SUPPLEMENTARY METHODS

Statistical analysis

Baseline demographics, laboratory results, physical measurements and EQ-5D scores were all considered as predictors of mortality during the first 48 weeks on ART, after which participants exited the trial (Table 1, Supplementary Table 1). Illnesses and symptoms reported at enrolment were included if they occurred in >5% of participants; highly-related symptoms were identified through hierarchical clustering of all symptoms across patients and pallor (grouped with difficulty walking) and weakness, poor appetite and cough (grouped with weight loss) excluded. The mean of continuous factors measured at both screening and enrolment visits was used. Continuous factors that were highly correlated (Spearman rho>0.9) or missing in >10% were also excluded (namely body fat %, muscle mass, total body water, total body water %, bone mass, basal metabolic rate, CD3, CD8, lymphocytes, lymphocytes %, neutrophils %, MCV, red blood cells, haematocrit, phosphate, bilirubin, ALT and AST). Continuous factors with evidence of outliers were truncated at the 1st, 5th, 95th or 99th percentile based on the distribution. Previous healthcare contact was defined as having a chronic health condition (e.g. diabetes, hypertension) or having medication prescribed at least 14 days prior to the screening visit.

Factors were selected for the final Cox proportional hazards model using backwards elimination (exit p>0.1 to build an explanatory model, reporting only factors with p<0.05). Non-linearity was included in the model building process using multivariable fractional polynomials if p<0.05 (stata mfp). Clinical centre (reflecting clinical management and access to diagnostic facilities) was included in all models. Models were restricted to complete cases, so after initial variable selection a final model was refitted to all observations with complete data and the remaining factors were re-checked and included if p<0.1. All continuous factors were included in final models with linear effects, ie each unit increase had the same impact on mortality at all levels of the factor. The only interaction (p<0.01) between factors in this model was between albumin and fever (p=0.002). This suggested that albumin had little effect on mortality in the 13% of patients reporting fever at baseline (HR=1.00 per g/l higher (95% CI 0.97-1.04)) compared with higher albumin significantly reducing risk in the 87% without fever at baseline (HR=0.94 (0.91-0.96)). As the effects of other factors were similar including or excluding this interaction, it was not included in final models.

Different patterns of "late presenters" were identified using cluster analysis. First, principal components analysis of the correlation matrix was used to reduce the continuous factors to the smallest number of components that explained >75% of the variance. Hierarchical clustering then used Ward's linkage on these principal components and remaining binary factors with the number of clusters determined using the Duda-Hart stopping rule.

Supplementary Table 1 Other baseline factors not considered as predictors of mortality due to incompleteness, collinearity with other factors already being considered, or reflecting subsequent treatment

	Died before 48 weeks N=255	Last seen alive N=1580	All participants N=1805
Temperature (˚C) (N=1793)	36.7 (36.2, 37.3)	36.5 (36.2, 36.9)	36.5 (36.2, 36.9)
Height (cm) (N=1798)	163 (157, 169)	164 (158, 171)	164 (158, 171)
Weight (kg) (N=1800)	49.3 (42.1, 53.9)	53.2, (46.8, 59.9)	52.5 (46.3, 59.3)
CD3 (cells/mm^3) (N=1734)	431 (295, 691)	584 (386, 843)	564 (368, 828)
CD4% (N=1351)	5 (3, 8)	5 (3, 8)	5 (3, 8)
CD8 (cells/mm^3) (N=1693)	394 (241, 615)	501 (319, 748)	482 (308, 726)
CD8% (N=1350)	82 (62, 90)	70 (56, 86)	71 (57, 87)
CD4/CD8 ratio (N=1693)	0.06 (0.03, 0.11)	0.07 (0.04, 0.12)	0.07 (0.04, 0.12)
Red blood cells (10^{12}/l) (N=952)	3.79 (3.18, 4.43)	4.29 (3.71, 4.75)	4.20 (3.64, 4.71)
Haemoglobin (g/dl) (N=1802)	10.0 (8.4, 11.6)	11.4 (9.7, 12.8)	11.2 (9.6, 12.7)
Grade 1 or 2	74 (33%)	359 (23%)	433 (24%)
Grade 3 or 4	37 (16%)	80 (5%)	117 (6%)
White blood cells (10^9/l) (N=1802)	3.9 (2.9, 5.4)	3.5 (2.7, 4.6)	3.5 (2.7, 4.7)
Grade 1 or 2	39 (17%)	303 (19%)	342 (19%)
Grade 3 or 4	3 (1%)	31 (2%)	34 (2%)
Platelets (10^9/l) (N=1801)	260 (189, 341)	251 (182, 343)	252 (183, 343)
Grade 1 or 2	22 (10%)	128 (8%)	150 (8%)
Grade 3 or 4	1 (<1%)	23 (1%)	24 (1%)
Neutrophils (10^9/l) (N=1785)	1.99 (1.38, 3.07)	1.69 (1.15, 2.50)	1.72 (1.17, 2.58)
Grade 1 or 2	23 (10%)	244 (15%)	267 (15%)
Grade 3 or 4	8 (4%)	33 (2%)	41 (2%)
Lymphocytes (10^9/l) (N=1792)	0.86 (0.58, 1.20)	0.98 (0.69, 1.39)	0.96 (0.68, 1.35)
Grade 1 or 2	37 (17%)	189 (12%)	226 (13%)
Grade 3 or 4	36 (16%)	143 (9%)	179 (10%)
Lymphocytes % (N=1748)	22.1 (14.2, 32.0)	29.1 (21.2, 38.0)	28.4 (20.0, 37.4)
Neutrophils % (N=1739)	53.0 (41.7, 68.1)	50.0 (39.3, 61.3)	50.3 (39.6, 61.8)
Haematocrit (%) (N=695)	30.0 (25.4, 35.3)	34.5 (29.2, 38.8)	33.9 (28.7, 38.4)
MCV (fl) (N=1694)	83 (77, 88)	84 (79, 89)	84 (79, 89)
AST (U/l) (N=791)	49 (33, 74)	38 (28, 57)	39 (29, 61)
Grade 1 or 2	52 (23%)	199 (13%)	251 (14%)
Grade 3 or 4	4 (2%)	6 (<1%)	10 (1%)
Creatinine (umol/l) (N=1796)	76 (60, 97)	71 (57, 86)	71 (57, 87)
ALT (U/l) (N=1772)	27 (16, 41)	26 (17, 42)	26 (17, 41)
Grade 1 or 2	35 (15%)	270 (17%)	305 (17%)
Grade 3 or 4	2 (1%)	5 (<1%)	7 (<1%)
Bilirubin (umol/l) (N=1767)	6 (4, 10)	6 (4, 9)	6 (4, 9)
Grade 1 or 2	9 (4%)	27 (2%)	36 (2%)
Grade 3 or 4	2 (1%)	5 (<1%)	7 (<1%)
Phosphate (mg/dl) (N=1445) *	2.06 (1.14, 3.58)	1.45 (1.08, 3.20)	1.49 (1.09, 3.26)
Malaria test done	6 (3%)	13 (1%)	19 (1%)
Ultrasound performed	3 (1%)	7 (0.4%)	10 (1%)

	Died before 48 weeks N=255	Last seen alive N=1580	All participants N=1805
X ray performed	6 (3%)	10 (1%)	16 (1%)
AFB performed	3 (1%)	7 (<1%)	10 (1%)
Any investigation performed	15 (7%)	34 (2%)	49 (3%)
Physician-reported conditions			
Herpes simplex*			
Current	1 (<1%)	9 (1%)	10 (1%)
Previous	1 (<1%)	7 (<1%)	8 (<1%)
Septicaemia*			
Current	0	1 (<1%)	1 (<1%)
Previous	1 (<1%)	4 (<1%)	5 (<1%)
Anaemia			
Current	6 (3%)	13 (1%)	19 (1%)
Previous	1 (<1%)	11 (1%)	12 (1%)
Chronic diarrhoea*			
Current	3 (1%)	45 (3%)	48 (3%)
Previous	11 (5%)	75 (5%)	86 (5%)
Kaposi's sarcoma			
Current	3 (1%)	11 (1%)	14 (1%)
Abscess *			
Current	1 (<1%)	2 (<1%)	3 (<1%)
Previous	1 (<1%)	5 (<1%)	6 (<1%)
Meningitis*			
Current	3 (1%)	1 (<1%)	4 (<1%)
Previous	1 (<1%)	3 (<1%)	4 (<1%)
Pneumonia*			
Current	10 (4%)	26 (2%)	36 (2%)
Previous	11 (5%)	62 (4%)	73 (4%)
Cryptococcus*			
Current	4 (2%)	17 (1%)	21 (1%)
Previous	2 (1%)	1 (<1%)	3 (<1%)
Chronic fever*			
Current	10 (4%)	14 (1%)	24 (1%)
Previous	7 (3%)	9 (<1%)	16 (<1%)
Other infection*			
Current	1 (<1%)	5 (<1%)	6 (<1%)
Previous	1 (<1%)	8 (1%)	9 (1%)
Any infection (* above, or TB or WHO 3/4 candida)			
Current	79 (35%)	382 (24%)	461 (26%)
Previous	34 (15%)	234 (15%)	268 (15%)
Previous wasting/severe weight loss (WHO 3/4)	19 (8%)	63 (4%)	82 (5%)
Previous TB (all) (WHO 3/4)	6 (3%)	37 (2%)	43 (2%)
Previous candida (WHO 3/4)	25 (11%)	133 (8%)	158 (9%)
Patient reported symptoms			
Dehydration	36 (16%)	59 (4%)	95 (5%)
Ear discharge	8 (4%)	22 (1%)	30 (2%)

	Died before 48 weeks N=255	Last seen alive N=1580	All participants N=1805
Jaundice	5 (2%)	16 (1%)	21 (1%)
Visual problems	17 (8%)	48 (3%)	65 (4%)
Bruises	8 (4%)	28 (2%)	36 (2%)
Poor sleep	32 (14%)	105 (7%)	137 (8%)
Muscle ache	37 (16%)	124 (8%)	161 (9%)
Headache	15 (7%)	49 (3%)	64 (4%)
Difficulty breathing	21 (9%)	39 (2%)	60 (3%)
Diarrhoea	21 (9%)	93 (6%)	114 (6%)
Weakness	151 (67%)	526 (33%)	677 (38%)
Pallor	71 (32%)	154 (10%)	225 (12%)
Poor appetite/difficulty feeding	122 (54%)	458 (29%)	580 (32%)
Cough	82 (36%)	275 (17%)	357 (20%)
Depression	35 (16%)	120 (8%)	155 (9%)
Body fat % (N=1743)	9.8 (4.6, 19.0)	13.1 (8.0, 22.8)	12.8 (7.7, 22.6)
Lean (muscle) mass (kg) (N=1740)	38.8 (35.3, 44.7)	41.6 (37.4, 47.2)	41.3 (37.0, 46.8)
Total body water (kg) (N=1731)	29.8 (25.9, 34.4)	31.6 (27.4, 35.4)	31.3 (27.3, 35.3)
Total body water % (N=1731)	63.6 (56.4, 70.1)	60.3 (53.3, 65.6)	60.7 (53.5, 65.9)
Bone mass (kg) (N=1675)	2.1 (1.9, 2.4)	2.3 (2.0, 2.5)	2.3 (2.0, 2.5)
Basal metabolic rate (kcal) (N=1674)	1218 (1128, 1371)	1312 (1201, 1450)	1303 (1192, 1441)
Treatment			
Started ART with efavirenz	203 (90%)	1416 (90%)	1619 (90%)
Started ART with tenofovir/ emtricitabine	170 (76%)	1252 (79%)	1422 (79%)
Initial ART regimen (excluding raltegravir)			
Tenofovir/emtricitabine/efavirenz	164 (73%)	1214 (77%)	1378 (76%)
Zidovudine/lamivudine/efavirenz	29 (13%)	150 (10%)	179 (10%)
Zidovudine/lamivudine/nevirapine	15 (7%)	129 (8%)	144 (8%)
Abacavir/lamivudine/efavirenz	10 (4%)	45 (3%)	55 (3%)
Tenofovir/emtricitabine/nevirapine	6 (3%)	32 (2%)	38 (2%)
Other	1 (<1%)	10 (1%)	11 (1%)
Receiving isoniazid pre-randomization	29 (13%)	148 (9%)	177 (10%)
Receiving isoniazid at randomization			
Treatment	31 (14%)	191 (12%)	222 (12%)
Prophylaxis	83 (37%)	704 (45%)	787 (44%)
Receiving fluconazole pre-randomization	40 (18%)	165 (10%)	205 (11%)
Receiving fluconazole at randomization			
Treatment	31 (14%)	117 (7%)	148 (8%)
Prophylaxis	89 (40%)	772 (49%)	861 (48%)
Receiving azithromycin at randomization			
Treatment	2 (1%)	11 (1%)	13 (1%)
Prophylaxis	98 (44%)	805 (51%)	903 (50%)
Receiving albendazole at			

	Died before 48 weeks N=255	Last seen alive N=1580	All participants N=1805
randomization			
Treatment	0	4 (0.3%)	4 (0.2%)
Prophylaxis	98 (44%)	806 (51%)	904 (50%)
Receiving cotrimoxazole/dapsone at randomization			
Cotrimoxazole: prophylaxis	221 (98%)	1545 (98%)	1766 (98%)
Cotrimoxazole: treatment	1 (0.4%)	3 (0.2%)	4 (0.2%)
Dapsone: prophylaxis	3 (1%)	29 (2%)	32 (2%)
Receiving other antibiotics at randomization	44 (19%)	154 (10%)	198 (11%)
Number of non-ART drugs receiving at randomization	3 (2,4)	3 (2,4)	3 (2,4)
1	30 (13%)	266 (17%)	296 (16%)
2	52 (22%)	330 (21%)	378 (21%)
3	41 (19%)	353 (23%)	401 (22%)
4	58 (26%)	360 (23%)	418 (23%)
5	19 (8%)	145 (9%)	164 (9%)
6	9 (4%)	70 (4%)	79 (4%)
7+	16 (7%)	46 (3%)	62 (3%)

* counted as any infection.

Supplementary Table 2 Characteristics of different groups of late presenters

	Group 1 N=355	Group 2 N=394	Group 3 N=242	Group 4 N=218	Group 5 N=398	Total 1607
Died	**87 (25%)**	**45 (11%)**	**25 (10%)**	**12 (6%)**	**15 (4%)**	**184 (11%)**
Died by 12 weeks	**65 (18%)**	**28 (7%)**	**12 (5%)**	**7 (3%)**	**5 (1%)**	**117 (7%)**
Male	194 (55%)	255 (65%)	58 (24%)	6 (3%)	343 (86%)	856 (53%)
Age (years)	**36 (29, 41)**	**35 (30, 42)**	**30 (23, 38)**	**36 (29, 41)**	**39 (33, 45)**	**36 (29, 42)**
Ever smoked	79 (22%)	99 (25%)	11 (5%)	4 (2%)	112 (28%)	305 (19%)
WHO stage						
1	51 (14%)	53 (13%)	30 (12%)	32 (15%)	83 (21%)	249 (15%)
2	47 (13%)	89 (23%)	82 (34%)	117 (54%)	165 (41%)	500 (31%)
3	154 (43%)	199 (51%)	104 (43%)	54 (25%)	123 (31%)	634 (39%)
4	103 (29%)	53 (13%)	26 (11%)	15 (7%)	27 (7%)	224 (14%)
Hospitalized at randomization	12 (3%)	2 (1%)	0 (0%)	0 (0%)	0 (0%)	14 (1%)
Previous healthcare contact	49 (14%)	27 (7%)	21 (9%)	8 (4%)	33 (8%)	138 (9%)
WHO grade 3/4 weight loss (current)	**110 (31%)**	**93 (24%)**	**37 (15%)**	**17 (8%)**	**39 (10%)**	**296 (18%)**
TB (any; current)	79 (22%)	80 (20%)	25 (10%)	11 (5%)	46 (12%)	241 (15%)
WHO grade 3/4 candida (current)	28 (8%)	25 (6%)	17 (7%)	11 (5%)	8 (2%)	89 (6%)
Fever	**100 (28%)**	**48 (12%)**	**19 (8%)**	**20 (9%)**	**26 (7%)**	**213 (13%)**
Weight loss (any; patient reported)	253 (71%)	233 (59%)	118 (49%)	82 (38%)	139 (35%)	825 (51%)
Difficulty walking	154 (43%)	14 (4%)	4 (2%)	8 (4%)	5 (1%)	185 (12%)
Rash	57 (16%)	63 (16%)	62 (26%)	49 (22%)	70 (18%)	301 (19%)
Numbness	135 (38%)	76 (19%)	29 (12%)	32 (15%)	40 (10%)	312 (19%)
Abdominal ache	71 (20%)	40 (10%)	18 (7%)	26 (12%)	17 (4%)	172 (11%)
Sore mouth/ulcers/candida	57 (16%)	42 (11%)	25 (10%)	18 (8%)	20 (5%)	162 (10%)
Vomiting	**48 (14%)**	**21 (5%)**	**4 (2%)**	**11 (5%)**	**9 (2%)**	**93 (6%)**
EQ5D: mobility						
No problems	**79 (22%)**	**374 (95%)**	**237 (98%)**	**202 (93%)**	**387 (97%)**	**1279 (80%)**
Some problems	**265 (75%)**	**20 (5%)**	**5 (2%)**	**16 (7%)**	**11 (3%)**	**317 (20%)**
Confined to bed	**11 (3%)**	**0 (0%)**	**0 (0%)**	**0 (0%)**	**0 (0%)**	**11 (1%)**
EQ5D: self-care						
No problems	**102 (29%)**	**378 (96%)**	**239 (99%)**	**203 (93%)**	**389 (98%)**	**1311 (82%)**
Some problems	**203 (57%)**	**15 (4%)**	**3 (1%)**	**15 (7%)**	**9 (2%)**	**245 (15%)**
Unable	**50 (14%)**	**1 (0%)**	**0 (0%)**	**0 (0%)**	**0 (0%)**	**51 (3%)**
EQ5D: usual activities						

	Group 1 N=355	Group 2 N=394	Group 3 N=242	Group 4 N=218	Group 5 N=398	Total 1607
No problems	25 (7%)	332 (84%)	232 (96%)	185 (85%)	372 (93%)	1146 (71%)
Some problems	229 (65%)	60 (15%)	10 (4%)	30 (14%)	26 (7%)	355 (22%)
Unable	101 (28%)	2 (1%)	0 (0%)	3 (1%)	0 (0%)	106 (7%)
EQ5D: pain						
None	33 (9%)	294 (75%)	204 (84%)	152 (70%)	330 (83%)	1013 (63%)
Moderate	290 (82%)	97 (25%)	36 (15%)	63 (29%)	66 (17%)	552 (34%)
Extreme	32 (9%)	3 (1%)	2 (1%)	3 (1%)	2 (1%)	42 (3%)
EQ5D: anxiety						
Not anxious	134 (38%)	320 (81%)	228 (94%)	163 (75%)	345 (87%)	1190 (74%)
Moderately	202 (57%)	69 (18%)	13 (5%)	48 (22%)	50 (13%)	382 (24%)
Extremely	19 (5%)	5 (1%)	1 (0%)	7 (3%)	3 (1%)	35 (2%)
Blood pressure (systolic/diastolic mmHg)	100/65 (90/60, 110/72)	104/70 (98/62, 110/73)	107/70 (100/64, 116/76)	110/70 (100/66, 119/77)	119/75 (110/70, 130/85)	109/70 (100/63, 118/77)
Fat mass (kg)	4.2 (1.7, 7.5)	4.4 (2.9, 7.4)	7.1 (4.0, 11.3)	18.9 (14.4, 24.7)	7.8 (5.4, 12.5)	6.6 (3.7, 12.3)
Fat free mass (kg)	42.0 (37.8, 47.4)	43.7 (40.0, 48.4)	38.1 (36.0, 40.9)	42.2 (40.2, 44.7)	50.6 (46.5, 55.1)	43.6 (39.2, 49.5)
MUAC (cm)	22.3 (20.4, 24.4)	22.8 (21.4, 24.1)	22.6 (21.0, 24.0)	28.0 (26.0, 30.1)	25.6 (24.0, 27.7)	24.0 (22.0, 26.1)
BMI (kg/m^2)	17.5 (16.0, 19.7)	18.0 (16.8, 19.3)	18.2 (16.8, 19.7)	23.9 (22.0, 26.3)	20.5 (19.0, 22.8)	19.2 (17.3, 21.4)
Grip strength (kg)	**20.0 (15.0, 26.9)**	**24.5 (20.8, 30.5)**	**20.3 (16.8, 23.8)**	**23.6 (20.3, 27.2)**	**33.5 (27.8, 38.0)**	**24.5 (19.4, 31.1)**
CD4 (cells/mm^3)	**28 (13, 49)**	**43 (20, 69)**	**27 (12, 48)**	**48 (24, 73)**	**42 (18, 67)**	**37 (17, 63)**
Haemoglobin (g/dl)	**10.1 (8.7, 11.8)**	**10.3 (9.1, 12.0)**	**10.7 (9.3, 12.1)**	**11.4 (10.5, 12.5)**	**12.8 (11.5, 14.1)**	**11.2 (9.6, 12.7)**
White blood cells (10^9/l)	3.5 (2.5, 4.8)	4.4 (3.5, 5.7)	3.0 (2.3, 4.0)	3.2 (2.5, 4.0)	3.4 (2.6, 4.3)	3.5 (2.7, 4.7)
Platelets (10^9/l)	247 (177, 329)	307 (223, 413)	266 (184, 370)	240 (186, 325)	225 (167, 291)	255 (184, 345)
Neutrophils (10^9/l)	1.71 (1.07, 2.68)	2.49 (1.77, 3.56)	1.42 (0.95, 1.93)	1.54 (1.15, 2.10)	1.59 (1.09, 2.18)	1.74 (1.19, 2.58)
Albumin (g/l)	**32 (26, 37)**	**32 (28, 36)**	**37 (32, 41)**	**38 (34, 42)**	**39 (35, 42)**	**35 (30, 40)**
eGFR (ml/min)	87.2 (67.6, 108.5)	95.8 (76.5, 115.4)	105.8 (85.0, 137.5)	107.5 (88.8, 136.9)	95.6 (78.4, 119.5)	97.1 (77.5, 120.9)
Log10 HIV viral load	5.6 (5.2, 6.0)	5.4 (5.0, 5.8)	5.3 (5.0, 5.7)	5.2 (4.9, 5.6)	5.4 (4.9, 5.7)	5.4 (5.0, 5.8)
Not included in the cluster analysis						
CD8 (cells/mm^3)	408 (257, 643)	528 (352, 801)	446 (303, 764)	523 (355, 700)	499 (335, 719)	479 (310, 724)
Phosphate (mg/dl)	2.72 (1.25, 3.67)	1.30 (1.01, 2.24)	1.43 (1.14, 3.00)	1.39 (1.01, 3.23)	1.39 (1.04, 3.06)	1.44 (1.06, 3.20)
Diarrhoea	32 (9%)	22 (6%)	13 (5%)	12 (6%)	20 (5%)	99 (6%)
Poor appetite/difficulty feeding	212 (60%)	115 (29%)	60 (25%)	59 (27%)	66 (16%)	512 (32%)
Dehydration	55 (15%)	14 (4%)	3 (1%)	1 (<1%)	2 (1%)	75 (5%)

Note: factors in bold have p<0.05 in the final multivariable model for mortality.