Time to Viral Suppression: Timely Linkage and Number of Care Visits

Texans Diagnosed in 2010-2011

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? Why Time to Suppression ?

- Suppression:

1. People suppressed can lead long lives.
2. People suppressed less likely to transmit HIV.

- The quicker these things happen, the better for everyone!

- An Important factor- Timely Linkage to Care.
- Linkage: The National Strategy calls for 85% of the newly diagnosed to be linked into care within 3 months by 2015.

Linkage to Care is defined as evidence of an HIV-related office visit, a viral load or CD-4 test or an ARV prescription.

Timely linkage is within 3 months of Diagnosis.

? Why Linkage affects Suppression?

- Timely linkage should mean:

1. Person gets access to ARVs more quickly.
2. Gets help with paying for care if not covered by insurance (Ryan White, ADAP and/or other Public Health).
3. Person's non-HIV partner(s) less likely to become infected once suppression is attained.

? Why Linkage affects Suppression?

- Even with a good definition of linkage, there are some gray areas.

1. In some parts of Texas, and elsewhere, diagnosis leads to another lab or appointment the same day.
2. In addition to timeliness, it's helpful to also look at number of visits prior to suppression.

?? Why Number of Care Visits affects Suppression ??

- How many visits does a person usually have between the time they are diagnosed and the time they have a non-detectable viral load test?
- Strength of Linkage
- Hypothetical Question:

If Joe has 6 visits within 3 months of diagnosis, and Jim just has 2 visits, is Joe more likely to be suppressed than Jim within 6 months of diagnosis?

?? Why Number of Care Visits ??

- The number of care visits might show how engaged a person is, and get at ?? like…
- Do they feel comfortable with their medical provider?
- Is it easy to get an appointment or is there a long waiting time?
- Is transportation assistance available if it is needed?

Assessing Time to Suppression

This study seeks to answer:

- What is the number of days (or months) between diagnosis and suppression?
- Are those linked to care sooner also suppressed sooner?
- Are those with more visits suppressed sooner than those with fewer visits?
- Are people with a low CD-4 count (sicker) suppressed more quickly than those with a higher CD-4 count, or is it the other way around?

Previous Research

- A 2013 Study by Hall, Tang, Westfall and Mugavero (www.plosone.org, December 2013) was the first to demonstrate newly diagnosed people with:

1. Timely Linkage (0-3 months) and
2. A Greater # of Care Visits prior to suppression

Are suppressed more quickly than others.

They analyzed ELR lab data from 19 jurisdictions including New York, LA County, San Francisco, D. C., Michigan, Louisiana and other less populous areas…diagnosed in 2009 over age 12. Followed until Dec. 2011 (max. of 36 months).

Previous Research

The relationship between linkage and time to suppression can be seen by:

1. Looking at the difference in the # of months to suppression between those linked within 3 months and others;
2. Statistical tests that generate a 'survival curve'; and
3. Statistical tests that generate hazard ratios.

- We are replicating the study by Hall, et al (2013) which first demonstrated that timely linkage leads to earlier suppression.

Texas Research

- We analyzed people diagnosed in 2010 and 2011- (our lab data gets good in 2010).
- Also just those over age 12.
- We followed up to a max 52 months.
- We had access to RW and ADAP labs too.

Texas and National Demographics

Do our demographics look like the National Study?

Texas Gender:

	Total		Had a VL test		Had a Suppressed VL test		
Characteristic	#	%	#	%	#	% pop	% tested
Sex							
Male	7,367	79.2	5,984	81.2	4,377	59.4	73.1
Female	1,938	20.8	1,594	82.2	1,123	57.9	70.5

National Gender:

	Total		Had a VL test		Had a Suppressed VL test		
Characteristic	#	%	#	%	#	% pop	% tested
Sex							
Male	13,201	77.5	11,266	85.3	7,495	56.8	66.5
Female	3,827	22.5	3,278	85.7	2,209	57.7	67.4

Texas and National Demographics

Texas Age:

	Total		Had a VL test		Had a Suppressed VL test		
Characteristic	#	%	#	%	#	% pop	% tested
Age at time of HIV dx:							
13-24	2,298	24.7	1,807	78.6	1,167	50.8	64.6
25-34	2,763	29.7	2,264	81.9	1,647	59.6	72.7
35-44	2,103	22.6	1,737	82.6	1,311	62.3	75.5
45-54	1,486	16	1,245	83.8	981	66.0	78.8
55+	655	7	525	80.2	394	60.2	75.0

National Age:

	Total		Had a VL test		Had a Suppressed VL test		
Characteristic	#	%	#	%	#	% pop	% tested
Age at time of HIV dx:							
13-24	3,484	20.5	2,973	85.3	1,700	48.8	57.2
25-34	4,697	27.6	4,042	86.1	2,671	56.9	66.1
35-44	4,325	25.4	3,697	85.5	2,627	60.7	71.1
45-54	3,161	18.6	2,692	85.2	1,908	60.4	70.9
55+	1,361	8	1,140	83.8	798	58.6	70

Texas and National Demographics

Texas Race/Ethnicity:

	Total		Had a VL test		Had a Suppressed VL test		
Characteristic	#	%	#	%	#	% pop	% tested
Race/Ethnicity							
White	1,968	21.2	1,688	85.8	1,321	67.1	78.3
Black	3,589	38.6	2,783	77.5	1,832	51.0	65.8
Hispanic	3,239	34.8	2,671	82.5	2,004	61.9	75.0
Other/Unknown	509	5.5	436	85.7	343	67.4	78.7

National Race/Ethnicity:

	Total		Had a VL test		Had a Suppressed VL test		
Characteristic	#	%	#	%	#	% pop	% tested
Race/Ethnicity							
White	4,228	24.8	3,832	90.6	2,792	66.0	72.9
Black	8,757	51.4	7,254	82.8	4,469	51.0	61.6
Hispanic	3,236	19.0	2,748	84.9	1,937	59.9	70.5
Other/Unknown	807	4.7	710	88.0	506	62.7	71.3

Texas and National Demographics Recap

- In the previous slide, % of population includes people not in care in the denominator.
- The % tested measure uses just those who had a viral load after diagnosis as the denominator.
- Texas has a slightly higher % of the population suppressed, and a slightly lower % of tested people suppressed.

Texas and National Demographics

Texas Transmission:

	Total		Had a VL test		Had a Suppressed VL test		
Characteristic	#	%	#	%	#	% pop	% tested
Mode of Transmission							
MSM	5,984	64.3	4,904	82.0	3,620	60.5	73.8
IDU	651	7	504	77.4	337	51.8	66.9
MSM/IDU	300	3.2	241	80.3	178	59.3	73.9
Heterosexual	2,365	25.4	1,925	81.4	1,364	57.7	70.9
Other/Unknown	6	0.06	5	83.3	2	33.3	40.0

National Transmission:

	Total		Had a VL test		Had a Suppressed VL test		
Characteristic	#	%	#	%	#	% pop	% tested
Mode of Transmission							
MSM	8,062	47.3	7,129	88.4	4,839	60.0	67.9
IDU	751	4.4	634	84.4	403	53.7	63.6
MSM/IDU	392	2.3	356	90.8	231	58.9	64.9
Heterosexual	2,174	12.8	1,959	90.1	1,322	60.8	67.5
Other/Unknown	5,649	33.2	4,466	79.1	2,909	51.5	65.1

Texas and National Outcomes

- How does time to suppression in Texas compare to the National Study?
- Does timely linkage have the same impact?
- Is initial CD-4 count related to time to suppression?
- Do more care visits prior to suppression predict a quicker time to suppression?

Texas and National Outcomes - Linkage

- In Texas (2010-2011), 77.1% were linked within 3 months of Diagnosis.
- Nationally, 76.6% were linked within 3 months of Diagnosis.

Texas and National Outcomes - Linkage

Texas:

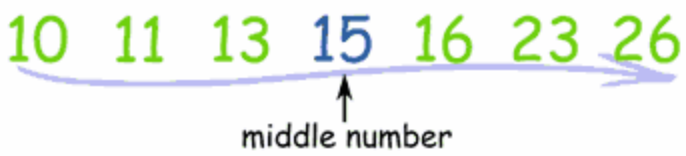
	Total		Had a VL test		Had a Suppressed VL test		
Characteristic	#	%	#	%	#	% pop	% tested
Care Entry Within 3 Mos.							
No	2,900	31.2	2,058	71.0	1,206	41.6	58.6
Yes	6,405	68.8	6,303	98.4	4,294	67.0	68.1
Total	9,305	100	8,361	89.9	5,500	59.1	65.8

National

	Total		Had a VL test		Had a Suppressed VL test		
Characteristic	#	%	#	%	#	% pop	% tested
Care Entry Within 3 Mos.							
No	3,984	23.4	2,039	51.2	1,176	29.5	57.7
Yes	13,044	**76.6**	12,505	95.9	8,528	65.4	68.2
Total	17,028	100	14,544	85.4	9,704	57.0	66.7

How to find a Median

(http://www.mathsisfun.com/definitions/median.html)



more ...

The middle number (in a sorted list of numbers).

To find the Median, place the numbers you are given in value order and find the middle number.

Example: find the Median of {13, 23, 11, 16, 15, 10, 26}.

Put them in order: {10, 11, 13, 15, 16, 23, 26}

The middle number is 15, so the median is 15.

(If there are two middle numbers, you average them.)

Texas Time to Suppression

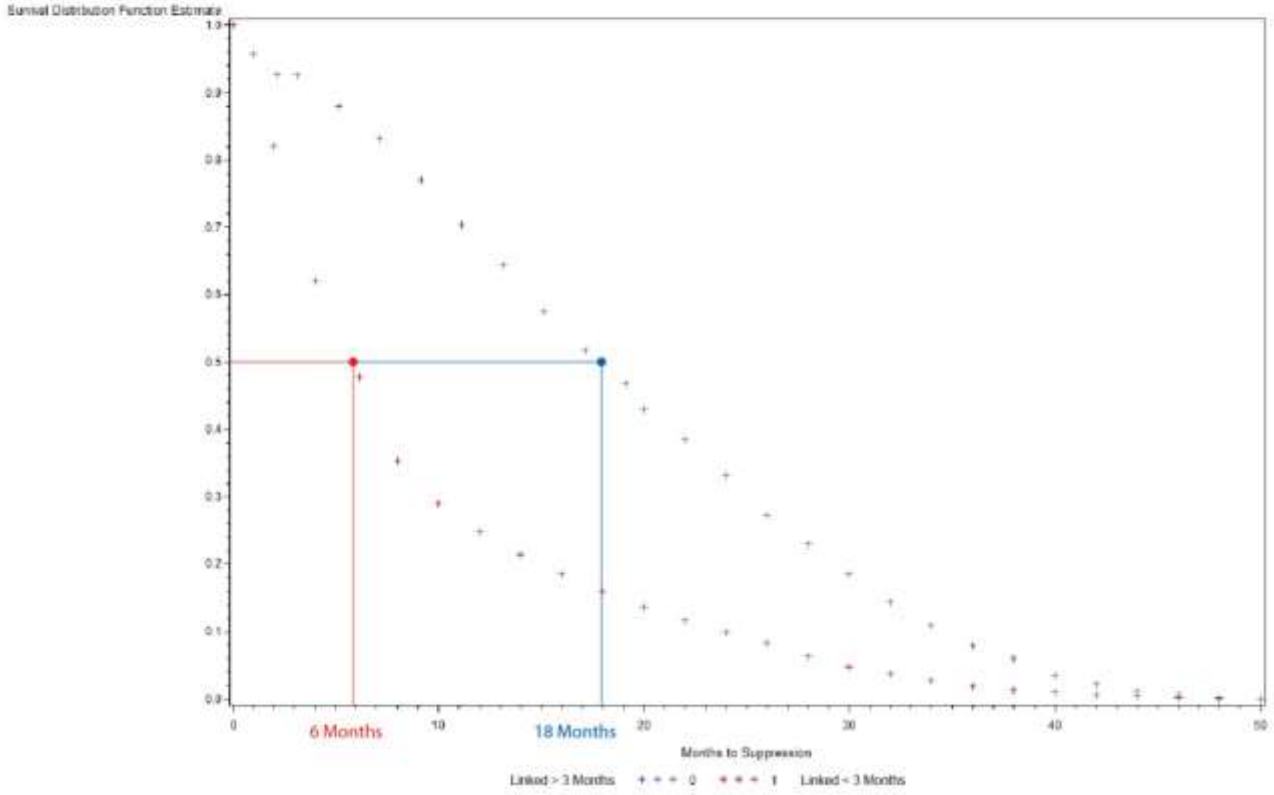
- Mean time to suppression was **12** months (median was **8**).
- Mean time to suppression for the Linked in 3 months group was **10** months (median was **6**).
- Mean time to suppression was **19** months for the late linked group (median was **18**).

The descriptive statistics suggest a difference between the linkage groups.

Texas Time to Suppression

- Survival curves are generated by a statistical analysis (in SAS, Proc Lifetest).
- Red X are the linked in 3 months group.
- The area in the square shows when half the people in the group are suppressed (crosses Y axis at 0.5)
- These show the Kaplan-Meier adjusted means for both groups. These are lower than regular means, and look more like our medians.

Texas Linkage and Time to Suppression



Hazard Ratios and Time to Suppression

Hazard Ratio:

- Tells us the difference between a reference group and other groups.
- That difference is true at any time-point in the study.
- In this study, for Linkage Groups (looking back at the curve) we see its most noticeable at 6-24 months.

Linkage and # of Care Visits and Time to Suppression

- The Linked in 3 months group was 1.6 times as likely to have the suppression event occur.

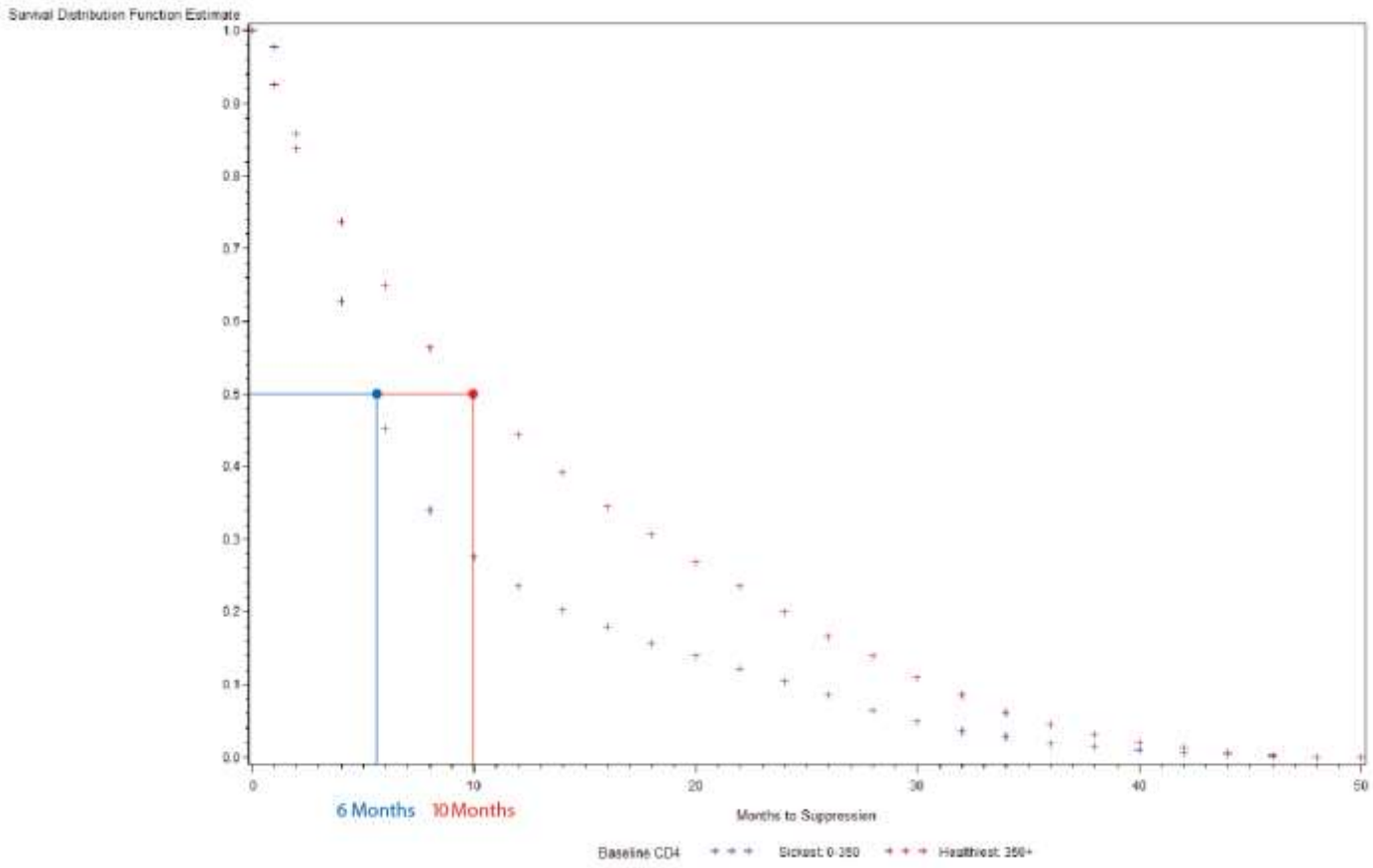
  95% confidence 1.53 to 1.75

‘Strength’ of linkage and Time to Suppression

- Those with more care visits are 1.17 times as likely to have the suppression event occur..

  95% confidence 1.16 to 1.18

Initial CD-4 Count and Time to Suppression



Initial CD-4 Count and Time to Suppression

- ‘Sicker’ people (CD-4 count below 350) become suppressed more quickly.
- Mean for the sicker group was 10 months (median was 6).
- Mean for the less sick group was 14 months (median was 10).

Hazard Ratios and Demographics

- One group is a reference group, and others are compared to it.

Suppressed (more likely/quickly)

- Females (than males)
- CD4 count < 200 (than >350)
- CD4 count 200-350 (than >350)
- Age- per unit of 10 years (than younger)

Hazard Ratios and Demographics

Suppressed (less likely/quickly)

- Blacks (than Whites)
- Hispanics (than Whites)
- IDU (than MSM)
- Heterosexuals (than MSM)
- Unknown/Missing CD4 count (than >350)

Conclusions

- Timely linkage does lead to a greater likelihood of being suppressed, and it happens more quickly.
- Sicker people are getting suppressed quickly once they access care.
- Having several care visits instead of comparatively few is important for suppression to occur.
- Results in Texas are comparable to National outcomes- we're doing great (and want to do even better!)