Impact of COVID-19 on the Outcomes of Rapid ART Initiation among People Living with HIV (PLWHIV): a Multicentre Study

P078

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Background

Taiwan has implemented rapid ART initiation (within 7 days of confirmed HIV diagnosis) program to improve HIV care continuum in 2018. However, the control measures during COVID-19 pandemic may have disrupted health-care delivery. We investigated the impact of COVID-19 on the short-term outcomes of PLWH who were put on rapid ART initiation.

Materials and Methods

Between 2018 and 2021, medical records of newly diagnosed PLWH who were put on rapid ART initiation were reviewed to collect the information on the dates of HIV diagnosis, ART initiation, loss to follow-up (LTFU), occurrence of sexually transmitted infections (STIs), plasma HIV RNA load (PVL), and CD4 count. All PLWH were followed for at least 24 weeks after ART initiation. The primary outcome was the proportion of PLWH engaged in care at Week 48. The secondary outcomes were the proportion of PLWH engaged in care at Week 24 and those with PVL <50 copies/ml at Weeks 24 and 48.

Results

During the 4-year period, 916 of 1243 (73.7%) newly diagnosed PLWH initiated ART within 7 days of confirmed HIV diagnosis and 504 (40.5%) of them initiated ART on the same day of diagnosis (Table 1). 511 (41.8%) had CD4 counts <200 cells/mm^3 and 619 (50.2%) had plasma HIV RNA >5 $\log_{10}$ copies/ml.

At Week 24, the proportions of retention in care among PLWH on rapid ART initiation in the pre-COVID-19 and the COVID-19 era were 96.3% and 97.4%, respectively (p=0.693); at Week 48, they were 93.8% and 93.9% (p>0.999). However, more scheduled blood tests were missed in the COVID-19 era at both Week 24 (13.8% vs 32.8%, p<0.001) and Week 48 (6.8% vs 48.4%, p<0.001) (Table 2).

Using the last-observation-carried-forward (LOCF) approach, the proportions of PVL <50 copies/ml at Week 24 and Week 48 were 95.2% and 90.6% in the pre-COVID-19 era and 93.1% and 92.2% in the COVID-19 era (p=0.203 and p=0.412), respectively. Factors associated with PVL <50 copies/ml with LOCF analysis at Week 48 were occurrences of STIs [aOR 0.46, 95% CI 0.29-0.74] and baseline PVL (aOR, per 1-log increment, 0.62; 95% CI 0.50-0.77).

Table 1. Characteristics of the included PLWH

	Pre-COVID (2018-2019) (n=708)	Post-COVID (2020-2021) (n=532)	p-value
Age, mean (SD)	32.2 (9.2)	32.3 (9.7)	0.892
MSM, n (%)	619 (87.4)	462 (86.8)	0.709
CD4 count, median (IQR), cells/mm^3	259 (89-422)	236 (78-394)	0.084
CD4 counts <200 cells/mm^3, n (%)	279 (40.0)	232 (44.2)	0.144
PVL ≥5 $\log_{10}$ copies/ml, n (%)	312 (44.5)	307 (57.9)	<0.001
Same-day ART initiation, n (%)	220 (31.1)	282 (53.0)	<0.001
Rapid ART initiation, n (%)	480 (67.8)	436 (82.0)	<0.001

Figure 1. Locations of participating centers and proportions of PLWH included

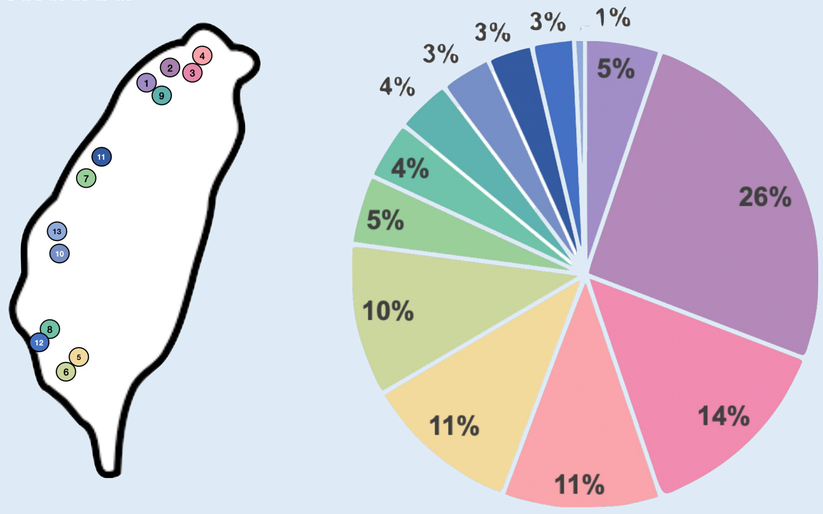

Table 2. Outcomes of rapid ART initiation in pre- / post- COVID era

	Pre-COVID (2018-2019) (n=480)	Post-COVID (2020-2021) (n=436)	p-value
Week 24 outcomes, n (%)			
Death	3 (0.6)	3(0.7)	>0.999
Loss to follow-up	12 (3.1)	8 (1.9)	0.652
Virologic failure/rebound	0	0	N/A
Retention in care (including transferal of care)	460 (96.3)	417 (97.4)	0.693
Retention in care but missing week 24 blood testing	62 (13.8)	133 (32.8)	<0.001
PVL <200 copies/ml*, n (%)	479 (99.8)	428 (98.1)	0.016
PVL <50 copies/ml*, n (%)	457 (95.2)	406 (93.1)	0.203
Week 48 outcomes, n (%)			
Death,	5 (1.0)	5 (1.3)	0.761
Loss to follow-up	25 (5.2)	17 (4.3)	0.634
Virologic failure/rebound	0	2 (0.5)	0.204
Retention in care (including transferal of care)	450 (93.8)	372 (93.9)	>0.999
Retention in care but missing week 48 blood testing	29 (6.8)	186 (48.4)	<0.001
PVL <200 copies/ml*, n (%)	471 (98.1)	427 (97.9)	<0.999
PVL <50 copies/ml*, n (%)	435 (90.6)	402 (92.2)	0.412

*Last-observation-carry-forward analysis

Conclusions

While the rates of retention in care of newly diagnosed PLWH on rapid ART initiation remained high during the COVID-19 era, the numbers of scheduled blood testing performed were significantly reduced.