

Note: This is Online Appendix 1 of Lamprecht DJ, Martinson N, Variava E. Effect of HIV on mortality among hospitalised patients in South Africa. *S Afr J HIV Med.* 2023;24(1), a1477.
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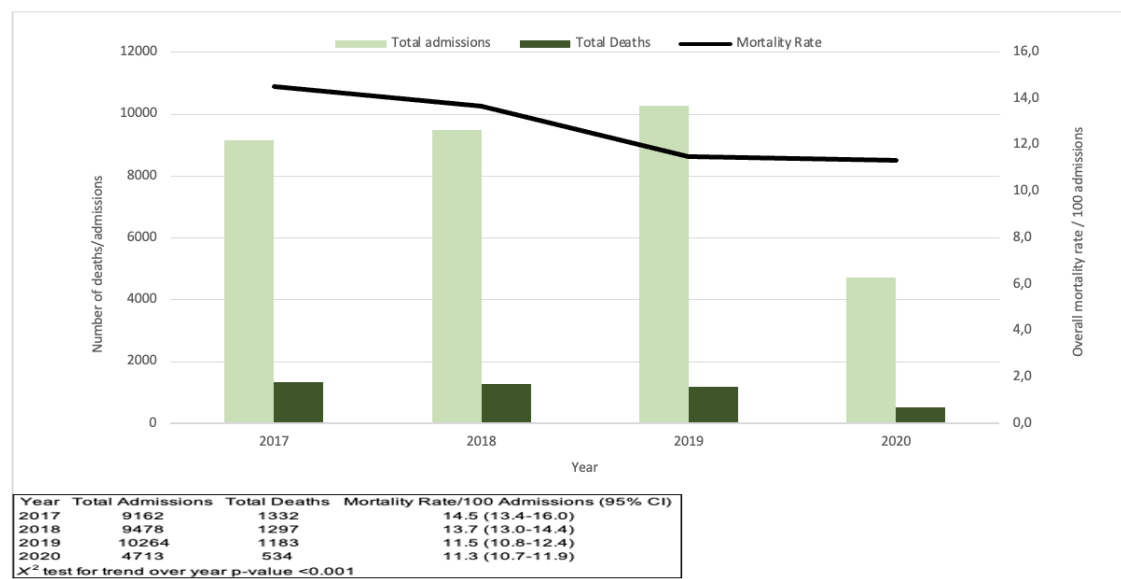


Figure 1: Annual admissions and inpatient deaths at Tshepong Hospital, 1 January 2017 to 30 June 2020. The inpatient mortality rates over time (number of deaths per 100 admissions) are depicted.

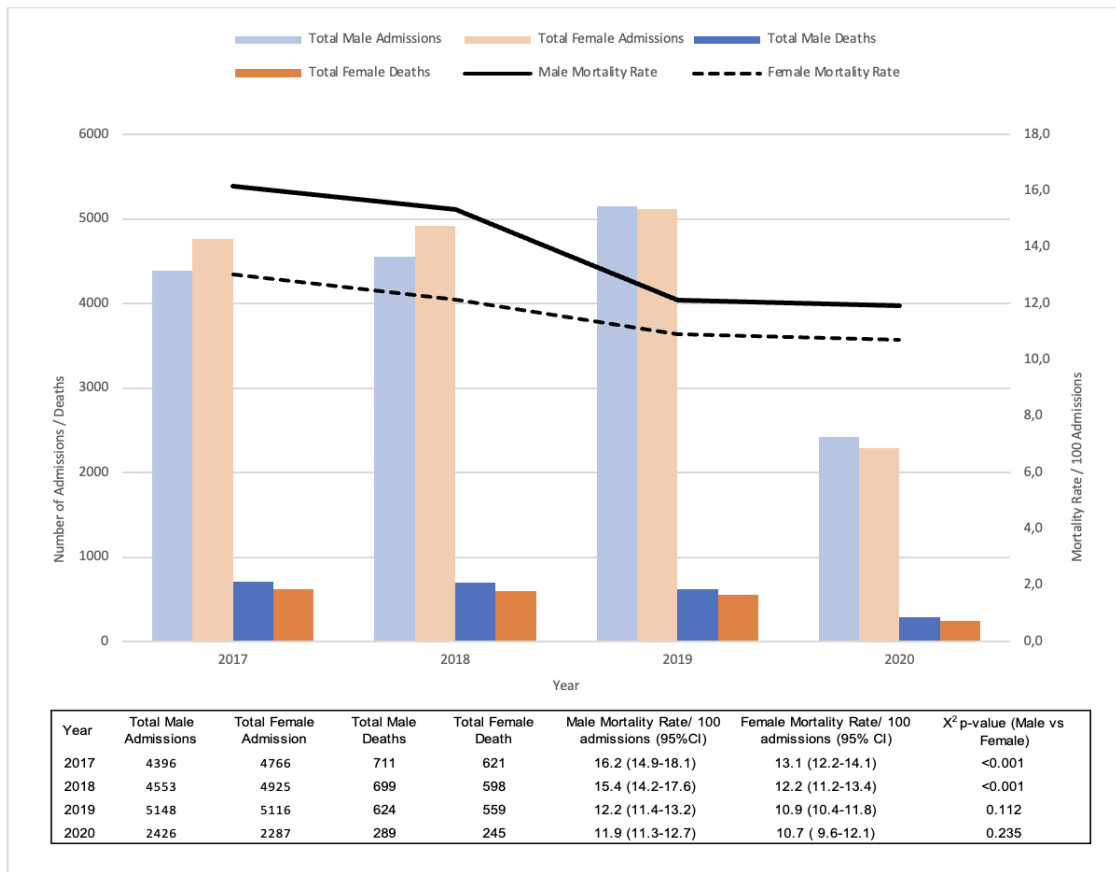


Figure 2: Annual admissions to, and inpatient deaths at Tsepong Hospital, 01 January 2017 to 30 June 2020. The inpatient mortality rates over time, stratified by gender (number of deaths pr 100 admissions) are depicted.

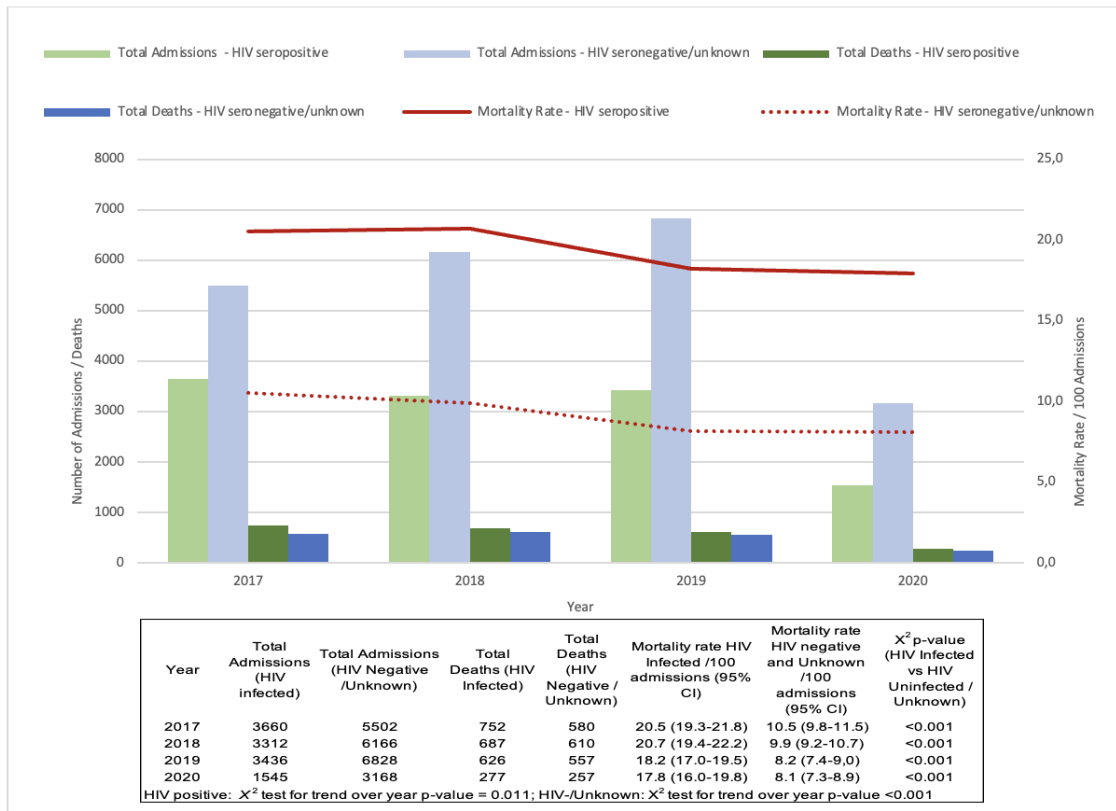


Figure 3: The total admissions and inpatients deaths, stratified by HIV-serostatus, are depicted for medical patients at Tshepong hospital between 01 January 2017 and 30 June 2020. The inpatient mortality rates over time are depicted. As the distribution of admissions for patients with confirmed HIV-seronegative status and those with unknown serostatus was unknown, the group were combined to calculate a mortality rate.

Table 1: Demographics and clinical profile o admissions and inpatients who died at Tshepong Hospital, 1 January 2017 to 30 June 2020.

Total Admissions					Total deaths														
(n, %)					All deaths			HIV positive			HIV negative			Unknown HIV status					
					(n, %)			(n, %)			(n, %)			(n, %)					
Year	Male	Female	HIV positive	HIV negative/ unknown	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	p-value		
2017	4396	4766	3360	5502	711	621	1332 (30.7)	410	342	752 (32.1)	102	84	186 (18.9)	199	195	394 (38.6)	*		
2018	4553	4925	3312	6166	699	598	1297 (29.8)	370	317	687 (29.3)	161	142	303 (30.8)	168	139	307 (30.1)	*		
2019	5148	5116	3426	6828	624	559	1183 (27.2)	328	298	626 (26.7)	190	161	351 (35.7)	106	100	206 (20.2)	*		
2020	2426	2287	1545	3168	289	245	534 (12.3)	129	138	277 (11.8)	90	54	144 (14.6)	60	53	113 (11.1)	*		
Total (%)	16523 (49.1)	17094 (50.9)	11953 (35.6)	21664 (64.4)	2323 (53.5)	2023 (46.5)	4346	1247 (53.2)	1095 (46.8)	2342 (53.9)	543 (55.2)	441 (44.8)	984 (22.6)	533 (52.3)	487 (47.7)	1020 (23.5)	0.404		
Age at death																			
(Median)					54.3 years			44.0 years			64.4 years			68.4 years			*		
Inter Quartile Range (IQR)					(40.6 - 67.2)			(35.8 - 54.2)			(55.5 - 73.9)			(58.4 - 77.3)					
Lowest Hemoglobin concentration during admission																			
(Median)					10.0 g/dL			8.9 g/dL			10.8 g/dL			12.1 g/dL			*		
Inter Quartile Range (IQR)					(8.5 - 13.1)			(6.9 - 11.2)			(8.5 - 13.1)			(9.7 - 14.1)					
Tuberculosis (pulmonary and extrapulmonary)																			
History of previous tuberculosis (n, %)					880 (20.3)			736 (31.4)			92 (9.4)			52 (5.1)			*		
Confirmed tuberculosis during admission (n, %)					654 (15)			584 (24.9)			53 (5.4)			17 (1.7)			*		
Duration of admission until death																			
(Median)					4 days			4 days			6 days			2 days			*		
Inter Quartile Range (IQR)					(1 - 9)			(2 - 9)			(2 - 11)			(1 - 5)					
Antiretroviral treatment history (n, %)																			
Not receiving ART					408 (17.4)			NNRTI						927 (65.2)					
Receiving ART					1421 (60.7)			PI						180 (12.7)					
Treatment interruption					392 (16.7)			Receiving ART but unknown regimen						314 (22.1)					
Unknown treatment status					121 (5.2)														
Duration of antiretroviral treatment																			
<6 months								310 (21.8)											
≥6 months								876 (61.7)											
Unknown duration								235 (16.5)											
CD4+ Count / Viral Load																			
CD4+ count distribution (cells/ml) in patients who died (n,%)								VL distribution (copies/ml) in patients who died (n,%)											
CD4+ count ≤ 50 cells/ml					822 (35.1)			VL ≤50 cells/ml					501 (21.4)						
CD4+ count 50-199 cells/ml					693 (24.6)			VL 50-400 cells/ml					162 (6.9)						
CD4+ count 200-499 cells/ml					432 (18.5)			VL 400-999 cells/ml					48 (2.1)						
CD4+ count ≥500 cells/ml					190 (8.1)			VL ≥1000 cells/ml					912 (38.9)						
CD4+ count unknown					205 (8.8)			VL Unknown					719 (30.7)						
Median 81 cells/ml, IQR (25 - 234)								Median 4970 copies/ml, IQR (20 - 111907)											

*P ≤ 0.001

Table 2: Causes of death by ICD 10 category (5 leading causes of death).

Immediate causes of death									
All Deaths	n, (%)	HIV negative	n, (%)	Unknown HIV serostatus	n, (%)	HIV positive	n, (%)	HIV positive virally suppressed	n, (%)
Infections and parasitic diseases	2221 (51)	Infections and parasitic diseases	318 (32.3)	Infections and parasitic diseases	380 (37.3)	Infective and parasitic diseases	1523 (65)	Infective and parasitic diseases	236 (47.1)
Diseases of nervous system	481 (11.7)	Diseases of circulatory system	159 (16.2)	Diseases of nervous system	213 (20.9)	Diseases of nervous system)	153 (6.5)	Neoplasms	47 (9.3)
Diseases of circulatory system	472 (10.9)	Neoplasms	127 (12.9)	Diseases of circulatory system	184 (18)	Neoplasms	128 (5.5)	Diseases of circulatory system	41 (8.2)
Diseases of genitourinary system	356 (8.2)	Diseases of nervous system	115 (11.6)	Diseases of respiratory system	90 (8.9)	Diseases of genitourinary system	133 (5.7)	Diseases of genitourinary system	37 (7.4)
Neoplams	325 (7.5)	Diseases of respiratory system	76 (7.7)	Neoplasms	70 (6.9)	Diseases of circulatory system	128 (5.5)	Diseases of nervous system	36 (7.2)
Uderlying cause of death									
All Deaths	n, (%)	HIV negative	n, (%)	Unknown HIV serostatus	n, (%)	HIV positive	n, (%)	HIV positive, virally suppressed	n, (%)
Infections and parasitic diseases	2008 (46.2)	Diseases of circulatory system	265 (26.9)	Diseases of circulatory system	306 (30)	Infections and parasitic diseases	1941 (82.9)	infections and parasitic diseases	299 (73.8)
Diseases of circulatory system	653 (15)	Diseases of respiratory system	156 (15.6)	Diseases of respiratory system	180 (17.6)	Diseases of respiratory system	93 (4)	Diseases of respiratory system	26 (6.4)
Diseases of respiratory system	429 (9.9)	Endocrine, nutritional and metabolic disorders	108 (11)	Endocrine, nutritional and metabolic disorders	120 (11.8)	Diseases of circulatory system	82 (3.5)	Diseases of thecirculator y system	26 (6.4)
Endocrine, nutritional and metabolic disorderss	276 (6.4)	Mental and behavioral disorders	63 (6.4)	Diseases of nervous system	98 (9.6)	Endocrine, nutritional and metabolic disorders	48 (2)	Neoplasms	13 (3.2)
Diseases of nervous system	171 (3.9)	Diseases of blood and immune mechanism	52 (5.3)	Mental and behavioural disorders	55 (5.4)	Diseases of blood and immune mechanism	45 (1.9)	Diseases of blood and immune mechanism	14 (2.8)

Table 3: Leading immediate causes of death.

		<i>Age (Years)</i>					
15 - 34	%	35 - 49	%	50 - 64	%	≥ 65	%
Tuberculosis [‡]	27.7	Tuberculosis [‡]	22.6	Pneumonia [†]	18.9	Pneumonia [†]	22.9
Pneumonia [†]	19.1	Pneumonia [†]	22.6	Tuberculosis [‡]	13	Cardiomyopathy/CAD [¶]	21.6
Meningitis ^{††}	7.7	Malignancy [§]	7	Malignancy [§]	9.9	CVA	8.6
Septicemia ^{††}	6.6	Septicemia ^{††}	6.8	Cardiomyopathy/CAD [¶]	8.5	Septicemia ^{††}	7.7
Cardiomyopathy/CAD [¶]	4.8	Meningitis ^{††}	5.9	CVA	7.4	Malignancy [§]	7.3
Malignancy [§]	4	CVA	4.4	Septicemia ^{††}	5.3	Chronic Kidney Disease	4
Gastroenteritis	2.6	Cardiomyopathy/CAD [¶]	4.4	Chronic Kidney Disease	4.7	Tuberculosis [‡]	3.8
CVA	1.6	Gastroenteritis	3	Meningitis ^{††}	2.7	Cor Pulmonale	3.5
Chronic Kidney Disease	1.4	Acute Kidney Injury	2.8	Cor Pulmonale	2.6	COPD	2.7
Acute Kidney Injury	1.1	Chronic Kidney Disease	2.5	COPD	2.5	Gastroenteritis	2.1
-	-	Cor Pulmonale	1.1	Gastroenteritis	2	Acute Kidney Injury	0.8
Miscellaneous ^{¶¶}	23.4	Miscellaneous ^{¶¶}	16.9	Miscellaneous ^{¶¶}	22.5	Miscellaneous ^{¶¶}	15.1

[†] Pneumonia includes: viral, bacterial, non-tuberculous mycobacteria, PJP, fungal causative agents

[‡] Tuberculosis: pulmonary and extrapulmonary tuberculosis

[§] Malignancy: includes total of all malignancies

[¶] Cardiomyopathy/CAD: included coronary artery disease, ischemic heart disease and cardiomyopathy of any cause

^{††} Septicemia: Infection induced organ dysfunction but source unknown

^{††} Meningitis: all infective causes, excluding tuberculous meningitis and cryptococcal meningitis

^{§§} Hepatitis: Includes infective and non-infective causes

^{¶¶} Miscellaneous: Combination of the other (less common) causes of death