

Examining the role of HIV lab surveillance data to help track engagement in HIV care

Ron Lubelchek, MD
Associate Medical Director,
Ruth M. Rothstein CORE Center

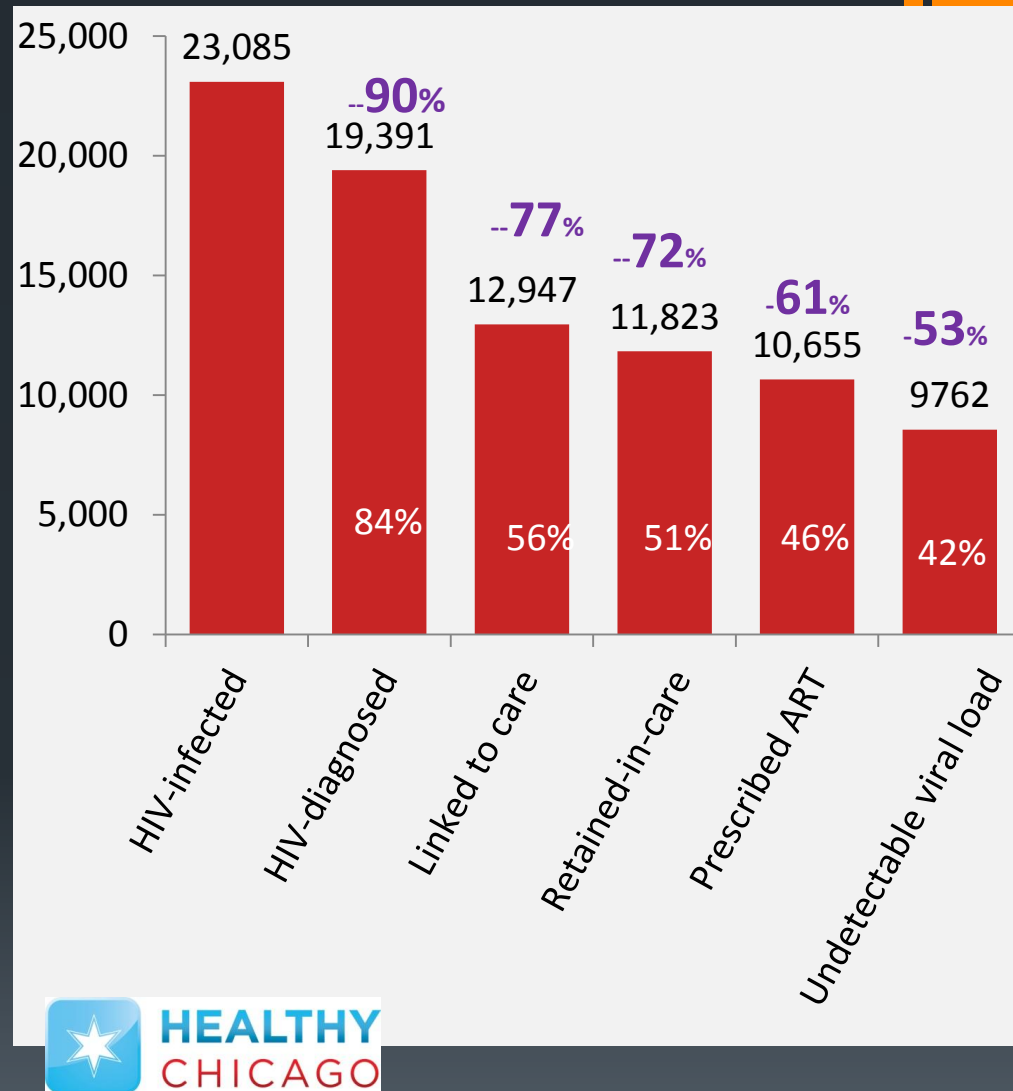
Nanette Benbow, M.A.S.
Deputy Commissioner for HIV/STI Services
Chicago Department of Public Health

Chicago site presentation
CFAR Continuum of Care (COC) Working Group Meeting – Day 1
February 3, 2014
Washington, D.C



Background

- The National HIV/AIDS Strategy (NHAS) lays out three goals:
 - decreasing HIV incidence
 - improving access and quality of care for people living with HIV/AIDS (PLWHA)
 - reducing HIV-related health disparities
- 2015 NHAS HIV care cascade goals re: linkage/retention
 - Increase proportion linked to care from 65% to 85%
 - Increase Ryan White patients in continuous care from 73% to 80%
- The HIV care cascade allows us to gauge how we are doing with respect to NHAS goals



Continuum of Care - Chicago, 2010
with 2015 targets

Measures for retention/engagement-in-care

- IOM report:
 - Proportion of people with diagnosed HIV infection who are in continuous care (two or more visits for routine HIV medical care in the preceding 12 months at least 3 months apart)
 - Proportion of people with diagnosed HIV infection who received two or more CD4 tests in the preceding 12 months
 - Proportion of people with diagnosed HIV infection who received two or more viral load tests in the preceding 12 months
- HHS-endorsed core indicator:
 - Numerator: Number of people with an HIV diagnosis who had at least one HIV medical care visit in each six-month period of the 24-month measurement period.
 - Denominator: Number of people with an HIV diagnosis with at least one HIV medical care visit in the first six months of the 24 months measurement period
- NHAS goals:
 - Proportion in continuous care defined as two or more visits for routine HIV medical care in the preceding 12 months, with visits at least 3 months apart.
- Harmonize?

ECHPP/CFAR Chicago site year 2 aims

1. Analyze 2011 Chicago Department of Public Health (CDPH) CD4 and HIV viral load (VL) surveillance data in order to characterize those living with HIV/AIDS who are not linked to care, retained in care, or virally suppressed based on lab-based definitions for linkage and retention in care.
2. Assess the usefulness of HIV surveillance laboratory data to track engagement-in-care.
 - A. Identify barriers to enhanced use of CD4/VL data to supplement engagement in clinical care outreach efforts.
 - B. Compare clinic visit vs. HIV surveillance lab-based definitions for engagement-in-care in order to estimate performance characteristics for lab-based measures of patient engagement-in-care.

Barriers to use of HIV lab surveillance data for improving engagement in HIV care in the 12 metropolitan statistical areas most affected by HIV/AIDS. **K Finnegan**, R Lubelchek, N Prachand, Nanette Benbow, MAS ; Patricia Murphy. ID Week, 2013, San Francisco, Oct. 2-6. abstract 685.

Methods: Aim 1

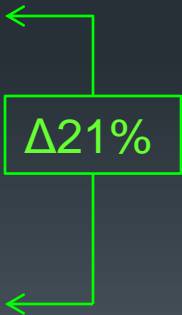
- Used HIV lab surveillance data reported to CDPH via the electronic HIV/AIDS Reporting System (eHARS) to assess linkage-to-care and engagement-in-care, using 2011 data.
- Definitions utilized:
 - Linkage-to-care:
 - Definition 1: CD4 and/or viral load performed within 90 days of diagnosis from an outpatient facility, excluding VL/CD4 done +/- 3 days from date of HIV diagnosis.
 - Definition 2: CD4 and/or VL performed within 90 days of diagnosis
 - Engagement-in-care:
 - Definition 1: 2 CD4 and/or VL performed at least 3 months apart
 - Definition 2: 2 CD4 and/or VL performed at least 3 months apart from the same facility
 - We also examined factors that correlated with linkage and engagement in-care via comparing X^2 -values for various co-variates such as age, sex, race, ethnicity, transmission category.

Aim 1: Results

Linkage-to-care



Chicago cases linked to care based on HIV lab surveillance data		
	2011	
Linked to Care	N	%
Total number of cases	1003	-
Total excluding deceased cases	990	100.00%
Cases with cd4/vl within 3 months of diagnosis (excluding labs +/- 3 days from HIV diagnosis date and those definitively from inpatient facility±)	572	58%
Cases with cd4/vl within 3 months of diagnosis (INCLUDING labs +/- 3 days from HIV diagnosis date and those definitively from inpatient facility±)	783	79%



Aim 1: Results

Engagement-in-care

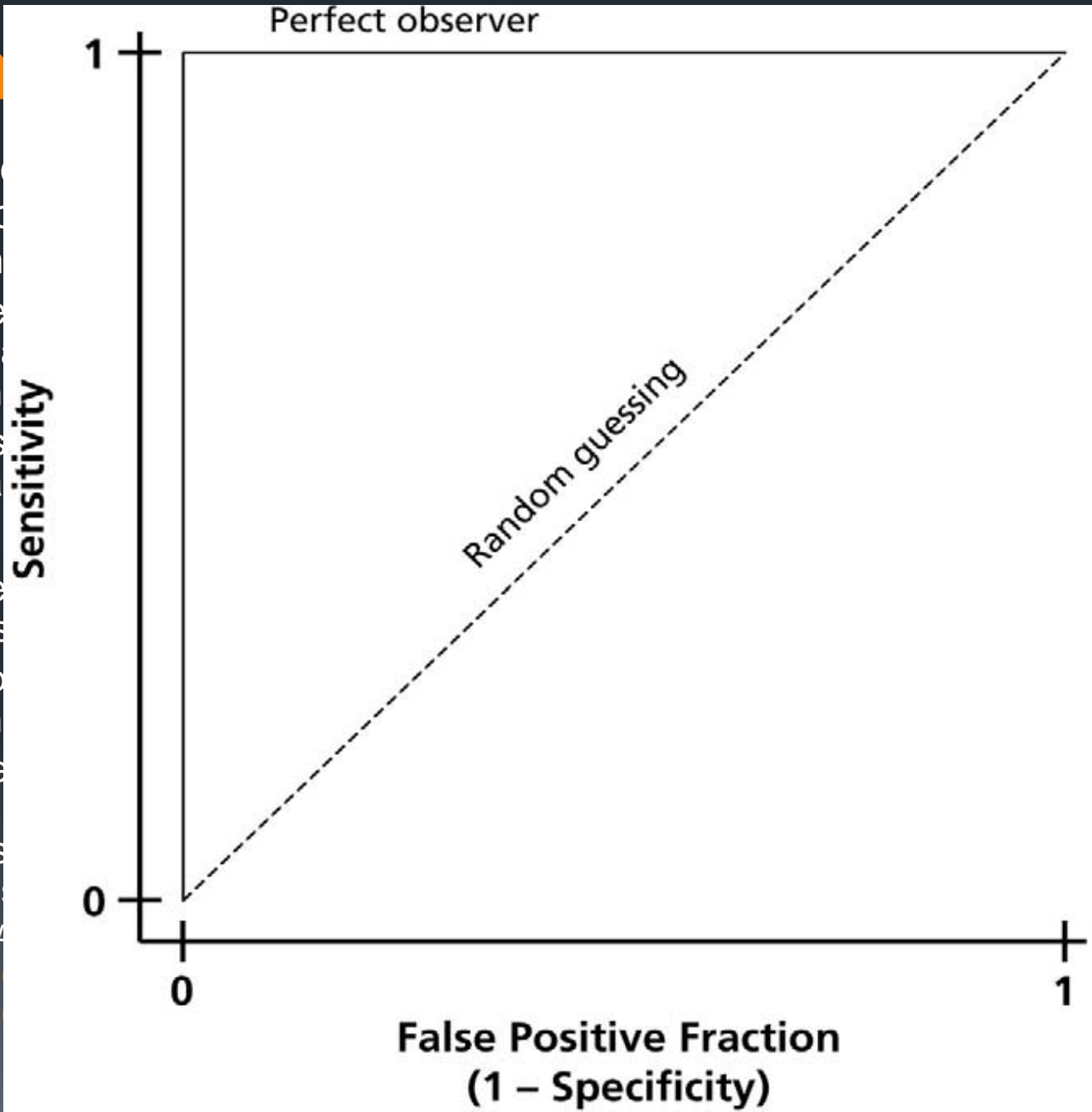
Chicago cases engaged-in-care based on HIV lab surveillance data		
	2011	
Engaged-in-care	N	%
Total number of cases diagnosed before Dec. 31, 2010	29,887	-
Total excluding deceased cases	19,319	100.00%
Cases with ≥ 2 cd4/vl at least 3 months apart	6,588	34.1%
Cases with ≥ 2 cd4/vl at least 3 months apart from same facility	5,998	31.0%

Aim 2b: Methods

- Re-cap aim/objective:
 - Determine the utility of a HIV surveillance lab-based assessment of patient engagement/non-engagement-in-care
 - Why?
 - 1. Lend insight to DOH as to how surveillance lab based assessment of engagement corresponds to clinic visit based assessment
 - 2. Help determine if surveillance based assessments of patient engagement can be useful to clinical care providers seeking to tract patient engagement
 - i.e. can DOH surveillance-based engagement data be used to inform clinical care providers which of their patients is truly lost-to-care vs. in care elsewhere.

Aim

- Use standard definitions
- Search engines
- Use basic
- Brief
- Search tests
- Spelling
- Relevance of results
- It is
- A



non-
lance
/
e.g.
rmance
eria).
ormance



Aim 2b methods continued

- Clinic visit data sets
 - Drawn from visit at the Ruth M. Rothstein CORE Center
 - Cook County Health and Hospital Systems ambulatory HIV clinic
 - Provides primary care to nearly 5500 PLWHA
 - Data set 1:
 - Engaged patients: Those whom meet DHHS definition for being in continuous care
 - At least 1 visit per consecutive 6 month periods over 24 months, with a minimum of 60 days between the first medical visit in the prior 6 month period and the last medical visit in the subsequent 6 month period between Jan. 2010 to Dec. 2011.
 - Non-engaged patients: Those with at least one visit in the second half of 2010 and no visit in 2011.
 - Data set 2:
 - Small data set of patients confirmed to be in jurisdiction, non-deceased, not in care elsewhere
 - CORE Center primary care patients lost to care prior to 2012 for whom outreach workers attempted to get back into care and for whom outreach workers listed disposition.
 - Excluded patients listed as:
 - Deceased
 - In care elsewhere
 - Out of jurisdiction
 - In corrections

Aim 2b methods cont.

- For each of the clinic visit data sets we matched patients with known clinic visit based engaged/non-engaged status against CORE lab data and CDPH eHARS lab surveillance data
 - For the CDPH eHARS match we excluded the following patients:
 - Deceased
 - Moved out of jurisdiction
 - Not residing in Chicago
- We considered 3 different surveillance lab-based definitions for engaged-in-care:
 - ≥ 1 CD4/HIV VL reported to eHARS for 2011
 - ≥ 2 CD4/HIV VLs reported to eHARS for 2011
 - ≥ 2 CD4/HIV VLs from same facility reported to eHARS for 2011
- We determined sensitivity, specificity and ROC AUC of these criteria for identifying patients as non-engaged compared against clinic visit data.

Aim 2b results

CORE Center lab data for monitoring CORE Center HIV patient engagement		
	Clinically non-engaged	Clinically engaged
No lab reported in 2011	409	23
≥ 1 lab reported in 2011	32	2,441
Total	441	2,464

For non-engagement:

$$\text{Sensitivity} = 409/441 = 92.7\% \pm 2.4\%$$

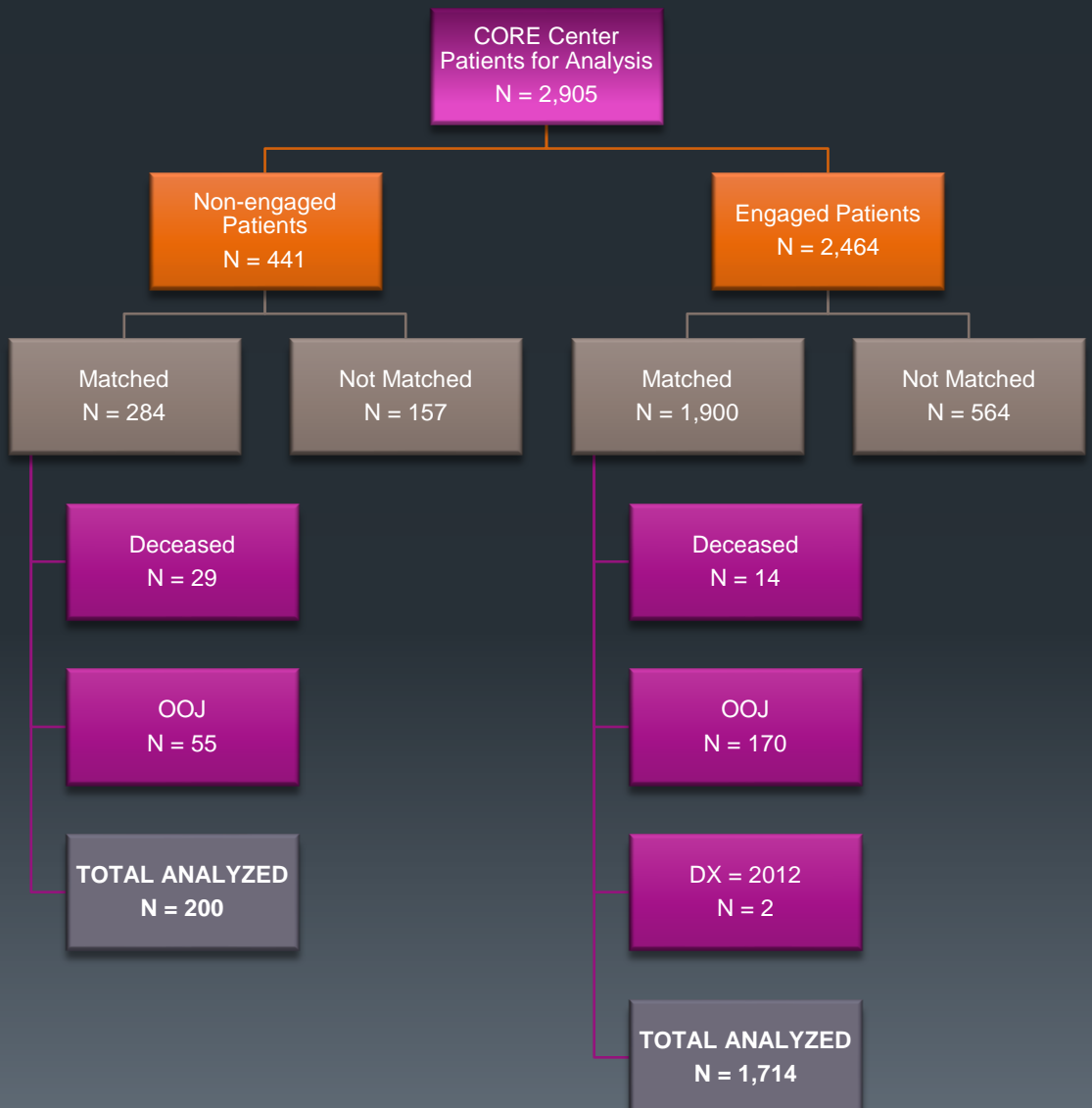
$$\text{Specificity} = 2,441/2,464 = 99.1\% \pm 0.38\%$$

CORE Center lab data for monitoring CORE Center HIV patient engagement		
	Not in care	In Care
< 2 labs reported in 2011 at least 3 months apart	435	254
≥ 2 lab reported in 2011 at least 3 months apart	6	2,210
Total	441	2,464

$$\text{Sensitivity} = 435/441 = 98.6\% \pm 1.1\%$$

$$\text{Specificity} = 2,210/2,464 = 89.7\% \pm 1.2\%$$

Results of matching CORE patients with CDPH eHARS



Aim 2b: Results of CORE visit vs. CDPH eHARS lab data

Testing CDPH eHARS lab based surveillance data for monitoring CORE Center HIV patient engagement – Definition 1					
	Not in care*		In Care**		Total
	N	%	N	%	N
No lab reported in 2011	107	53%	22	1%	129
≥ 1 lab reported in 2011	93	47%	1,692	99%	1,785
Total	200	100%	1,714	100%	1,914

Testing CDPH eHARS lab based surveillance data for monitoring CORE Center HIV patient engagement – Definition 2					
	Not in care*		In Care**		Total
	N	%	N	%	N
< 2 labs reported in 2011	144	72%	144	8%	288
≥ 2 labs reported from in 2011 at least 3 months apart	56	28%	1,570	92%	1,626
Total	200	100%	1,714	100%	1,914

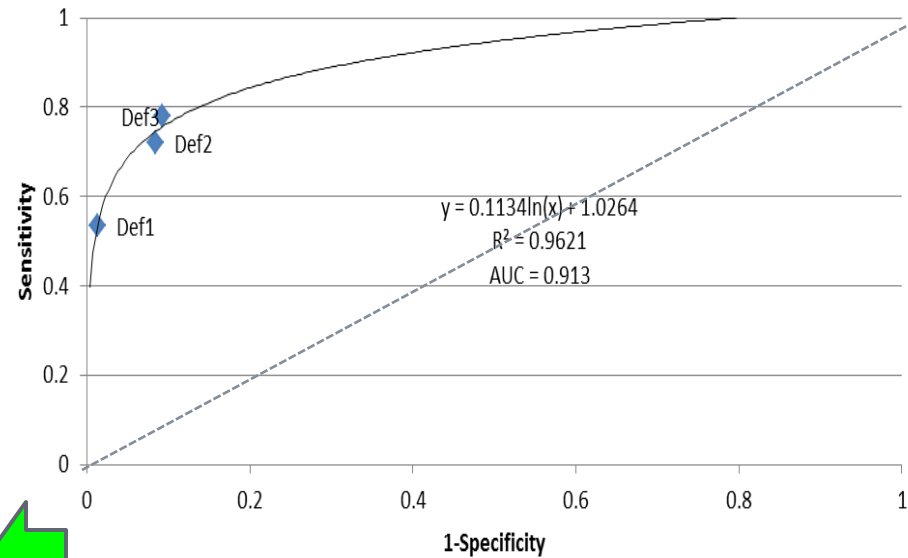
Testing CDPH eHARS lab based surveillance data for monitoring CORE Center HIV patient engagement – Definition 3					
	Not in care*		In Care**		Total
	N	%	N	%	N
< 2 labs reported in 2011 from same facility	156	78%	158	9%	314
≥ 2 labs reported from in 2011 from same facility at least 3 months apart	44	22%	1,556	91%	1,600
Total	200	100%	1,714	100%	1,914

Results for matching clinically engaged and non-engaged patients against CDPH eHARS lab data

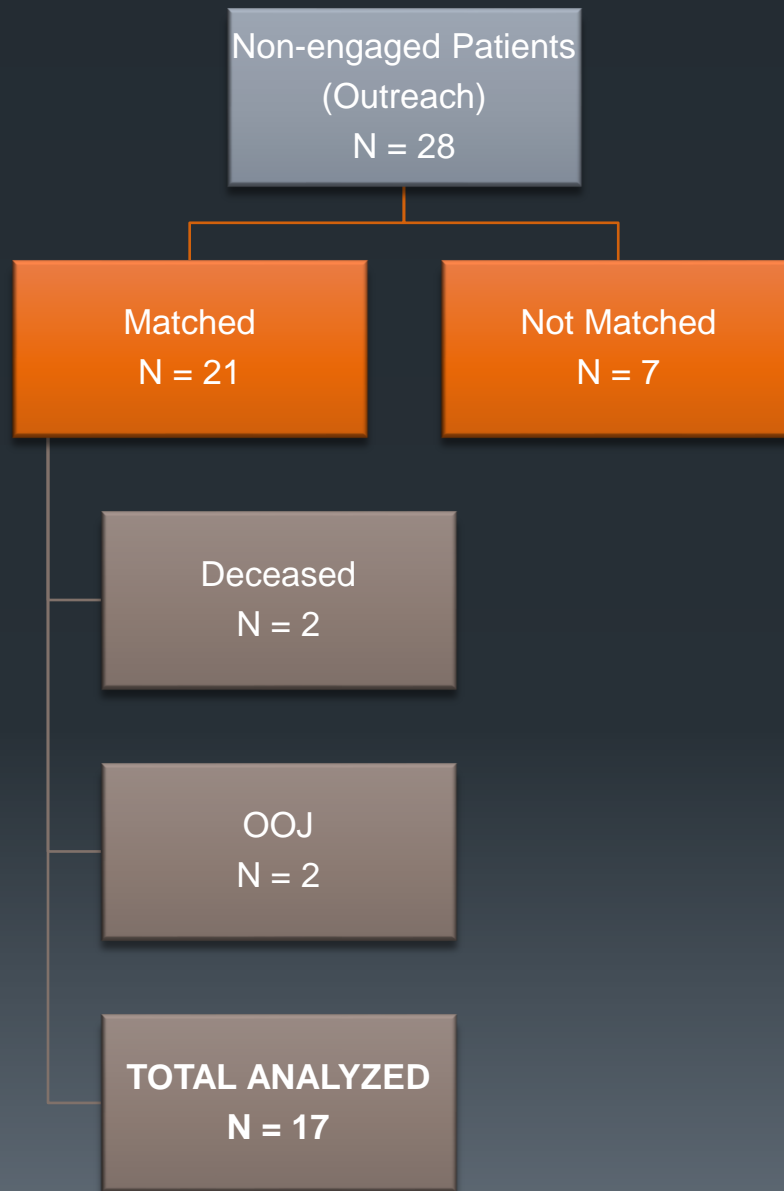
Sensitivity and specificity of lab based measures of non-engagement in care for clinically non-engaged CORE Center patients matched to eHARS database

	Sensitivity (95% CI)	Specificity (95% CI)
Definition 1: No lab in 2011	53.5% (6.9%)	98.7% (0.5%)
Definition 2: < 2 labs reported in 2011	72.0% (2.1%)	91.6% (1.3%)
Definition 3: < 2 labs reported in 2011 from same facility	78.0% (2.0%)	90.8% (1.4%)

ROC of lab based measures of non-engagement in care for *clinically non-engaged* CORE Center patients matched to eHARS database



Match of “definitely out of care patients” with CDPH eHARS



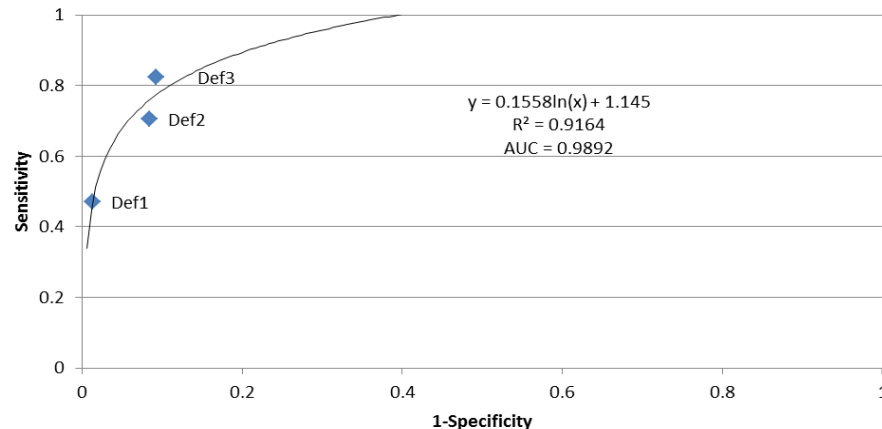
CDPH eHARS match for definitely-out-of-care data set

Sensitivity and specificity of lab based measures of non-engagement in care for clinically non-engaged CORE Center patients matched to eHARS database – definitely out of care data set

	Sensitivity (95% CI)	Specificity (95% CI)
Definition 1: No lab in 2011	47.1% (23.7%)	98.7% (0.5%)
Definition 2: < 2 labs reported in 2011	70.6% (21.7%)	91.6% (1.3%)
Definition 3: < 2 labs reported in 2011 from same facility	82.4% (18.1%)	90.8% (1.4%)



ROC of lab based measures of non-engagement in care for *clinically non-engaged* CORE Center patients matched to eHARS database - Outreach



Limitations

- Patients in the CDPH eHARS database include only those cases which reside in the city of Chicago at their date of diagnosis which resulted in fewer CORE Center patients being matched to the database.
- No true gold standard when considering which patients are engaged-in-care. Patients we deemed as out of care based on clinic visits, may have been in care else where.
- Patients may have received labs in ED/urgent care and labs alone do not equate to engagement/retention-in-care
 - This is why we looked at labs from same facility definition
- Experience highlighted some inherent challenges of working with lab surveillance data.

Conclusions:



- Use of lab-based surveillance to gauge patient engagement-in-care can be informative
 - Has high sensitivity and specificity for identifying non-engaged patients compared to clinic visit-based definitions for patient engagement-in-care.
- System for bi-directional data sharing between DOH and clinical providers (e.g. CORE Center) may have the potential to improve engagement and retention activities for HIV patients
- Creating HIV public health information exchange could facilitate the process of identifying and re-engaging out of care PLWHA
- This work has served as a feasibility study of sharing surveillance data with providers to impact re-engagement in care that will now be implemented city-wide.
- Helped explore security and confidentiality concerns around data sharing with community stakeholders and others interested in sharing data
- Helped validate engagement-in-care performance measures that can be used to track local progress.

Acknowledgements

- Chicago CFAR/ECHPP Year 2 team
 - CDPH
 - Nanette Benbow. Deputy Commissioner, HIV/STI Services Division
 - Nik Prachand, Director HIV/STI surveillance
 - Ronald Hazen, HIV/STI surveillance epidemiologist
 - Stephanie Townsell, HIV Surveillance Program Director,
 - Cook County Health and Hospitals System/Chicago D-CFAR
 - Katelynne Finnegan, CFAR/ECHPP Year 2 Project Coordinator
- Chicago D-CFAR
 - Alan Landay – Director
 - Anna Hotton – Clinical core biostatistician
 - Audrey French – Clinical core director
- CFAR Continuum of Care Working Group meeting organizers
 - Alan Greenberg – CFAR/ECHPP supplement Principal Investigator
 - Rebecca Barasky
 - Jenna McCroskey-Crowther
 - Other GWU meeting organizers
- Thank you

