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Supplemental Table 1. Modification of the associations of iron deficiency anemia[1] categories with mortality in HIV-infected patients initiating HAART (n = 27,569)

Exposure status	Baseline anemia and early mortality[2]		Anemia during follow up and overall mortality	
	Multivariate RR[3] (95% CI)	*P*-value	Multivariate RR[4] (95% CI)	*P*-value
Sex		0.03		< 0.001
Male				
No anemia or ID	1.00 (Ref)		1.00 (Ref)	
ID without anemia	1.00 (0.54, 1.84)		1.00 (0.71, 1.41)	
Anemia without ID	1.96 (1.47, 2.63)		1.97 (1.67, 2.33)	
IDA	2.67 (2.00, 3.58)		2.43 (2.05, 2.88)	
Female				
No anemia or ID	1.00 (Ref)		1.00 (Ref)	
ID without anemia	1.25 (0.86, 1.82)		0.96 (0.76, 1.20)	
Anemia without ID	1.58 (1.24, 2.02)		1.39 (1.21, 1.60)	
IDA	1.86 (1.46, 2.36)		1.54 (1.33, 1.77)	
BMI category		< 0.001		0.03
Obese				
No anemia or ID	1.00 (Ref)		1.00 (Ref)	
ID without anemia	2.20 (0.20, 24.31)		0.67 (0.26, 1.75)	
Anemia without ID	6.45 (1.50, 27.81)		1.67 (1.03, 2.66)	
IDA	5.27 (1.19, 23.37)		1.46 (0.87, 2.43)	
Overweight				
No anemia or ID	1.00 (Ref)		1.00 (Ref)	
ID without anemia	1.36 (0.27, 6.74)		1.11 (0.64, 1.93)	
Anemia without ID	3.74 (1.60, 8.71)		1.79 (1.30, 2.47)	
IDA	4.61 (1.99, 10.67)		2.01 (1.45, 2.79)	
Normal weight				
No anemia or ID	1.00 (Ref)		1.00 (Ref)	
ID without anemia	1.87 (1.13, 3.07)		1.05 (0.79, 1.40)	
Anemia without ID	2.32 (1.66, 3.24)		1.64 (1.39, 1.93)	
IDA	3.19 (2.30, 4.44)		2.02 (1.72, 2.38)	

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Exposure status	Baseline anemia and early mortality[2]		Anemia during follow up and overall mortality	
	Multivariate RR[3] (95% CI)	***P*-value**	**Multivariate RR[4] (95% CI)**	***P*-value**
Underweight				
No anemia or ID	1.00 (Ref)		1.00 (Ref)	
ID without anemia	0.89 (0.57, 1.38)		0.93 (0.68, 1.28)	
Anemia without ID	1.16 (0.91, 1.50)		1.43 (1.19, 1.73)	
IDA	1.41 (1.10, 1.81)		1.60 (1.33, 1.93)	
Zidovudine use[5]		-		0.004
Yes				
No anemia or ID	-		1.00 (Ref)	
ID without anemia	-		0.99 (0.72, 1.37)	
Anemia without ID	-		1.23 (1.03, 1.47)	
IDA	-		1.48 (1.23, 1.77)	
No				
No anemia or ID	-		1.00 (Ref)	
ID without anemia	-		0.99 (0.75, 1.31)	
Anemia without ID	-		1.88 (1.61, 2.19)	
IDA	-		2.06 (1.77, 2.40)	
CD4 cell count		-		0.04
< 350 cells/μL				
No anemia or ID	-		1.00 (Ref)	
ID without anemia	-		1.10 (0.89, 1.37)	
Anemia without ID	-		1.78 (1.57, 2.02)	
IDA	-		1.98 (1.74, 2.25)	
≥ 350 cells/μL				
No anemia or ID	-		1.00 (Ref)	
ID without anemia	-		0.63 (0.40, 1.01)	
Anemia without ID	-		1.28 (1.01, 1.62)	
IDA	-		1.43 (1.11, 1.83)	

[1] Iron deficiency anemia defined as follows: anemia as hemoglobin < 12 g/dL for women or hemoglobin < 13 g/dL for men, and iron deficiency as mean corpuscular volume < 80 fL. Anemia and iron deficiency exposures were cross classified to define each individual's exposure status.

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[2] Early mortality defined as mortality in the first three months of follow up.
[3] Baseline exposure model adjusted for sex, age, facility level, BMI, CD4 cell count, WHO disease stage, alanine aminotransferase, HAART regimen, iron use, tuberculosis history, tuberculosis treatment, oral candidiasis, diarrhea, and calendar year of HAART initiation.
[4] Anemia during follow up model also adjusted for sex, facility level, calendar year of HAART initiation, and time-varying values of age, BMI and CD4 cell count splines, WHO disease stage, alanine aminotransferase, HAART regimen, iron use, tuberculosis treatment, oral candidiasis, diarrhea, and season of visit.
HAART, highly active antiretroviral therapy; ID, iron deficiency; IDA, iron deficiency anemia; Ref, reference.
[5] Model also included interaction terms for missing categories of the effect modifier but the results are not shown.

Supplemental Table 2. Associations of anemia[1] with mortality in HIV-infected patients without iron deficiency at the time of initiation of HAART (n=14223)

Exposure status	Deaths/person-months	Univariate RR (95% CI)	Trend test *P*-value	Multivariate RR[2] (95% CI)	Trend test *P*-value
Baseline anemia and early mortality[4]	**1,290/21,053**				
No anemia	122/4,716	1.00 (Ref)	< 0.001	1.00 (Ref)	< 0.001
Mild anemia	395/9,506	1.59 (1.29, 1.94)		1.29 (1.05, 1.58)	
Moderate anemia	570/6,059	3.34 (2.74, 4.06)		2.06 (1.68, 2.52)	
Severe anemia	203/772	7.57 (6.05, 9.48)		3.34 (2.64, 4.24)	
Anemia during follow up and overall mortality	**2,416/452,048**				
No anemia	352/182,514	1.00 (Ref)	< 0.001	1.00 (Ref)	< 0.001
Mild anemia	833/202,420	1.46 (1.28, 1.65)		1.30 (1.15, 1.48)	
Moderate anemia	892/61,042	3.13 (2.75, 3.56)		2.23 (1.95, 2.54)	
Severe anemia	339/6,072	8.11 (6.95, 9.47)		4.13 (3.51, 4.87)	

[1] Anemia defined as: mild (hemoglobin 10-< 12 g/dL in women or 10-< 13 g/dL in men), moderate (hemoglobin 7.0-< 10 g/dL), and severe (hemoglobin < 7 g/dL). No anemia was defined as hemoglobin ≥ 12 g/dL in women or hemoglobin ≥ 13 g/dL in men.

[2] Baseline anemia model adjusted for sex, age, facility level, BMI and CD4 cell count splines, WHO disease stage, alanine aminotransferase, HAART regimen, iron supplement use, tuberculosis history, tuberculosis treatment, oral candidiasis, diarrhea, season of HAART initiation, and calendar year since HAART initiation. Anemia during follow up model adjusted for sex, tuberculosis history, calendar year of HAART initiation, and time-varying values of age, facility level, BMI and CD4 cell count splines, WHO disease stage, alanine aminotransferase, HAART regimen, iron supplement use, oral candidiasis, diarrhea, and season of visit.

[3] Early mortality defined as mortality in the first three months of follow up.

HAART, highly active antiretroviral therapy; Ref, reference.

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Supplemental Table 3. Modification of the associations of anemia[1] with mortality in HIV-infected patients without iron deficiency at HAART initiation (n = 14,223)

Exposure status	Baseline anemia and early mortality[2]		Anemia during follow up and overall mortality	
	Multivariate RR[3] (95% CI)	***P*-value**	**Multivariate RR[4] (95% CI)**	***P*-value**
Sex		-		0.005
Male				
No anemia	-		1.00 (Ref)	
Mild anemia	-		1.65 (1.37, 2.00)	
Moderate anemia	-		2.73 (2.24, 3.33)	
Severe anemia	-		4.89 (3.85, 6.22)	
Female				
No anemia	-		1.00 (Ref)	
Mild anemia	-		1.05 (0.88, 1.25)	
Moderate anemia	-		1.88 (1.58, 2.23)	
Severe anemia	-		3.59 (2.91, 4.42)	
BMI category		< 0.001		< 0.001
Obese				
No anemia	1.00 (Ref)		1.00 (Ref)	
Mild anemia	3.57 (0.74, 17.22)		0.91 (0.49, 1.69)	
Moderate anemia	12.98 (2.80, 60.18)		3.90 (2.12, 7.20)	
Severe anemia	14.91 (2.08, 106.9)		7.28 (2.90, 18.27)	
Overweight				
No anemia	1.00 (Ref)		1.00 (Ref)	
Mild anemia	2.53 (1.03, 6.22)		1.30 (0.88, 1.92)	
Moderate anemia	6.93 (2.86, 16.81)		3.95 (2.66, 5.87)	
Severe anemia	5.07 (1.02, 25.31)		6.21 (3.01, 12.79)	
Normal weight				
No anemia	1.00 (Ref)		1.00 (Ref)	
Mild anemia	1.59 (1.12, 2.28)		1.36 (1.12, 1.64)	
Moderate anemia	2.91 (2.04, 4.14)		2.44 (2.00, 2.98)	
Severe anemia	6.20 (4.13, 9.31)		5.82 (4.53, 7.49)	
Underweight				
No anemia	1.00 (Ref)		1.00 (Ref)	
Mild anemia	0.93 (0.71, 1.23)		1.15 (0.93, 1.43)	

Moderate anemia	1.30 (1.00, 1.69)		1.65 (1.34, 2.04)	
Severe anemia	2.02 (1.49, 2.74)		2.91 (2.29, 3.70)	
Iron supplement use		-		0.003
Yes				
No anemia	-		1.00 (Ref)	
Mild anemia	-		1.09 (0.54, 2.21)	
Moderate anemia	-		1.04 (0.53, 2.02)	
Severe anemia	-		1.53 (0.78, 3.01)	
No				
No anemia	-		1.00 (Ref)	
Mild anemia	-		1.36 (1.13, 1.65)	
Moderate anemia	-		2.27 (1.87, 2.75)	
Severe anemia	-		4.44 (3.45, 5.71)	

[1] Baseline anemia defined as: mild (hemoglobin 10-< 12 g/dL in women or 10-< 13 g/dL in men), moderate (hemoglobin 7.0-< 10 g/dL), and severe (hemoglobin < 7 g/dL). No anemia was defined as hemoglobin ≥ 12 g/dL in women or hemoglobin ≥ 13 g/dL in men.

[2] Early mortality defined as mortality in the first three months of follow up.

[3] Baseline anemia model adjusted for sex, age, facility level, BMI and CD4 cell count splines, WHO disease stage, alanine aminotransferase, HAART regimen, iron supplement use, tuberculosis history, tuberculosis treatment, oral candidiasis, diarrhea, season of HAART initiation, and calendar year since HAART initiation. Anemia during follow up model adjusted for sex, tuberculosis history, calendar year of HAART initiation, and time-varying values of age, facility level, BMI and CD4 cell count splines, WHO disease stage, alanine aminotransferase, HAART regimen, iron supplement use, oral candidiasis, diarrhea, and season of visit.

HAART, highly active antiretroviral therapy; Ref, reference.