

The earliest cases of human immunodeficiency virus type 1 group M in Congo-Kinshasa, Rwanda and Burundi and the origin of acquired immune deficiency syndrome†

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The early cases of acquired immune deficiency syndrome and human immunodeficiency virus type 1 (HIV-1) infection in the 1960s and 1970s in Congo-Kinshasa (Zaire), Rwanda and Burundi are reviewed. These countries appear to be the source of the HIV-1 group M epidemic, which then spread outwards to neighbouring Tanzania and Uganda in the east, and Congo-Brazzaville in the west. Further spread to Haiti and onwards to the USA can be explained by the hundreds of single men from Haiti who participated in the UNESCO educational programme in the Congo between 1960 and 1975.

Keywords: AIDS; HIV-1; Congo

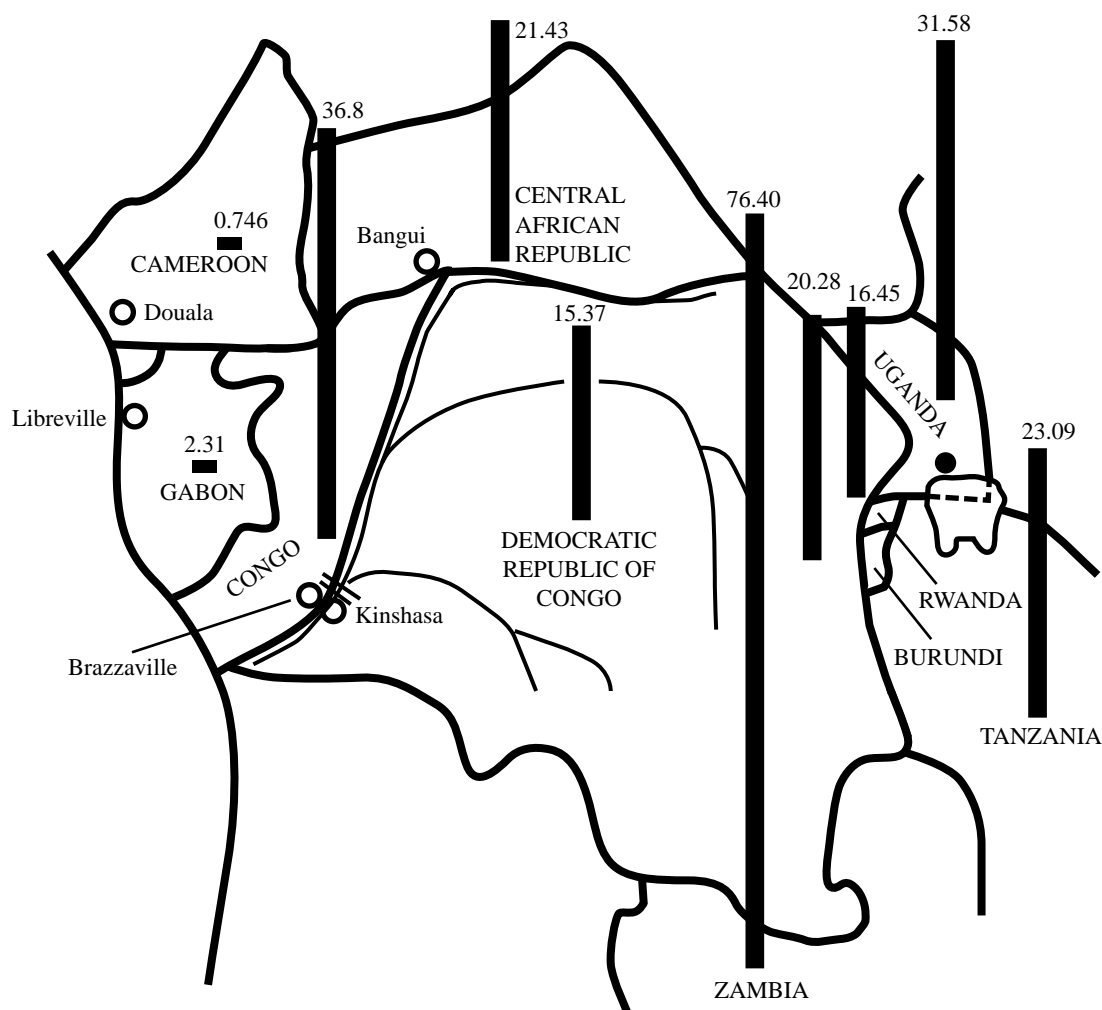
Three arguments explain the origin of acquired immune deficiency syndrome (AIDS) in Congo-Kinshasa, Rwanda and Burundi.

(i) All the earliest cases from 1959 to the epidemic in Congo in 1979 are found in that area. These AIDS cases are nearly all confirmed by serum analysis (table 1).

Table 1. *Earliest cases of HIV*

year	number	place	serum analysis (S) clinical (C)	reference/comment
1959	1	Léopoldville	S (HIV-1 group M)	Zhu <i>et al.</i> (1998)
1961–1962	1	Norwegian infected at Douala (Cameroon)	S + C (HIV-1 group O)	Froland <i>et al.</i> (1988)
1962–1976	7	Zaire and Burundi	4: S + C 3: C	Sonnet <i>et al.</i> (1987)
1966–1969	2	wife and child of the Norwegian	S + C (HIV-1 group O)	cf. Froland <i>et al.</i> (1988)
1970	2	Léopoldville	S	Dechazal <i>et al.</i> (1988)
1972	1	Danish medical doctor infected in Zaire (+1977)	S + C	Bygbjerg (1983)
1974	1	child in Kinshasa (perinatal)	S + C	Nemeth <i>et al.</i> (1988)
1975 (onwards)	—	Kinshasa: emergence of Kaposi	S + C	Piot <i>et al.</i> (1984)
1976	5	Yambuku (NW Congo)	S	Nzilambi <i>et al.</i> (1988)
1977	1	Zairean woman treated in Belgium (+1978)	C	Vandepitte <i>et al.</i> (1983)
1978	1	Greek fisherman of Lake Tanganyika (+1978)	S + C	Garrett (1995)
1978	1	child of Zairean parents treated in Sweden	S + C	Clumeck <i>et al.</i> (1984)
1979	—	epidemic of AIDS in Zaire		Vangroenweghe (2000)
1980	3%	Zairean mothers in Léopoldville	S	J. Desmyter, personal communication
1980–1981	29	Burundi (4.4% of examined sera)	S	Morvan <i>et al.</i> (1989)
1982–1983	9	Zaireans treated in Paris	C	Katlama <i>et al.</i> (1984)
	4	Congolese (Brazzaville)	C	
	1	Mali	C	

† Additional contribution.

Figure 1. HIV-1 infection rates per 10⁵ of the population.Table 2. '1978' triennial (1977–1979) minimal HIV incidence by country^a

(Ranks 1–7 in Africa counted 51.36 million people. Ranks 1–4 in the Americas (the Caribbean) counted 3.54 million people. The proportion of HIV in Africa to the Americas was, in 1978, 14.5:1; Haiti, 5.01 million.)

global rank	country	rate per 10 ⁵	global rank	country	rate per 10 ⁵
Africa			Americas		
1	Zambia	76.40	1	Bahamas	56.51
2	Malawi	48.84	2	Bermuda	45.69
3	Congo-Brazzaville ^b	36.84	3	Puerto Rico	42.86
4	Uganda	31.58	4	French Guyana	42.51
5	Tanzania	23.09	5	US Virgin Isles	16.67
6	Centrafrique ^b	21.43	6	USA	
7	Burundi ^b	20.28	7	St Kitts and Nevo	15.87
8	Kenya	16.95	8	Haiti	13.95
9	Zimbabwe	16.89	9	Trinidad and Tobago	12.69
10	Rwanda ^b	16.45	10	Barbados	10.57
11	Zaire (Congo Kinshasa) ^b	15.37	11	Guadeloupe	10.30
12	Côte d'Ivoire	14.37	12	Martinique	8.28
13	Ghana	9.88	13	Dominican Republic	6.72
23	Gabon	2.31			
30	Cameroon	0.746			
32	South Africa	0.392			

^a AIDS feedback 4 00. (Source: R. P. Bernard. See also Bernard, this issue.)

^b Defined as the start of the HIV epidemic: Zaire, Rwanda, Burundi, Congo-Brazzaville and Centrafrique (Central African Republic).

(ii) The earliest pre-epidemic and epidemic of human immunodeficiency virus type 1 (HIV-1) group M took place in the above area. In 1978 the HIV-1 rate per 100 000 was 15.37 in Congo-Kinshasa; 20.28 in Burundi; and 16.45 in Rwanda (figure 1 and table 2). In that same year the rate was only 2.3 in Gabon and 0.746 in Cameroon. The spillover from Congo to the neighbouring countries—Congo-Brazzaville (36.84), Centrafique (21.43), Uganda (31.58) and Zambia (76.40)—can be explained as follows. The spread to Tanzania and Uganda was mainly due to the liberation war in 1971–1981. AIDS reached Congo-Brazzaville by the daily river-ferry and tens of fishing boats from Kinshasa to Brazzaville. From 1958 to 1959 onwards thousands of refugees left Kinshasa for Brazzaville in the pre-independence troubles. International truckers and migrant mine labourers were mainly responsible for the spread from Tanzania and Zambia and to southern Africa. The spread of AIDS from Kinshasa and Congo to Haiti can be explained by hundreds of educational technicians a year paid by the UNESCO between 1960 and 1975. All were single and returned regularly on holiday to Haiti. From Haiti AIDS spread by migrant labour to the Caribbean. Gay tourists imported AIDS from the Haitian city Port-au-Prince (Cité Soleil) to the United States (Vangroenweghe 2000 ch. 2 and 3).

(iii) All the subtypes of HIV-1 group M are found in Congo-Kinshasa and also the highest number of recombinants (29.7% in 1999). Lesser subtypes are found in Cameroon and Gabon and also not such a high number of recombinants.

These three arguments indicate that AIDS originated in Congo-Kinshasa, Rwanda and Burundi. There is just one problem. In Gabon and Cameroon five chimpanzees were found with simian immunodeficiency virus (SIV), which is close to HIV-1 group M. Only one chimpanzee was found from Congo-Kinshasa with SIV that was not so close to HIV-1 group M. In eastern Africa, B. Hahn found another chimpanzee with SIV in 2000. But he was not so close to HIV-1. As long as tens of SIV chimpanzees are not found in Congo and in eastern Africa one cannot conclude that the earliest crossover from chimpanzees to man took place in Gabon and Cameroon. However, it is possible that in West Africa crossover from chimpanzees to humans took place independently and probably later than the crossover

in Congo. Nobody could explain until now how the starburst or sunburst of the subtypes happened.

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