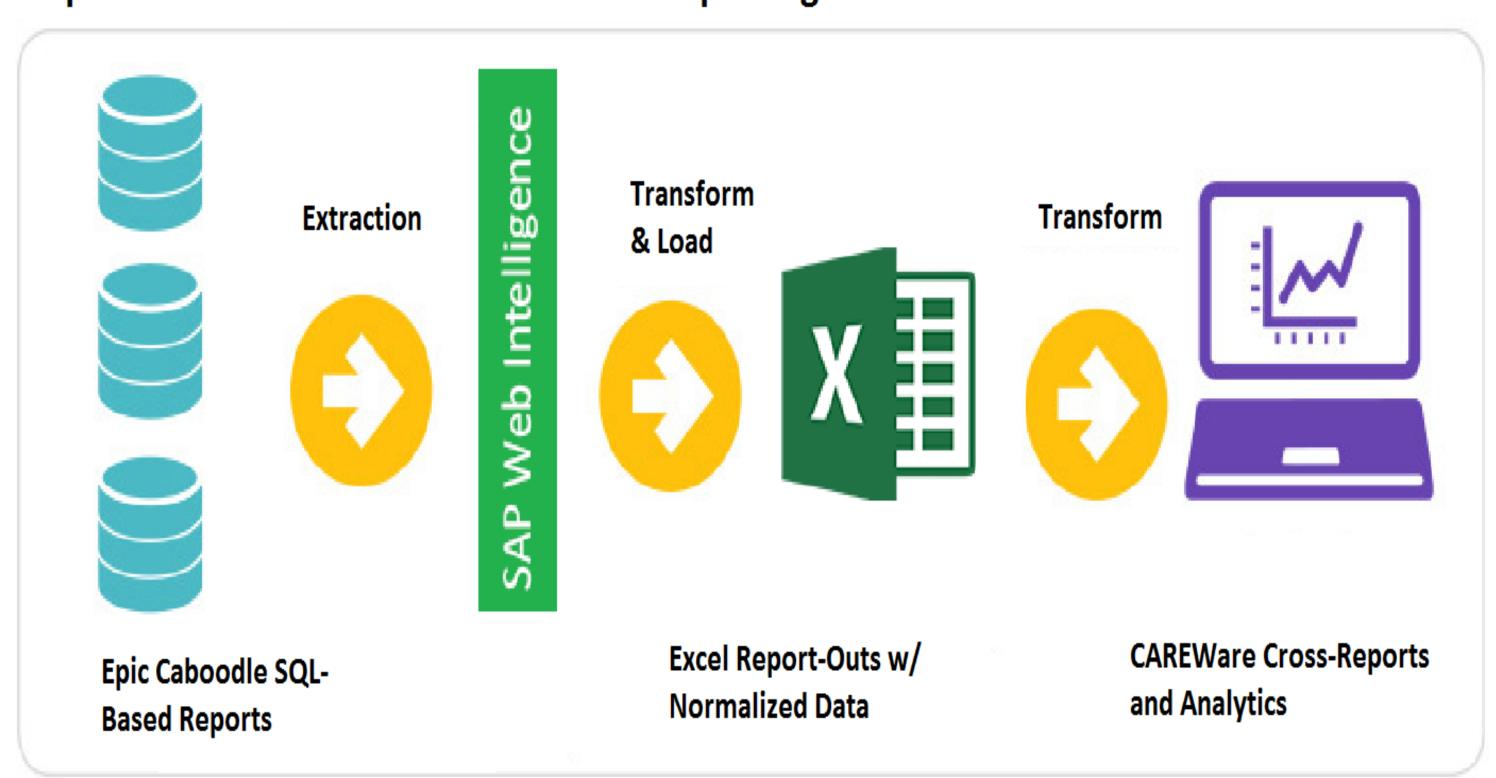
Epic Data Warehouse and CAREWare Reporting

Figure 1 Epic / CAREWare Data Extraction Process
- All Viral Load data since the Epic Go-live in 2014 are interfaced into CAREWare for the purpose of increased accuracy in data reporting.
- WebI Data Warehouse extract of clinical diagnoses and use of Healthcare Cost and Utilization's (HCUP) Clinical Classification System (CCS)[3] tool to normalize large ICD-10 diagnosis code datasets for further analysis
- Careware report out of longitudinal viral load analysis of active PLWH between January 1, 2016 and December 31, 2017.

PURPOSE / OBJECTIVE

1. Define the numerator and denominator for measuring durable viral load suppression (DVLS) of persons living with HIV.
2. Describe methods for reporting and mining clinical data to further examine populations with co-occurring Substance Use Disorder.
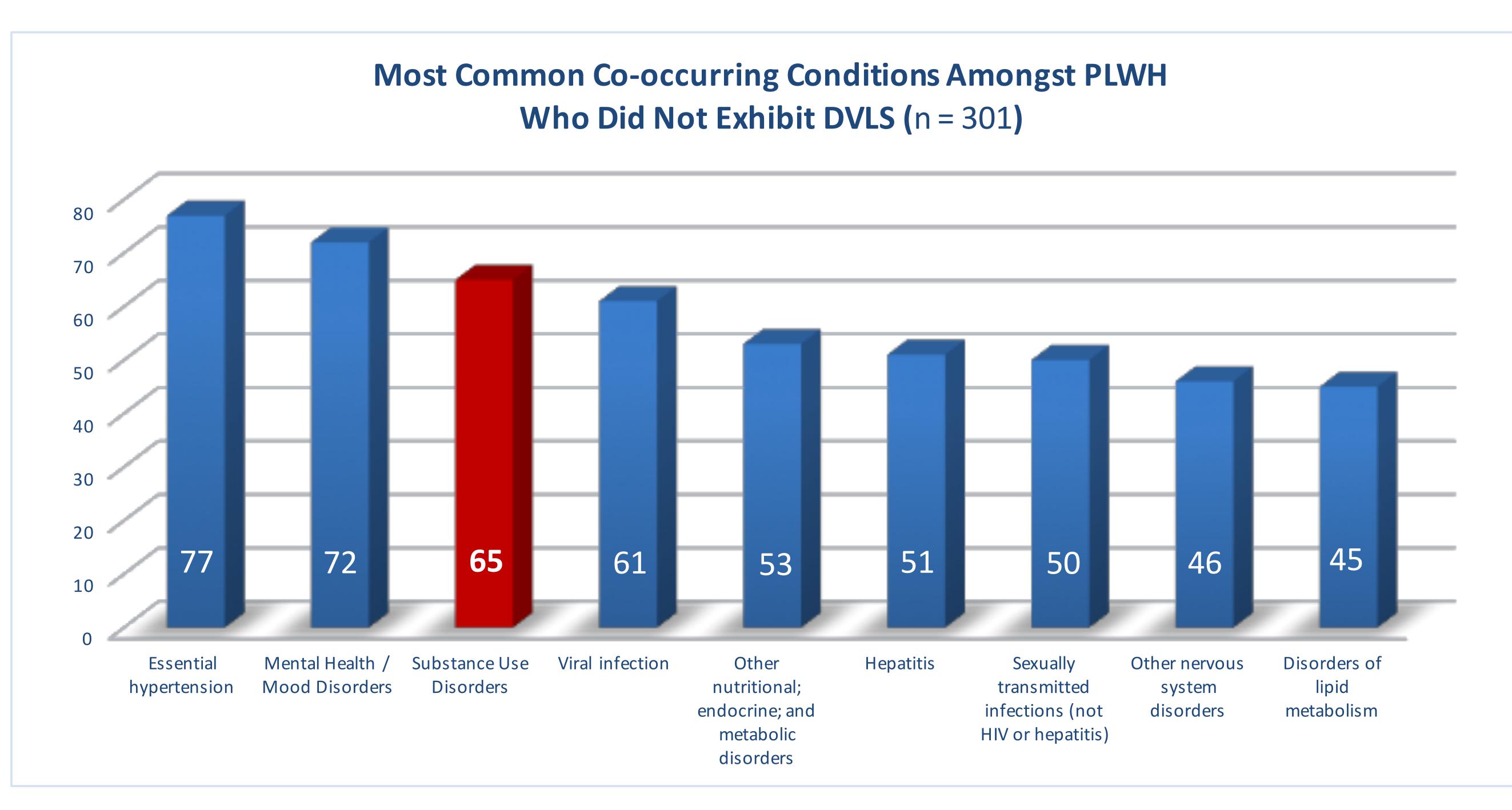3. Apply the DVLS metric to appropriately identify underserved PLWH populations for targeted outreach and to further develop clinical interventions.

Figure 2 Demographic Breakdown of PLWH who did not exhibit DVLS

Aggregate Data Between January 1, 2016 and December 31, 2017	DID NOT Achieve Durable Viral Load Suppression	
	#	%
Total # of Unduplicated Patients	301	100.00
Race/ethnicity: Black	171	56.81
Race/ethnicity: Latino	74	24.58
Race/ethnicity: White	54	17.94
Race/ethnicity: Other	13	4.32
Gender: Male	196	65.12
Gender: Female	103	34.22
Gender: Transgender MtF	2	0.66
Age: 19-24	10	3.32
Age: 25-34	78	25.91
Age: 35-44	50	16.61
Age: 45-54	86	28.57
Age: 55-64	65	21.59
Age: 65 and older	12	3.99

DVLS DEFINITION

For our reporting purposes, Durable Viral Load Suppression is defined as the following:
- **Denominator**: HIV+ Individual with at least one medical visit with a provider, diagnosis date >1 year since the measurement end date, at least one viral load test within the first 12 month span and at least 1 viral load test within the second 12 month span
- **Numerator**: All Viral Loads within the 24 month measurement period are <= 200 copies/mL

Most Common Co-occurring Conditions Amongst PLWH Who Did Not Exhibit DVLS (n = 301)

Condition	Count
Essential hypertension	77
Mental Health / Mood Disorders	72
Substance Use Disorders	65
Viral infection	61
Other nutritional; endocrine; and metabolic disorders	53
Hepatitis	51
Sexually transmitted infections (not HIV or hepatitis)	50
Other nervous system disorders	46
Disorders of lipid metabolism	45

Figure 3 Epic "Problem List" data is mined using the data warehouse reporting tool, SAP Web Intelligence, to report out all clinical diagnoses documented in a patient's chart. This data is saved in the form of ICD-10 codes and organized into broad categories using the Clinical Classification System's (CCS) categorization schema. The table represents the 301 active PLWH between January 1, 2016 and December 31, 2017 who did not exhibit DVLS and illustrates the most common co-occurring conditions shared amongst the cohort.

FINDINGS

- For calendar year 2017, a CAREWare report out of EIP's active PLWH population who fit the denominator criteria (n = 806) were analyzed.
- 529 out of the 806 patients did satisfy the DVLS metric, equating to a **65.63%** durable viral suppression rate for the entire eligible PLWH population.
- In comparison during that same measurement year, a small cohort of 35 individuals were identified as having active Substance Use Disorder complications **and** were actively being followed by Addictions Medicine. Within this separate cohort, the durable viral load suppression measure was calculated to be **42.86% (15/35)**.
- A supplementary report out of PLWH who did not exhibit DVLS over a two year span from January 1, 2016 to December 31, 2017 and their documented clinical diagnoses were exported.
- 65 out of 301 (Figure 3) patients were observed to have co-occurring SUD.

ABOUT THE COOPER EIP EXPANDED CARE CENTER (CEEC)

- Comprehensive multidisciplinary medical and support services, including Addictions Medicine as of December 2017
- Located in the Sheridan Pavilion at 3 Cooper Plaza, Suite 513, Camden City, Camden County, New Jersey.
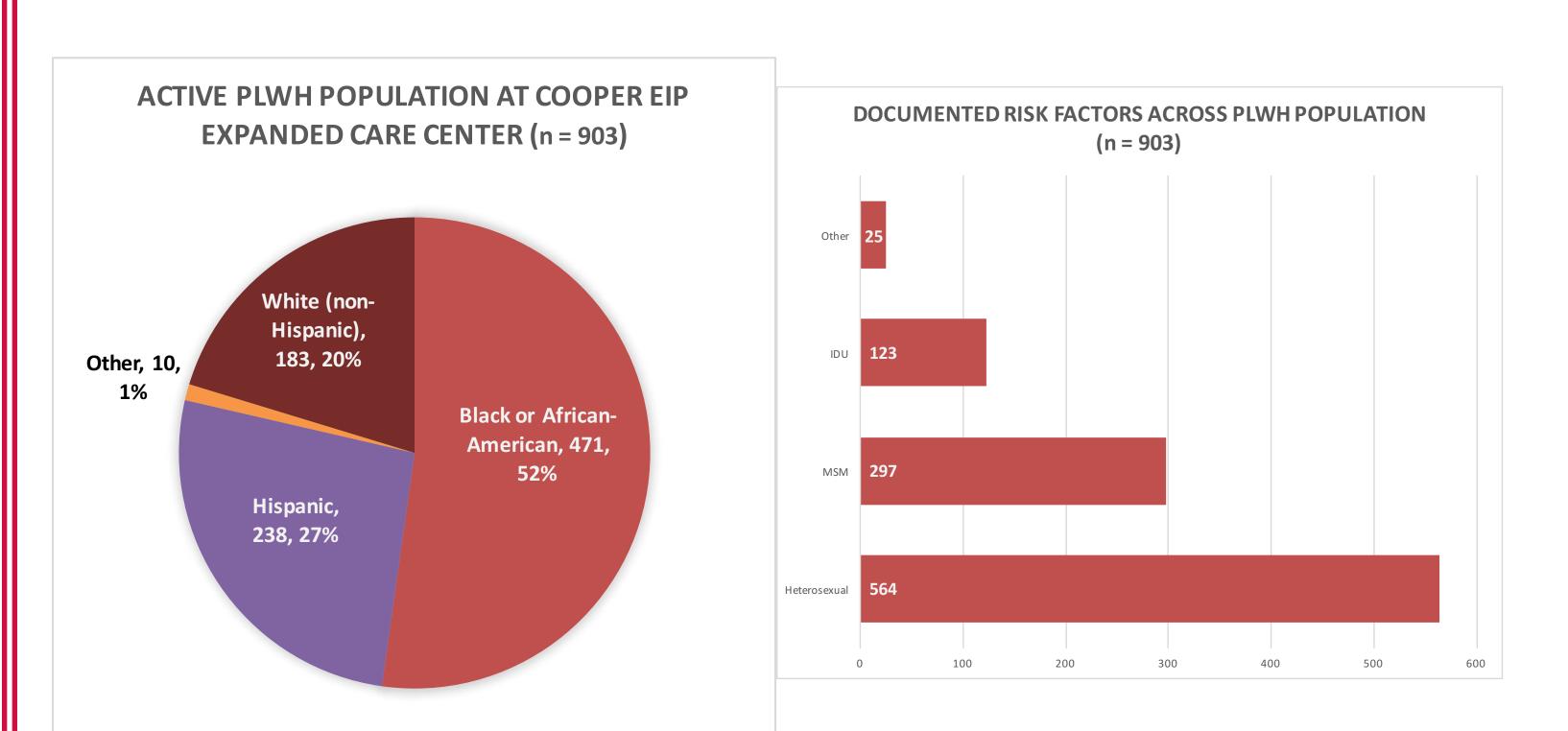- Only full service Ryan White HIV medical care program in Camden City

Figure 4 The graphs above are representative of CEEC's active PLWH population as of December 31, 2017. Any consumers with multiple risk factors may be represented more than once.

LIMITATIONS

- Accurate use of Epic Problem List data (ICD-10 diagnoses codes) for analytical purposes is dependent on thorough provider documentation in the appropriate EMR module
- Process to audit patient charts for scanned in lab work (if patient gets bloodwork outside of Cooper Pathology, LabCorp, or Quest) was not established until early 2017. Some viral load data that was not interfaced may be missing.

CONTACT

For more information, please contact Ronnie Mendoza at mendoza-ronnie@cooperhealth.edu

REFERENCES
1. Lemons A, Degroote N, Peréz A, et al. Opioid Misuse among HIV-Positive Adults in Medical Care: Results from the Medical Monitoring Project, 2009 - 2014. J Acquir Immune Defic Syndr. 2018;
2. Marks G, Patel U, Stirratt MJ, et al. Single Viral Load Measurements Overestimate Stable Viral Suppression Among HIV Patients in Care: Clinical and Public Health Implications. J Acquir Immune Defic Syndr. 2016;73(2):205-12.
3. Wier LM, Levit K, Stranges E, et al. HCUP Facts and Figures: Statistics on Hospital-based Care in the United States, 2008. Rockville, MD: Agency for Healthcare Research and Quality, 2010

CONCLUSION

Utilization of Durable Viral Load Suppression (DVLS) as a clinical metric for surveillance reporting can further improve prioritized patient outreach efforts in large, urban-based clinics, especially affected by the opioid epidemic. PLWH with active, diagnosed Substance Use Disorder (SUD) and currently seeking treatment have been shown to achieve DVLS at a statistically lower rate than those with no history of substance use. In addition, further examination of patient ICD-10 diagnoses codes across an analytical cohort of PLWH who did not exhibit DVLS illustrated a higher prevalence of co-occurring SUD (both active and in remission) compared to most other clinical diagnoses. Performance of the DVLS metric across the PLWH population at the CEEC clinic reflects the well characterized treatment adherence challenges encountered in the dual-diagnosed subpopulation with diagnosed SUD.