Adddison’s disease associated with advanced HIV may explain the high mortality

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| Variable | N = 4311 |
| --- | --- |
| **Age at enrolment** | 37 (9) |
| **Gender** |  |
| Female | 218 (51%) |
| Male | 211 (49%) |
| **Ethnicity** |  |
| Asian | 1 (0.2%) |
| Black African | 357 (83%) |
| Coloured | 68 (16%) |
| White | 2 (0.5%) |
| 1Mean (SD); n (%) | |

| Variable | N = 4311 |
| --- | --- |
| **HIV-positive, confirmed on ELISA** |  |
| Yes | 427 (100%) |
| **Total CD4 count...9** | 38 (28) |
| **CD4 < 100** | 428 (99%) |
| **Opportunistic infection present** | 424 (99%) |
| **Oral or inhaled steroids in the last three months** | 5 (1.2%) |
| **days since employment** | 758 (2,126) |
| **Duration of current illness** | 29 (90) |
| 1n (%); Mean (SD) | |

| Variable | N = 4311 |
| --- | --- |
| **Opportunistic infection (choice=Tuberculosis)** |  |
| Checked | 313 (73%) |
| Unchecked | 118 (27%) |
| **Opportunistic infection (choice=Cryptococcus neoformans)** |  |
| Checked | 1 (0.2%) |
| Unchecked | 430 (100%) |
| **Opportunistic infection (choice=Toxoplasmosis)** |  |
| Unchecked | 431 (100%) |
| **Opportunistic infection (choice=Mycobacterium avium-intracellulare)** |  |
| Unchecked | 431 (100%) |
| **Opportunistic infection (choice=Kaposis sarcoma)** |  |
| Checked | 1 (0.2%) |
| Unchecked | 430 (100%) |
| **Opportunistic infection (choice=Cytomegalovirus)** |  |
| Checked | 1 (0.2%) |
| Unchecked | 430 (100%) |
| **Opportunistic infection (choice=Other)** |  |
| Checked | 114 (26%) |
| Unchecked | 317 (74%) |
| 1n (%) | |

| Variable | N = 4311 |
| --- | --- |
| **BP (systolic)** | 114 (18) |
| **BP (diastolic)** | 69 (13) |
| **Heart rate** | 94 (20) |
| **Hypotension** | 30 (7.3%) |
| **Weakness** | 343 (84%) |
| **Tiredness** | 349 (85%) |
| **Poor appetite** | 307 (75%) |
| **Weight loss** | 363 (88%) |
| **Increased pigmentation of the skin** | 180 (46%) |
| **Nausea** | 209 (51%) |
| 1Mean (SD); n (%) | |

| Variable | N = 4311 |
| --- | --- |
| **Vomiting** | 112 (27%) |
| **Liking for salt** | 256 (63%) |
| **Hypoglycaemia** | 9 (2.2%) |
| **Loss of consciousness** | 5 (1.2%) |
| **Diarrhoea** | 162 (40%) |
| **Dizziness** | 179 (44%) |
| **Shock** | 5 (1.2%) |
| **Anorexia** | 172 (42%) |
| **Loss of axillary and pubic hair, if female** |  |
| No | 151 (36%) |
| Not applicable | 196 (47%) |
| Yes | 68 (16%) |
| **Any postural drop in blood pressure** | 14 (3.4%) |
| 1n (%) | |

| Variable | N = 4311 |
| --- | --- |
| **Presence of anaemia** | 223 (55%) |
| **Total CD4 count...89** | 38 (28) |
| **log10 viral load** | 4.22 (1.48) |
| **Or, HIV viral load = LDL (choice=LDL)** |  |
| Checked | 1 (0.2%) |
| Unchecked | 430 (100%) |
| **Current tuberculosis** | 359 (87%) |
| **Past tuberculosis** | 230 (57%) |
| **Electrolytes available** | 416 (100%) |
| **Sodium** | 133.8 (6.5) |
| **Potassium** | 4.83 (5.07) |
| **Urea** | 12 (24) |
| 1n (%); Mean (SD) | |

| Variable | N = 4311 |
| --- | --- |
| **Creatinine** | 147 (286) |
| **Full blood count (FBC) result available** | 399 (100%) |
| **Haemoglobin** | 10.54 (33.75) |
| **White cell count** | 12.1 (69.5) |
| **Platelets** | 245 (156) |
| **MCV** | 95 (90) |
| **Differential on FBC available** | 94 (23%) |
| **Neutrophils** | 25 (107) |
| **Lymphocyte count** | 3.8 (7.1) |
| **Eosinophils** | 0.48 (1.18) |
| **Basophils** |  |
| 0 | 3 (18%) |
| 0.01 | 6 (35%) |
| 0.029999999 | 1 (5.9%) |
| 0.039999999 | 3 (18%) |
| 0.079999998 | 1 (5.9%) |
| 0.090000004 | 1 (5.9%) |
| 1.299999952 | 1 (5.9%) |
| 1.399999976 | 1 (5.9%) |
| **Aetiology of anaemia** |  |
| Chronic | 139 (64%) |
| Folate deficiency | 3 (1.4%) |
| Iron deficiency | 39 (18%) |
| Other | 23 (11%) |
| Vitamin B12 | 14 (6.4%) |
| 1Mean (SD); n (%) | |

| Variable | N = 4311 |
| --- | --- |
| **Random cortisol result** | 488 (179) |
| **Random cortisol result coded** |  |
| (80,500] | 220 (58%) |
| (500,1.4e+03] | 160 (42%) |
| **ACTH result** | 41 (38) |
| **ACTH result coded** |  |
| (0,13.9] | 62 (16%) |
| (13.9,500] | 319 (84%) |
| **Antibodies sample drawn** |  |
| Yes | 387 (100%) |
| **Confirm random cortisol < 500 nmol/L** | 220 (51%) |
| **Confirm patient not on steroids for past 3 months** | 355 (93%) |
| **Synacthen: 0 minute cortisol result** | 458 (202) |
| **Synacthen: 30 minute cortisol result** | 693 (231) |
| **addisons\_disease** | 30 (9.4%) |
| 1Mean (SD); n (%) | |

| Variable | N = 4311 |
| --- | --- |
| **CT scan done** |  |
| No | 375 (100%) |
| **Bilateral adrenal enlargement** | 0 (NA%) |
| **Calcification** | 0 (NA%) |
| **Atrophy** | 0 (NA%) |
| **Haemorrhage** | 0 (NA%) |
| **Nodularity** | 0 (NA%) |
| **Outcome of hospitalization** |  |
| Demised --> EXIT form | 49 (15%) |
| Discharged home | 276 (85%) |
| Other | 1 (0.3%) |
| 1n (%) | |

| Variable | N = 4311 |
| --- | --- |
| **3 followup\_done** | 102 (37%) |
| **3 followup\_patientstatus** |  |
| Alive | 128 (83%) |
| Deceased --> EXIT form | 27 (17%) |
| **3 followup\_patientcondition** |  |
| Deteriorated | 4 (4.4%) |
| Improved | 85 (94%) |
| Unchanged | 1 (1.1%) |
| **6 followup\_done** | 113 (42%) |
| **6 followup\_patientstatus** |  |
| Alive | 130 (79%) |
| Deceased --> EXIT form | 35 (21%) |
| **6 followup\_patientcondition** |  |
| Deteriorated | 2 (2.0%) |
| Improved | 94 (96%) |
| Unchanged | 2 (2.0%) |
| **12 followup\_done** | 154 (62%) |
| **12 followup\_patientstatus** |  |
| Alive | 142 (76%) |
| Deceased --> EXIT form | 44 (24%) |
| **12 followup\_patientcondition** |  |
| Deteriorated | 6 (4.3%) |
| Improved | 127 (91%) |
| Unchanged | 7 (5.0%) |
| **If deceased, cause of death** |  |
| + MDR | 1 (1.1%) |
| Acute gastroenteritis hypocalemia | 1 (1.1%) |
| Acute kidney injury | 1 (1.1%) |
| Cancer | 1 (1.1%) |
| Cancer (According to the wife) | 1 (1.1%) |
| Chronic diarrhea | 1 (1.1%) |
| Chronic kidney disease, stage 5 | 1 (1.1%) |
| COPD | 1 (1.1%) |
| Cryptococcal meningitis | 1 (1.1%) |
| Diss. TB | 4 (4.4%) |
| Diss/TB | 2 (2.2%) |
| Double Pneumonia | 1 (1.1%) |
| Drug induced liver injury (DILI) | 1 (1.1%) |
| Drug induced pancreatitis | 1 (1.1%) |
| Female pelvic inflammatory disease, unspecified | 1 (1.1%) |
| Gastroenteritis | 1 (1.1%) |
| Head Trauma | 1 (1.1%) |
| Hepatitis B | 1 (1.1%) |
| HIV | 1 (1.1%) |
| HIV-Encephalous | 1 (1.1%) |
| Interstitial pulmonary disease | 1 (1.1%) |
| Jaundice | 1 (1.1%) |
| Kaposi Sarcoma | 1 (1.1%) |
| Kidney failure | 2 (2.2%) |
| Kidney failure and PTB | 1 (1.1%) |
| Liver failure | 1 (1.1%) |
| LRTI/RVD | 1 (1.1%) |
| Lymphoid. Haematopoietic related tissue | 1 (1.1%) |
| Lymphoma | 2 (2.2%) |
| MDR | 1 (1.1%) |
| MDR Chronic Diarrhoea | 1 (1.1%) |
| MDR TB | 1 (1.1%) |
| Meningitis | 1 (1.1%) |
| Meningitis / MDR TB | 1 (1.1%) |
| Natural causes | 7 (7.7%) |
| No diagnosis | 1 (1.1%) |
| Oesophageal Conditis | 1 (1.1%) |
| Pancytopenia and TB | 1 (1.1%) |
| Pneumonia | 2 (2.2%) |
| PTB | 6 (6.6%) |
| PTB/Diss. TB | 1 (1.1%) |
| Pulmonary TB | 3 (3.3%) |
| Renal failure | 2 (2.2%) |
| Renal Failure | 1 (1.1%) |
| Respiratory Pneumonia | 1 (1.1%) |
| Seizures | 2 (2.2%) |
| Sepsis | 2 (2.2%) |
| Sepsis TB | 1 (1.1%) |
| Sepsis/TBM | 1 (1.1%) |
| Sepsis? Had boil in neck | 1 (1.1%) |
| Septicemia | 1 (1.1%) |
| TB | 1 (1.1%) |
| TB and heart failure | 1 (1.1%) |
| TB and Meningitis | 1 (1.1%) |
| TB Default | 2 (2.2%) |
| TB intestines | 1 (1.1%) |
| TB Meningitis | 1 (1.1%) |
| TB/Ascites | 1 (1.1%) |
| Tuberculosis | 1 (1.1%) |
| unknown | 1 (1.1%) |
| Unknown | 7 (7.7%) |
| 1n (%) | |

# Table 2: Patients diagnosed with hypoadrenalism in advanced HIV study, compred to those with normal adreal function

## Socio-demographics by hypoadrenalism + advanced HIV and without

patients with hypoadrenalism with advanced HIV (CD4<100) and not on steriods whether oral or injectable

| Characteristic | N | OR1 | 95% CI1 | p-value |
| --- | --- | --- | --- | --- |
| Age at enrolment | 320 | 1.00 | 0.96, 1.05 | 0.8 |
| gender | 320 |  |  |  |
| Female |  | — | — |  |
| Male |  | 1.03 | 0.48, 2.23 | >0.9 |
| ethnicity | 319 |  |  |  |
| Asian |  | — | — |  |
| Black African |  | 604,812 | 0.00, NA | >0.9 |
| Coloured |  | 470,026 | 0.00, NA | >0.9 |
| White |  | 1.00 | 0.00, 252,405,882,915,600,544 | >0.9 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | | |

# Table 2: Signs by hypoadrenalism + advanced HIV and without

| Characteristic | N | OR1 | 95% CI1 | p-value |
| --- | --- | --- | --- | --- |
| BP (systolic) | 320 | 1.01 | 0.99, 1.03 | 0.3 |
| BP (diastolic) | 320 | 1.02 | 0.99, 1.05 | 0.2 |
| Heart rate | 320 | 0.99 | 0.97, 1.01 | 0.5 |
| Hypotension | 306 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.39 | 0.02, 1.99 | 0.4 |
| Weakness | 307 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.32 | 0.13, 0.82 | 0.012 |
| Tiredness | 308 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.33 | 0.13, 0.96 | 0.029 |
| Poor appetite | 305 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.93 | 0.38, 2.62 | 0.9 |
| Weight loss | 309 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.41 | 0.15, 1.31 | 0.10 |
| Increased pigmentation of the skin | 293 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.71 | 0.30, 1.61 | 0.4 |
| Nausea | 308 |  |  |  |
| No |  | — | — |  |
| Yes |  | 1.11 | 0.51, 2.42 | 0.8 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | | |

# Table 2: Signs by hypoadrenalism + advanced HIV and without - Continued 2

| Characteristic | N | OR1 | 95% CI1 | p-value |
| --- | --- | --- | --- | --- |
| Vomiting | 307 |  |  |  |
| No |  | — | — |  |
| Yes |  | 1.35 | 0.58, 2.98 | 0.5 |
| Liking for salt | 306 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.85 | 0.38, 1.98 | 0.7 |
| Hypoglycaemia | 307 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.00 |  | >0.9 |
| Loss of consciousness | 305 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.00 |  | >0.9 |
| Diarrhoea | 305 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.72 | 0.31, 1.56 | 0.4 |
| Dizziness | 306 |  |  |  |
| No |  | — | — |  |
| Yes |  | 1.14 | 0.52, 2.50 | 0.7 |
| Shock | 309 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.00 |  | >0.9 |
| Anorexia | 307 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.47 | 0.19, 1.05 | 0.078 |
| Loss of axillary and pubic hair, if female | 310 |  |  |  |
| No |  | — | — |  |
| Not applicable |  | 0.81 | 0.36, 1.83 | 0.6 |
| Yes |  | 0.30 | 0.05, 1.14 | 0.12 |
| Any postural drop in blood pressure | 307 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.87 | 0.05, 4.71 | 0.9 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | | |

# Table 2: Signs by hypoadrenalism + advanced HIV and without - Continued 3

| Characteristic | N | OR1 | 95% CI1 | p-value |
| --- | --- | --- | --- | --- |
| Presence of anaemia | 304 |  |  |  |
| No |  | — | — |  |
| Yes |  | 1.00 | 0.46, 2.18 | >0.9 |
| Total CD4 count | 319 | 1.00 | 0.98, 1.01 | 0.5 |
| log10 viral load | 65 | 1.53 | 0.64, 5.14 | 0.4 |
| Or, HIV viral load = LDL (choice=LDL) | 321 |  |  |  |
| Checked |  | — | — |  |
| Unchecked |  | 211,090 | 0.00, NA | >0.9 |
| Current tuberculosis | 309 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.34 | 0.14, 0.91 | 0.023 |
| Past tuberculosis | 302 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.83 | 0.38, 1.82 | 0.6 |
| Sodium | 305 | 1.03 | 0.98, 1.08 | 0.2 |
| Potassium | 306 | 1.06 | 0.99, 1.13 | 0.045 |
| Urea | 304 | 0.99 | 0.95, 1.01 | 0.6 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | | |

| Characteristic | N | OR1 | 95% CI1 | p-value |
| --- | --- | --- | --- | --- |
| Creatinine | 319 | 1.00 | 1.00, 1.00 | 0.4 |
| Full blood count (FBC) result available | 298 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.00 |  | >0.9 |
| Haemoglobin | 319 | 1.02 | 0.86, 1.21 | 0.8 |
| White cell count | 318 | 1.00 |  | 0.8 |
| Platelets | 315 | 1.00 | 1.00, 1.00 | 0.4 |
| MCV | 294 | 1.00 | 0.99, 1.00 | >0.9 |
| Differential on FBC available | 306 |  |  |  |
| No |  | — | — |  |
| Yes |  | 1.23 | 0.47, 2.89 | 0.7 |
| Neutrophils | 61 | 1.01 | 1.00, 1.03 | 0.12 |
| Lymphocyte count | 62 | 1.05 | 0.94, 1.15 | 0.3 |
| Eosinophils | 41 | 2.14 | 1.03, 9.21 | 0.14 |
| Basophils | 15 | 0.00 | 0.00, 0.00 | 0.5 |
| Aetiology of anaemia | 165 |  |  |  |
| Chronic |  | — | — |  |
| Folate deficiency |  | 8.33 | 0.36, 100 | 0.10 |
| Iron deficiency |  | 3.03 | 0.72, 11.5 | 0.11 |
| Other |  | 5.13 | 1.18, 20.5 | 0.021 |
| Vitamin B12 |  | 1.39 | 0.07, 9.14 | 0.8 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | | |

| Characteristic | N | OR1 | 95% CI1 | p-value |
| --- | --- | --- | --- | --- |
| 3 followup\_done | 228 |  |  |  |
| No |  | — | — |  |
| Yes |  | 1.13 | 0.47, 2.58 | 0.8 |
| 3 followup\_patientstatus | 126 |  |  |  |
| Alive |  | — | — |  |
| Deceased --> EXIT form |  | 1.39 | 0.29, 5.13 | 0.6 |
| 3 followup\_patientcondition | 72 |  |  |  |
| Deteriorated |  | — | — |  |
| Improved |  | 0.06 | 0.00, 0.67 | 0.026 |
| Unchanged |  | 0.00 |  | >0.9 |
| 6 followup\_done | 226 |  |  |  |
| No |  | — | — |  |
| Yes |  | 1.05 | 0.45, 2.42 | >0.9 |
| 6 followup\_patientstatus | 137 |  |  |  |
| Alive |  | — | — |  |
| Deceased --> EXIT form |  | 1.60 | 0.41, 5.32 | 0.5 |
| 6 followup\_patientcondition | 84 |  |  |  |
| Deteriorated |  | — | — |  |
| Improved |  | 0.08 | 0.00, 2.22 | 0.089 |
| Unchanged |  | 0.00 |  | >0.9 |
| 12 followup\_done | 212 |  |  |  |
| No |  | — | — |  |
| Yes |  | 0.54 | 0.22, 1.29 | 0.2 |
| 12 followup\_patientstatus | 158 |  |  |  |
| Alive |  | — | — |  |
| Deceased --> EXIT form |  | 1.17 | 0.31, 3.66 | 0.8 |
| 12 followup\_patientcondition | 119 |  |  |  |
| Deteriorated |  | — | — |  |
| Improved |  | 0.18 | 0.02, 4.09 | 0.2 |
| Unchanged |  | 0.00 |  | >0.9 |
| If deceased, cause of death | 76 |  |  |  |
| + MDR |  | — | — |  |
| Acute gastroenteritis hypocalemia |  | 1.00 | 0.00, Inf | >0.9 |
| Acute kidney injury |  | 1.00 | 0.00, Inf | >0.9 |
| Cancer |  | 1.00 | 0.00, Inf | >0.9 |
| Cancer (According to the wife) |  | 1.00 | 0.00, Inf | >0.9 |
| Chronic diarrhea |  | 1.00 | 0.00, Inf | >0.9 |
| Chronic kidney disease, stage 5 |  | 39,869,252,698,223,566,848 | 0.00, NA | >0.9 |
| COPD |  | 1.00 | 0.00, Inf | >0.9 |
| Cryptococcal meningitis |  | 1.00 | 0.00, Inf | >0.9 |
| Diss. TB |  | 1.00 | 0.00, Inf | >0.9 |
| Diss/TB |  | 1.00 | 0.00, Inf | >0.9 |
| Double Pneumonia |  | 39,869,252,233,939,902,464 | 0.00, NA | >0.9 |
| Drug induced liver injury (DILI) |  | 1.00 | 0.00, Inf | >0.9 |
| Drug induced pancreatitis |  | 1.00 | 0.00, Inf | >0.9 |
| Gastroenteritis |  | 1.00 | 0.00, Inf | >0.9 |
| Hepatitis B |  | 1.00 | 0.00, Inf | >0.9 |
| HIV |  | 1.00 | 0.00, Inf | >0.9 |
| Interstitial pulmonary disease |  | 1.00 | 0.00, Inf | >0.9 |
| Jaundice |  | 1.00 | 0.00, Inf | >0.9 |
| Kaposi Sarcoma |  | 1.00 | 0.00, Inf | >0.9 |
| Kidney failure |  | 1.00 | 0.00, Inf | >0.9 |
| Liver failure |  | 1.00 | 0.00, Inf | >0.9 |
| Lymphoid. Haematopoietic related tissue |  | 1.00 | 0.00, Inf | >0.9 |
| Lymphoma |  | 1.00 | 0.00, Inf | >0.9 |
| MDR |  | 1.00 | 0.00, Inf | >0.9 |
| MDR Chronic Diarrhoea |  | 1.00 | 0.00, Inf | >0.9 |
| MDR TB |  | 1.00 | 0.00, Inf | >0.9 |
| Meningitis |  | 39,869,255,185,048,780,800 | 0.00, NA | >0.9 |
| Meningitis / MDR TB |  | 1.00 | 0.00, Inf | >0.9 |
| Natural causes |  | 1.00 | 0.00, Inf | >0.9 |
| No diagnosis |  | 1.00 | 0.00, Inf | >0.9 |
| Oesophageal Conditis |  | 1.00 | 0.00, Inf | >0.9 |
| Pneumonia |  | 1.00 | 0.00, Inf | >0.9 |
| PTB |  | 1.00 | 0.00, Inf | >0.9 |
| PTB/Diss. TB |  | 1.00 | 0.00, Inf | >0.9 |
| Pulmonary TB |  | 1.00 | 0.00, Inf | >0.9 |
| Renal failure |  | 1.00 | 0.00, Inf | >0.9 |
| Renal Failure |  | 1.00 | 0.00, Inf | >0.9 |
| Respiratory Pneumonia |  | 1.00 | 0.00, Inf | >0.9 |
| Seizures |  | 39,869,252,225,723,695,104 | 0.00, NA | >0.9 |
| Sepsis TB |  | 1.00 | 0.00, Inf | >0.9 |
| Sepsis/TBM |  | 1.00 | 0.00, Inf | >0.9 |
| Sepsis? Had boil in neck |  | 39,869,252,712,504,115,200 | 0.00, NA | >0.9 |
| Septicemia |  | 1.00 | 0.00, Inf | >0.9 |
| TB and heart failure |  | 1.00 | 0.00, Inf | >0.9 |
| TB and Meningitis |  | 1.00 | 0.00, Inf | >0.9 |
| TB Default |  | 1.00 | 0.00, Inf | >0.9 |
| TB intestines |  | 1.00 | 0.00, Inf | >0.9 |
| TB Meningitis |  | 1.00 | 0.00, Inf | >0.9 |
| TB/Ascites |  | 1.00 | 0.00, Inf | >0.9 |
| Tuberculosis |  | 1.00 | 0.00, Inf | >0.9 |
| unknown |  | 1.00 | 0.00, Inf | >0.9 |
| Unknown |  | 1,262,842,047 | 0.00, NA | >0.9 |
| 1OR = Odds Ratio, CI = Confidence Interval | | | | |

# Table 3: Clinical features predictive of hypoadrenalism–addisons\_disease (hypoadrenalism status of study paticipants) vs other variables

| Variable | N | 0, N = 2881 | 1, N = 301 | p-value2 |
| --- | --- | --- | --- | --- |
| **Age at enrolment** | 318 | 37 (9) | 37 (9) | 0.9 |
| **gender** | 318 |  |  | >0.9 |
| Female |  | 151 (52%) | 16 (53%) |  |
| Male |  | 137 (48%) | 14 (47%) |  |
| **ethnicity** | 317 |  |  | 0.9 |
| Asian |  | 1 (0.3%) | 0 (0%) |  |
| Black African |  | 235 (82%) | 26 (87%) |  |
| Coloured |  | 49 (17%) | 4 (13%) |  |
| White |  | 2 (0.7%) | 0 (0%) |  |
| 1Mean (SD); n (%) | | | | |
| 2Wilcoxon rank sum test; Pearson's Chi-squared test; Fisher's exact test | | | | |

| Variable | N | 0, N = 2881 | 1, N = 301 | p-value2 |
| --- | --- | --- | --- | --- |
| **HIV-positive, confirmed on ELISA** | 316 |  |  |  |
| Yes |  | 286 (100%) | 30 (100%) |  |
| **Total CD4 count** | 317 | 37 (27) | 34 (28) | 0.6 |
| **CD4 < 100** | 318 | 286 (99%) | 30 (100%) | >0.9 |
| **Opportunistic infection present** | 317 | 287 (100%) | 30 (100%) | >0.9 |
| **Oral or inhaled steroids in the last three months** | 315 | 2 (0.7%) | 1 (3.3%) | 0.3 |
| **days since employment** | 50 | 570 (2,100) | 2,456 (1,561) | 0.035 |
| **Duration of current illness** | 300 | 35 (109) | 20 (15) | 0.4 |
| 1n (%); Mean (SD) | | | | |
| 2Wilcoxon rank sum test; Fisher's exact test | | | | |

| Characteristic | N | 0, N = 2881 | 1, N = 301 | p-value2 |
| --- | --- | --- | --- | --- |
| Tuberculosis | 318 |  |  | 0.018 |
| Checked |  | 220 (76%) | 17 (57%) |  |
| Unchecked |  | 68 (24%) | 13 (43%) |  |
| Cryptococcus neoformans | 318 |  |  | >0.9 |
| Checked |  | 0 (0%) | 0 (0%) |  |
| Unchecked |  | 288 (100%) | 30 (100%) |  |
| Toxoplasmosis | 318 |  |  |  |
| Unchecked |  | 288 (100%) | 30 (100%) |  |
| Mycobacterium avium-intracellulare | 318 |  |  |  |
| Unchecked |  | 288 (100%) | 30 (100%) |  |
| Kaposis sarcoma | 318 |  |  | >0.9 |
| Checked |  | 1 (0.3%) | 0 (0%) |  |
| Unchecked |  | 287 (100%) | 30 (100%) |  |
| Cytomegalovirus | 318 |  |  | 0.094 |
| Checked |  | 0 (0%) | 1 (3.3%) |  |
| Unchecked |  | 288 (100%) | 29 (97%) |  |
| Other | 318 |  |  | 0.044 |
| Checked |  | 75 (26%) | 13 (43%) |  |
| Unchecked |  | 213 (74%) | 17 (57%) |  |
| 1n (%) | | | | |
| 2Pearson's Chi-squared test; Fisher's exact test | | | | |

# A tibble: 431 x 8

Tuberculosis Cryptococcus ~ Toxoplasmosis Mycobacterium~ Kaposis sarco~   
1 Unchecked Unchecked Unchecked Unchecked Unchecked  
2 Unchecked Unchecked Unchecked Unchecked Unchecked  
3 Checked Unchecked Unchecked Unchecked Unchecked  
4 Unchecked Unchecked Unchecked Unchecked Unchecked  
5 Checked Unchecked Unchecked Unchecked Unchecked  
6 Unchecked Unchecked Unchecked Unchecked Unchecked  
7 Unchecked Unchecked Unchecked Unchecked Unchecked  
8 Unchecked Unchecked Unchecked Unchecked Unchecked  
9 Unchecked Unchecked Unchecked Unchecked Unchecked  
10 Checked Unchecked Unchecked Unchecked Unchecked  
# … with 421 more rows, and 3 more variables: Cytomegalovirus , # Other , addisons\_disease

| Variable | N | 0, N = 2881 | 1, N = 301 | p-value2 |
| --- | --- | --- | --- | --- |
| **BP (systolic)** | 318 | 114 (18) | 118 (15) | 0.13 |
| **BP (diastolic)** | 318 | 69 (12) | 72 (11) | 0.093 |
| **Heart rate** | 318 | 96 (20) | 92 (20) | 0.4 |
| **Hypotension** | 305 | 22 (8.0%) | 1 (3.3%) | 0.7 |
| **Weakness** | 306 | 246 (89%) | 22 (73%) | 0.020 |
| **Tiredness** | 307 | 255 (92%) | 24 (80%) | 0.042 |
| **Poor appetite** | 304 | 220 (80%) | 24 (80%) | >0.9 |
| **Weight loss** | 308 | 257 (92%) | 25 (83%) | 0.2 |
| **Increased pigmentation of the skin** | 292 | 129 (48%) | 10 (38%) | 0.3 |
| **Nausea** | 307 | 147 (53%) | 16 (53%) | >0.9 |
| 1Mean (SD); n (%) | | | | |
| 2Wilcoxon rank sum test; Fisher's exact test; Pearson's Chi-squared test | | | | |

| Variable | N | 0, N = 2881 | 1, N = 301 | p-value2 |
| --- | --- | --- | --- | --- |
| **Vomiting** | 306 | 78 (28%) | 10 (33%) | 0.6 |
| **Liking for salt** | 305 | 189 (68%) | 18 (62%) | 0.5 |
| **Hypoglycaemia** | 306 | 7 (2.5%) | 0 (0%) | >0.9 |
| **Loss of consciousness** | 304 | 2 (0.7%) | 0 (0%) | >0.9 |
| **Diarrhoea** | 304 | 117 (43%) | 10 (33%) | 0.3 |
| **Dizziness** | 305 | 129 (47%) | 15 (52%) | 0.6 |
| **Shock** | 308 | 3 (1.1%) | 0 (0%) | >0.9 |
| **Anorexia** | 306 | 125 (45%) | 8 (27%) | 0.051 |
| **Loss of axillary and pubic hair, if female** | 309 |  |  | 0.2 |
| No |  | 97 (35%) | 14 (47%) |  |
| Not applicable |  | 131 (47%) | 14 (47%) |  |
| Yes |  | 51 (18%) | 2 (6.7%) |  |
| **Any postural drop in blood pressure** | 306 | 11 (4.0%) | 1 (3.3%) | >0.9 |
| 1n (%) | | | | |
| 2Pearson's Chi-squared test; Fisher's exact test | | | | |

| Variable | N | 0, N = 2881 | 1, N = 301 | p-value2 |
| --- | --- | --- | --- | --- |
| **Presence of anaemia** | 303 | 151 (55%) | 16 (53%) | 0.8 |
| **log10 viral load** | 65 | 4.23 (1.45) | 4.96 (0.38) | 0.6 |
| **Or, HIV viral load = LDL (choice=LDL)** | 318 |  |  | >0.9 |
| Checked |  | 1 (0.3%) | 0 (0%) |  |
| Unchecked |  | 287 (100%) | 30 (100%) |  |
| **Current tuberculosis** | 307 | 250 (90%) | 23 (77%) | 0.034 |
| **Past tuberculosis** | 301 | 161 (59%) | 17 (57%) | 0.8 |
| **Electrolytes available** | 312 | 284 (100%) | 28 (100%) | >0.9 |
| **Sodium** | 303 | 133.5 (6.8) | 135.1 (4.8) | 0.10 |
| **Potassium** | 304 | 4.45 (3.12) | 6.17 (8.38) | 0.4 |
| **Urea** | 302 | 11 (18) | 9 (9) | 0.7 |
| 1n (%); Mean (SD) | | | | |
| 2Pearson's Chi-squared test; Wilcoxon rank sum test; Fisher's exact test | | | | |

| Variable | N | 0, N = 2881 | 1, N = 301 | p-value2 |
| --- | --- | --- | --- | --- |
| **Creatinine** | 317 | 143 (302) | 192 (326) | 0.078 |
| **Full blood count (FBC) result available** | 296 | 268 (100%) | 27 (96%) | 0.095 |
| **Haemoglobin** | 317 | 8.97 (2.23) | 9.05 (2.11) | >0.9 |
| **White cell count** | 316 | 14.3 (84.1) | 10.4 (16.3) | 0.5 |
| **Platelets** | 313 | 251 (157) | 218 (161) | 0.2 |
| **MCV** | 292 | 90 (66) | 90 (11) | 0.088 |
| **Differential on FBC available** | 304 | 57 (21%) | 7 (23%) | 0.7 |
| **Neutrophils** | 61 | 11 (22) | 70 (156) | 0.7 |
| **Lymphocyte count** | 62 | 3.0 (5.8) | 6.3 (13.4) | 0.3 |
| **Eosinophils** | 41 | 0.23 (0.44) | 1.55 (2.80) | 0.2 |
| **Basophils** | 15 |  |  | >0.9 |
| 0 |  | 2 (15%) | 0 (0%) |  |
| 0.01 |  | 4 (31%) | 2 (100%) |  |
| 0.029999999 |  | 1 (7.7%) | 0 (0%) |  |
| 0.039999999 |  | 2 (15%) | 0 (0%) |  |
| 0.079999998 |  | 1 (7.7%) | 0 (0%) |  |
| 0.090000004 |  | 1 (7.7%) | 0 (0%) |  |
| 1.299999952 |  | 1 (7.7%) | 0 (0%) |  |
| 1.399999976 |  | 1 (7.7%) | 0 (0%) |  |
| **Aetiology of anaemia** | 164 |  |  | 0.040 |
| Chronic |  | 99 (67%) | 6 (38%) |  |
| Folate deficiency |  | 2 (1.4%) | 1 (6.2%) |  |
| Iron deficiency |  | 22 (15%) | 4 (25%) |  |
| Other |  | 13 (8.8%) | 4 (25%) |  |
| Vitamin B12 |  | 12 (8.1%) | 1 (6.2%) |  |
| 1Mean (SD); n (%) | | | | |
| 2Wilcoxon rank sum test; Fisher's exact test; Pearson's Chi-squared test | | | | |

| Variable | N | 0, N = 2881 | 1, N = 301 | p-value2 |
| --- | --- | --- | --- | --- |
| **CT scan done** | 311 |  |  |  |
| No |  | 283 (100%) | 28 (100%) |  |
| **Bilateral adrenal enlargement** | 0 | 0 (NA%) | 0 (NA%) |  |
| **Calcification** | 0 | 0 (NA%) | 0 (NA%) |  |
| **Atrophy** | 0 | 0 (NA%) | 0 (NA%) |  |
| **Haemorrhage** | 0 | 0 (NA%) | 0 (NA%) |  |
| **Nodularity** | 0 | 0 (NA%) | 0 (NA%) |  |
| **Outcome of hospitalization** | 272 |  |  | 0.020 |
| Demised --> EXIT form |  | 40 (16%) | 0 (0%) |  |
| Discharged home |  | 204 (84%) | 28 (100%) |  |
| Other |  | 0 (0%) | 0 (0%) |  |
| 1n (%) | | | | |
| 2Fisher's exact test | | | | |

| Variable | N | 0, N = 2881 | 1, N = 301 | p-value2 |
| --- | --- | --- | --- | --- |
| **3 followup\_done** | 228 | 72 (36%) | 10 (37%) | >0.9 |
| **3 followup\_patientstatus** | 126 |  |  | 0.7 |
| Alive |  | 92 (81%) | 9 (75%) |  |
| Deceased --> EXIT form |  | 22 (19%) | 3 (25%) |  |
| **3 followup\_patientcondition** | 72 |  |  | 0.074 |
| Deteriorated |  | 1 (1.6%) | 2 (22%) |  |
| Improved |  | 61 (97%) | 7 (78%) |  |
| Unchanged |  | 1 (1.6%) | 0 (0%) |  |
| **6 followup\_done** | 226 | 86 (43%) | 11 (42%) | >0.9 |
| **6 followup\_patientstatus** | 137 |  |  | 0.5 |
| Alive |  | 97 (78%) | 9 (69%) |  |
| Deceased --> EXIT form |  | 27 (22%) | 4 (31%) |  |
| **6 followup\_patientcondition** | 84 |  |  | 0.3 |
| Deteriorated |  | 1 (1.3%) | 1 (14%) |  |
| Improved |  | 74 (96%) | 6 (86%) |  |
| Unchanged |  | 2 (2.6%) | 0 (0%) |  |
| **12 followup\_done** | 212 | 119 (63%) | 11 (46%) | 0.10 |
| **12 followup\_patientstatus** | 158 |  |  | 0.8 |
| Alive |  | 109 (76%) | 11 (73%) |  |
| Deceased --> EXIT form |  | 34 (24%) | 4 (27%) |  |
| **12 followup\_patientcondition** | 119 |  |  | 0.3 |
| Deteriorated |  | 2 (1.8%) | 1 (10%) |  |
| Improved |  | 100 (92%) | 9 (90%) |  |
| Unchanged |  | 7 (6.4%) | 0 (0%) |  |
| **If deceased, cause of death** | 76 |  |  | 0.2 |
| + MDR |  | 1 (1.4%) | 0 (0%) |  |
| Acute gastroenteritis hypocalemia |  | 1 (1.4%) | 0 (0%) |  |
| Acute kidney injury |  | 1 (1.4%) | 0 (0%) |  |
| Cancer |  | 1 (1.4%) | 0 (0%) |  |
| Cancer (According to the wife) |  | 1 (1.4%) | 0 (0%) |  |
| Chronic diarrhea |  | 1 (1.4%) | 0 (0%) |  |
| Chronic kidney disease, stage 5 |  | 0 (0%) | 1 (17%) |  |
| COPD |  | 1 (1.4%) | 0 (0%) |  |
| Cryptococcal meningitis |  | 1 (1.4%) | 0 (0%) |  |
| Diss. TB |  | 3 (4.3%) | 0 (0%) |  |
| Diss/TB |  | 2 (2.9%) | 0 (0%) |  |
| Double Pneumonia |  | 0 (0%) | 1 (17%) |  |
| Drug induced liver injury (DILI) |  | 1 (1.4%) | 0 (0%) |  |
| Drug induced pancreatitis |  | 1 (1.4%) | 0 (0%) |  |
| Female pelvic inflammatory disease, unspecified |  | 0 (0%) | 0 (0%) |  |
| Gastroenteritis |  | 1 (1.4%) | 0 (0%) |  |
| Head Trauma |  | 0 (0%) | 0 (0%) |  |
| Hepatitis B |  | 1 (1.4%) | 0 (0%) |  |
| HIV |  | 1 (1.4%) | 0 (0%) |  |
| HIV-Encephalous |  | 0 (0%) | 0 (0%) |  |
| Interstitial pulmonary disease |  | 1 (1.4%) | 0 (0%) |  |
| Jaundice |  | 1 (1.4%) | 0 (0%) |  |
| Kaposi Sarcoma |  | 1 (1.4%) | 0 (0%) |  |
| Kidney failure |  | 1 (1.4%) | 0 (0%) |  |
| Kidney failure and PTB |  | 0 (0%) | 0 (0%) |  |
| Liver failure |  | 1 (1.4%) | 0 (0%) |  |
| LRTI/RVD |  | 0 (0%) | 0 (0%) |  |
| Lymphoid. Haematopoietic related tissue |  | 1 (1.4%) | 0 (0%) |  |
| Lymphoma |  | 1 (1.4%) | 0 (0%) |  |
| MDR |  | 1 (1.4%) | 0 (0%) |  |
| MDR Chronic Diarrhoea |  | 1 (1.4%) | 0 (0%) |  |
| MDR TB |  | 1 (1.4%) | 0 (0%) |  |
| Meningitis |  | 0 (0%) | 1 (17%) |  |
| Meningitis / MDR TB |  | 1 (1.4%) | 0 (0%) |  |
| Natural causes |  | 7 (10%) | 0 (0%) |  |
| No diagnosis |  | 1 (1.4%) | 0 (0%) |  |
| Oesophageal Conditis |  | 1 (1.4%) | 0 (0%) |  |
| Pancytopenia and TB |  | 0 (0%) | 0 (0%) |  |
| Pneumonia |  | 2 (2.9%) | 0 (0%) |  |
| PTB |  | 6 (8.6%) | 0 (0%) |  |
| PTB/Diss. TB |  | 1 (1.4%) | 0 (0%) |  |
| Pulmonary TB |  | 3 (4.3%) | 0 (0%) |  |
| Renal failure |  | 2 (2.9%) | 0 (0%) |  |
| Renal Failure |  | 1 (1.4%) | 0 (0%) |  |
| Respiratory Pneumonia |  | 1 (1.4%) | 0 (0%) |  |
| Seizures |  | 0 (0%) | 1 (17%) |  |
| Sepsis |  | 0 (0%) | 0 (0%) |  |
| Sepsis TB |  | 1 (1.4%) | 0 (0%) |  |
| Sepsis/TBM |  | 1 (1.4%) | 0 (0%) |  |
| Sepsis? Had boil in neck |  | 0 (0%) | 1 (17%) |  |
| Septicemia |  | 1 (1.4%) | 0 (0%) |  |
| TB |  | 0 (0%) | 0 (0%) |  |
| TB and heart failure |  | 1 (1.4%) | 0 (0%) |  |
| TB and Meningitis |  | 1 (1.4%) | 0 (0%) |  |
| TB Default |  | 1 (1.4%) | 0 (0%) |  |
| TB intestines |  | 1 (1.4%) | 0 (0%) |  |
| TB Meningitis |  | 1 (1.4%) | 0 (0%) |  |
| TB/Ascites |  | 1 (1.4%) | 0 (0%) |  |
| Tuberculosis |  | 1 (1.4%) | 0 (0%) |  |
| unknown |  | 1 (1.4%) | 0 (0%) |  |
| Unknown |  | 5 (7.1%) | 1 (17%) |  |
| 1n (%) | | | | |
| 2Pearson's Chi-squared test; Fisher's exact test | | | | |

# Table 4 (Mortality): Predictors of recurrent admission, mortality, including basal cortisol, stimulated cortisol, incremental cortisol

| Variable | N | 0, N = 3781 | 1, N = 531 | p-value2 |
| --- | --- | --- | --- | --- |
| **Ethnicity** | 428 |  |  | 0.3 |
| Asian |  | 1 (0.3%) | 0 (0%) |  |
| Black African |  | 312 (83%) | 45 (85%) |  |
| Coloured |  | 61 (16%) | 7 (13%) |  |
| White |  | 1 (0.3%) | 1 (1.9%) |  |
| **Gender** | 429 |  |  | 0.4 |
| Female |  | 188 (50%) | 30 (57%) |  |
| Male |  | 188 (50%) | 23 (43%) |  |
| **Total CD4 count** | 428 | 39 (29) | 34 (27) | 0.2 |
| **Random cortisol result** | 381 | 488 (176) | 490 (199) | 0.8 |
| **Synacthen: 30 minute cortisol result** | 145 | 693 (231) | 695 (235) | 0.8 |
| **Synacthen: 0 minute cortisol result** | 148 | 446 (194) | 508 (231) | 0.2 |
| **ACTH result** | 381 | 39 (30) | 55 (71) | 0.088 |
| **Neutrophils** | 93 | 28 (116) | 8 (22) | 0.13 |
| **Lymphocyte count** | 93 | 4.3 (7.6) | 1.1 (1.5) | 0.5 |
| **Haemoglobin** | 426 | 10.76 (36.06) | 9.03 (2.34) | >0.9 |
| 1n (%); Mean (SD) | | | | |
| 2Fisher's exact test; Pearson's Chi-squared test; Wilcoxon rank sum test | | | | |

# Table 4 (Mortality): Predictors of recurrent admission, mortality, including basal cortisol, stimulated cortisol, incremental cortisol - continued

| Variable | N | 0, N = 3781 | 1, N = 531 | p-value2 |
| --- | --- | --- | --- | --- |
| **Sodium** | 408 | 133.9 (6.6) | 133.4 (6.0) | 0.7 |
| **Hypoglycaemia** | 408 | 8 (2.2%) | 1 (2.0%) | >0.9 |
| **BP (systolic)** | 428 | 115 (18) | 112 (14) | 0.6 |
| **BP (diastolic)** | 428 | 69 (13) | 71 (9) | 0.059 |
| **Current tuberculosis** | 415 | 316 (87%) | 43 (84%) | 0.6 |
| **Duration of current illness** | 400 | 30 (96) | 22 (23) | 0.8 |
| **HIV\_duration** | 350 | 1,434 (1,957) | 1,638 (2,004) | 0.5 |
| **n\_primary\_med\_conditions** | 428 |  |  | 0.2 |
| 3 |  | 46 (12%) | 12 (23%) |  |
| 2 |  | 86 (23%) | 12 (23%) |  |
| 1 |  | 225 (60%) | 26 (49%) |  |
| 4 |  | 16 (4.3%) | 3 (5.7%) |  |
| 5 |  | 2 (0.5%) | 0 (0%) |  |
| **n\_Coexisting\_medical\_conditions** | 302 |  |  | 0.001 |
| 2 |  | 86 (33%) | 10 (24%) |  |
| 1 |  | 111 (43%) | 9 (22%) |  |
| 4 |  | 17 (6.5%) | 10 (24%) |  |
| 3 |  | 43 (16%) | 11 (27%) |  |
| 5 |  | 4 (1.5%) | 1 (2.4%) |  |
| **addisons\_disease\_advanced\_HIV** | 321 | 24 (8.8%) | 5 (11%) | 0.6 |
| 1Mean (SD); n (%) | | | | |
| 2Wilcoxon rank sum test; Fisher's exact test; Pearson's Chi-squared test | | | | |

# Table 6: Multivariate logistical regression analysis, examining the variables independently predictive of a poor outcome

Cross validation model

Variable

Estimate

CI.lower

CI.upper

Addison’s disease advanced HIV

1.1065829

0.4010981

3.0529327

Lymphocyte count

0.8409678

0.7447470

0.9496202

BP diastolic

1.0115596

0.9890784

1.0345516