Virologic outcomes following in-patient initiation of antiretroviral therapy (ART) in a population-based program in British Columbia, Canada.

Wayne Leung[1], Wendy Zhang[2], Jason Trigg[2], Diana Kao[2], Junine Toy[2], Viviane D. Lima[1,2], Rolando Barrios[1], Julio SG Montaner[1,2], Mark W. Hull[1,2]

[1]Faculty of Medicine, University of British Columbia, Vancouver, British Columbia (BC), Canada.
[2]British Columbia Centre for Excellence in HIV/ AIDS, Vancouver, Canada

Correspondence: wayne.leung@alumni.ubc.ca

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Objective

- To determine the rates of ART initiation in hospital, vs. in the outpatient setting in BC.
- To evaluate whether or not initiation or re-initiation of ART during a hospital admission would lead to similar rates of virologic suppression as individuals who were started in the outpatient setting
- To evaluate individual characteristics that are associated with ART initiation in hospital

Overall goal: To determine whether or not the hospital is a viable setting to start ART

Methods

Study design: Retrospective study

Data collection: Drug Treatment Program offered by the BC Centre for Excellence in HIV/AIDS

Study participants: Any individual aged >19 at time of initiation of antiretroviral therapy between January 2003 and December 2019

Data analysis:

- Multivariate logistic model for factors associated with in-patient ART start
- Comparison of proportions of participants with viral suppression (two consecutive viral loads of <50 copies per mL) at end of one, two, and three years after ART initiation and re-initiation (treatment interruption of all antiretroviral drugs for a period of at least 90 consecutive days) in-hospital or in the outpatient setting

Results (1)

Table 1. Multivariable analysis of factors associated with in-hospital antiretroviral therapy initiation in British Columbia 2003 – 2019.

Factor	Unadjusted Odds Ratio [OR] (95% confidence interval)	Adjusted OR (95% confidence interval)
Age (per 10-year increment)	1.20 (1.07-1.34)	1.19 (1.06-1.35)
Sex at birth		
Male	1.00	1.00
Female	1.74 (1.32-2.28)	1.61 (1.16-2.24)
Year of ART initiation (per 1-year increment)	1.11 (1.08-1.15)	1.19 (1.15-1.23)
History of positive hepatitis C status		
No	1.00	
Yes	2.20 (1.72-2.82)	Not selected
Unknown	0.49 (0.18-1.35)	
AIDS defining illness prior to ART start		
No	1.00	1.00
Yes	5.05 (3.89-6.55)	5.43 (4.06-7.24)
Self-identified Indigenous ethnicity		
No	1.00	
Yes	1.62 (1.18-2.22)	Not selected
Unknown	0.47 (0.36-0.63)	
HIV risk group		
Other	1.00	1.00
MSM	0.60 (0.40-0.91)	0.85 (0.53-1.35)
IDU	1.42 (0.98-2.07)	2.52 (1.67-3.81)
MSM and IDU	1.32 (0.77-2.28)	2.85 (1.56-5.21)
Unknown	0.32 (0.20-0.51)	0.56 (0.34-0.91)
Baseline viral load (log10 scale)	1.63 (1.45-1.83)	1.46 (1.30-1.64)

AIDS, acquired immunodeficiency syndrome; ART, antiretroviral therapy; HIV, human immunodeficiency virus; IDU, injection drug use; MSM, men who have sex with men.

Results (2)

Table 2A. Differences in proportion of individuals achieving virologic suppression, and associated rates of suppression in those with in-hospital vs. outpatient ART initiation at the end of Years 1, 2 and 3.

Year	Setting	Individuals virally suppressed at end of year	Proportion achieving virologic suppression	*P*-value	Rate of viral suppression per 100 person-year (95% confidence interval)	*P*-value
1	In-hospital	201/253	79.45%	**<0.001**	158 (137-182)	**<0.001**
	Outpatient	4416/4715	92.87%		248 (241-255)	
2	In-hospital	181/193	93.78%	0.956	377 (324-436)	0.071
	Outpatient	3894/4136	94.15%		433 (419-446)	
3	In-hospital	148/154	96.10%	0.924	389 (329-457)	0.130
	Outpatient	3436/3594	95.60%		442 (428-457)	

Table 2B. Differences in proportion of individuals achieving virologic suppression, and associated rates of suppression in those with in-hospital vs. outpatient ART re-initiation at the end of Years 1, 2 and 3.

Year	Setting	Individuals virally suppressed at end of year	Proportion achieving virologic suppression	*P*-value	Rate of viral suppression per 100 person-year (95% confidence interval)	*P*-value
1	In-hospital	54/78	69.23%	**0.002**	120 (90-157)	**<0.001**
	Outpatient	1008/1204	83.72%		208 (195-221)	
2	In-hospital	43/45	95.56%	0.270	307 (222-414)	0.763
	Outpatient	703/788	89.21%		293 (272-315)	
3	In-hospital	37/40	92.50%	0.990	308 (217-425)	0.794
	Outpatient	535/578	92.56%		322 (296-351)	

ART, antiretroviral therapy.

Conclusion

- Only a small proportion of individuals in a population-based ART program-initiated therapy during a hospitalization. Those who did so were more likely to be female, older age and have a history of substance use.
- There are comparable long-term rates of virologic suppression between ART starts and restarts both in the hospital and outpatient setting.
- Efforts to improve patients' support as well as physician awareness and comfort with ART initiation during hospital stays may be warranted.