

Survival outcomes in diffuse large B-cell lymphoma patients with and without HIV in the United States from 2001 to 2016: a population-based analysis

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<https://doi.org/10.3324/haematol.2024.286343>

Received: July 29, 2024.

Accepted: October 15, 2024.

Early view: October 31, 2024.

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Supplementary Table 1. Demographic and clinical characteristics of diffuse large B-cell patients with human immunodeficiency virus over combined antiretroviral therapy approval periods in the 2001-2016 period from 13 Surveillance, Epidemiology, and End Results registries.

Characteristics	All patients, N (%)	Antiretroviral therapy periods, N (%)				P-value for trend
		2001-2003	2004-2007	2008-2012	2013-2016	
No. of patients	2156	390	623	649	494	
Age at diagnosis						< 0.001
Median	45	43	44	46	48	
Range	21 - 79	21 - 79	21 - 79	21 - 78	21 - 79	
Age at diagnosis, in years (yrs)						0.006
20-39 yrs	561 (26)	133 (34)	140 (22)	176 (27)	112 (23)	
40-79 yrs	1595 (74)	257 (66)	483 (78)	473 (73)	382 (77)	
Sex						0.079
Female	291 (13)	38 (10)	79 (13)	113 (17)	61 (12)	
Male	1865 (87)	352 (90)	544 (87)	536 (83)	433 (88)	
Race and ethnicity						< 0.001
Non-Hispanic White	942 (44)	200 (51)	320 (51)	244 (38)	178 (36)	
Non-Hispanic Black	621 (29)	83 (21)	157 (25)	213 (33)	168 (34)	
Hispanic	520 (24)	95 (24)	128 (21)	175 (27)	122 (25)	
Others ^a	73 (3)	12 (3)	18 (3)	17 (3)	26 (5)	
Primary site						0.04
Lymph nodes	1358 (63)	265 (68)	390 (63)	403 (62)	300 (61)	
Gastrointestinal	342 (16)	48 (12)	107 (17)	114 (18)	73 (15)	
Central nervous system	115 (5)	15 (4)	24 (4)	33 (5)	43 (9)	
Other/Unspecified	341 (16)	62 (16)	102 (16)	99 (15)	78 (16)	
Cancer stage ^b						0.498
Early-stage disease	718 (34)	121 (32)	224 (37)	225 (35)	148 (31)	
Advanced-stage disease	1397 (66)	263 (68)	387 (63)	415 (65)	332 (69)	
Missing ^c	41	6	12	9	14	

a Others race and ethnicity includes non-Hispanic Asian/Pacific Islander and non-Hispanic American Indian/Alaska Native

b Cancer stage was identified using the Ann Arbor and SEER Summary Stage classification variables in the SEER database and was defined as early- (Ann Arbor stage I or II, or SEER localized or regional stage) and advanced-stage disease (Ann Arbor stage III or IV or SEER distant stage)

c Missing values in the cancer stage were added in the propensity matching using a “Missing category.”

Supplementary Table 2. Five-year overall survival rates and Hazard ratios over combined antiretroviral therapy approval periods in the matched cohort in the 2001-2016 period from 13 Surveillance, Epidemiology, and End Results registries.

Characteristics		Events	Total	2001-2003		Events	Total	2004-2007		Events	Total	2008-2012		Events	Total	2013-2016		P-value for trend of HRs
				5-year OS % (95% CI)	HR (95% CI)			5-year OS % (95% CI)	HR (95% CI)			5-year OS % (95% CI)	HR (95% CI)			5-year OS % (95% CI)	HR (95% CI)	
All patients	HIV-/unknown	483	1170	58 (56-61)	Ref	681	1869	63 (61-66)	Ref	659	1947	66 (64-68)	Ref	506	1482	64 (62-67)	Ref	0.021
	HIV+	235	390	39 (35-45)	1.85 (1.58-2.16)	347	623	44 (40-48)	1.86 (1.63-2.12)	306	649	52 (49-56)	1.63 (1.42-1.86)	220	494	54 (49-58)	1.47 (1.26-1.73)	
Sex	Female																	0.900
	HIV-/unknown	58	139	58 (50-67)	Ref	93	240	61 (55-68)	Ref	101	304	66 (61-72)	Ref	58	182	67 (60-74)	Ref	
	HIV+	23	38	40 (27-58)	1.85 (1.14-3.01)	43	79	46 (36-58)	1.73 (1.20-2.48)	54	113	52 (43-62)	1.77 (1.27-2.47)	30	61	49 (38-64)	1.83 (1.18-2.85)	0.011
	Male																	
	HIV-/unknown	425	1031	58 (55-62)	Ref	588	1629	64 (61-66)	Ref	558	1643	66 (63-68)	Ref	448	1300	64 (61-66)	Ref	
	HIV+	212	352	39 (35-45)	1.85 (1.57-2.18)	304	544	44 (40-48)	1.88 (1.64-2.16)	252	536	52 (48-57)	1.60 (1.38-1.86)	190	433	54 (50-59)	1.43 (1.21-1.69)	0.572
Age at diagnosis, in years (yrs)	20-39 yrs																	
	HIV-/unknown	107	399	73 (69-77)	Ref	82	420	80 (76-84)	Ref	101	528	80 (77-84)	Ref	61	336	81 (77-86)	Ref	0.107
	HIV+	80	133	40 (32-49)	3.14 (2.35-4.20)	77	140	44 (36-53)	3.84 (2.81-5.25)	74	176	57 (50-65)	2.69 (1.99-3.63)	50	112	54 (45-64)	3.08 (2.12-4.48)	
	40-79 yrs																	0.010
	HIV-/unknown	376	771	51 (47-55)	Ref	599	1449	58 (56-61)	Ref	558	1419	60 (58-63)	Ref	445	1146	59 (56-62)	Ref	
	HIV+	155	257	39 (34-46)	1.48 (1.23-1.79)	270	483	44 (39-48)	1.60 (1.39-1.85)	232	473	51 (46-55)	1.43 (1.23-1.67)	170	382	54 (49-59)	1.25 (1.05-1.50)	0.938
Race and ethnicity	Non-Hispanic White																	
	HIV-/unknown	219	587	63 (59-67)	Ref	350	959	64 (60-67)	Ref	262	778	66 (63-70)	Ref	189	563	65 (61-70)	Ref	0.216
	HIV+	120	200	40 (34-47)	2.04 (1.63-2.55)	179	320	44 (39-50)	1.87 (1.56-2.24)	110	244	55 (49-62)	1.51 (1.21-1.89)	75	178	57 (50-65)	1.38 (1.05-1.80)	
	Non-Hispanic Black																	0.853
	HIV-/unknown	123	258	52 (46-59)	Ref	174	450	61 (57-66)	Ref	207	593	65 (61-69)	Ref	163	484	65 (60-69)	Ref	
	HIV+	54	83	35 (26-47)	1.82 (1.32-2.51)	94	157	40 (33-48)	1.92 (1.49-2.47)	116	213	45 (39-52)	1.92 (1.53-2.41)	83	168	49 (42-57)	1.77 (1.36-2.31)	0.216
	Hispanic																	
	HIV-/unknown	119	284	57 (51-63)	Ref	138	401	65 (60-70)	Ref	173	526	66 (62-70)	Ref	127	361	62 (56-67)	Ref	
	HIV+	55	95	41 (32-52)	1.71 (1.24-2.35)	68	128	46 (38-55)	1.86 (1.39-2.49)	72	175	58 (51-66)	1.44 (1.09-1.89)	54	122	53 (44-63)	1.39 (1.01-1.91)	0.853
	Others ^a																	
	HIV-/unknown	22	41	45 (32-64)	Ref	19	59	68 (57-81)	Ref	17	50	66 (54-80)	Ref	27	74	60 (49-74)	Ref	
	HIV+	6	12	50 (28-88)	1.05 (0.43-2.59)	6	18	65 (46-92)	1.11 (0.44-2.77)	8	17	53 (34-83)	1.65 (0.71-3.82)	8	26	68 (52-89)	0.86 (0.39-1.90)	

a Others race and ethnicity includes non-Hispanic Asian/Pacific Islander and non-Hispanic American Indian/Alaska Native

Abbreviations: CI, confidence interval; HR, Hazard ratio; HIV, human immunodeficiency virus; OS, overall survival

Supplementary Table 3. Characteristics of patients with diffuse large B-cell lymphoma according to human immunodeficiency virus status in the contemporary matched cohort (2008-2016) derived from 13 Surveillance, Epidemiology, and End Results registries.

Characteristics	All patients, N (%)	HIV status, N (%)		P-value
		HIV-/unknown	HIV+	
No. of patients	4572	3429	1143	
Age group at diagnosis, in years (yrs)				1.000
20-39 yrs	1152 (25)	864 (25)	288 (25)	
40-79 yrs	3420 (75)	2565 (75)	855 (75)	
Sex				0.382
Female	660 (14)	486 (14)	174 (15)	
Male	3912 (86)	2943 (86)	969 (85)	
Race and ethnicity				0.549
Non-Hispanic White	1763 (39)	1341 (39)	422 (37)	
Hispanic	1184 (26)	887 (26)	297 (26)	
Non-Hispanic Black	1458 (32)	1077 (31)	381 (33)	
Others ^a	167 (4)	124 (4)	43 (4)	
Cancer stage ^b				0.997
Early-stage disease	1490 (33)	1117 (33)	373 (33)	
Advanced-stage disease	2991 (65)	2244 (65)	747 (65)	
Missing ^c	91 (2)	68 (2)	23 (2)	
Primary site				0.007
Lymph nodes	2939 (64)	2236 (65)	703 (62)	
Gastrointestinal	658 (14)	471 (14)	187 (16)	
Central nervous system	239 (5)	163 (5)	76 (7)	
Other/Unspecified	736 (16)	559 (16)	177 (15)	

a Others race and ethnicity includes non-Hispanic Asian/Pacific Islander and non-Hispanic American Indian/Alaska Native

b Cancer stage was identified using the Ann Arbor and SEER Summary Stage classification variables in the SEER database and was defined as early- (Ann Arbor stage I or II, or SEER localized or regional stage) and advanced-stage disease (Ann Arbor stage III or IV or SEER distant stage)

c Missing values in the cancer stage were added in the propensity matching using a "Missing category."

Abbreviations: HIV, human immunodeficiency virus