

## A three-year overview of the pattern and outcome of medical conditions in the medical wards of a Federal Medical Centre

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### ABSTRACT

**INTRODUCTION:** Hospital admissions reflect the pattern of illnesses in society, and its documentation in various localities may provide clues on decision-making and implementations in the health sector. This study aimed to ascertain the reasons for admission and outcome in the medical wards of the Federal Medical Centre, Yenagoa, Nigeria.

**METHODS:** The medical records of all patients admitted into the medical wards during the study were retrospectively reviewed. Disease classification was done according to the ICD-10 classification system. Relevant data were obtained from the admission and discharge registers and were analyzed using Statistical Package for Social Sciences version- 22.

**RESULTS:** A total of 1,782 subjects comprising 933 males (52.4%) and 849 females (47.6%) were represented in the final data analysis. The majority of the admitted patients were in their 6th and 7th decade of life (18.5% and 18.6%, respectively). Cardiovascular diseases were the commonest indication for annual medical admission, with a cumulative frequency of 35.5%. Stroke and heart failure were the most common cardiovascular diseases. Infectious diseases were the second leading cause of medical admission (19.5%). The least common medical disorders were rheumatological dermatological and toxicological conditions representing 0.5%, 0.2%, and 0.2%, respectively, of all medical admissions. The overall mortality during the study period is 16.5%, with malignant diseases being the leading cause of death.

**CONCLUSION:** This study reflects the epidemics of non-communicable diseases in developing countries and the need for policymakers to be aware of this trend without neglecting to prevent infectious diseases, whose burden is still high.

**Keywords:** Medical admissions, Medical illnesses, Health system, Medical wards, Outcome

### INTRODUCTION

Geographical variations in health care affect the pattern and the burden of medical illnesses, impacting the prioritization of interventions by health policymakers [1,2]. Currently, there is a global epidemiological transition in the pattern of

presentation of diseases from infectious to non-communicable diseases in developing countries, and this is attributable to industrialization, rural-urban population drift, urbanization, and lack of access to medical interventional measures [3]. This is more glaring in Africa, where there is obvious neglect in providing quality health services and

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support for health-care-related research. Sub-Saharan Africa is known for having the lowest rate of healthcare efficacy, with non-communicable diseases posing an increasing challenge to the health system [2,4]. Therefore, investment in health is highly desirable and a priority for most societies to achieve economic sustainability. Health care-seeking behavior of individuals is not only an indicator of their willingness to preserve life, but it is also vital to personal, societal and national development [5,6]. The severity of medical illness and clinical acuity seems to be the predominant drivers for medical admission. However, ancillary factors, including patients' demography, lack of information about the baseline condition, need for diagnostic testing, inadequate access to primary care, and recent emergency department visits, are contributory [7,8]. The mortality rate of medical admission in developing countries is higher than that in the developed world due to a double burden of communicable and non-communicable diseases arising from epidemiological shifts, high rate of poverty, illiteracy, late presentation of patients and lack of well-coordinated health service delivery [9]. The length of hospital stay is a quality metric used to determine efficient hospital management. Shorter stay increases bed turnover and the ability to accommodate more critically ill patients, while longer hospital stays can result in poor admission experience and exposure to hospital-acquired infection, which could worsen disease outcomes [10]. This study aimed to determine the frequency, pattern, and outcome of medical admissions in the medical wards of Federal Medical Centre, Yenagoa, Bayelsa State, Nigeria.

## METHODS

This descriptive retrospective study was conducted at the Federal Medical Centre, Yenagoa, Nigeria. The hospital is one of the tertiary health facilities in Bayelsa state and a major referral center in the state and neighboring communities in Delta and Rivers States. It has a bed capacity of 423 and serves a population of about 1.7 million people living in Bayelsa, South-South of Nigeria. The period of study was three years, from January 2017 to December 2019. The medical wards of the hospital are comprised of male and female medical wards and are overseen by the internal medicine department. The department had 16 consultants during the study period. There were

four cardiologists, three gastroenterologists, two endocrinologists, two nephrologists, two neurologists, two hematologists, one dermatologist, one pulmonologist, and one infectious disease specialist. Patients are usually admitted into the ward through the accident and emergency department and the medical outpatient department. They are assigned to a particular consultant based on the nature of the medical illness. Data was generated from the medical records and register of the medical wards and included patients' demographic information of respondents, diagnosis at admission, medical specialty involved in the management of the patient and outcome variables such as duration of hospital stay, discharge with improvement, discharge against medical advice, transfer to intensive care unit and death. The medical illnesses were grouped into body systems according to the WHO International Classification of Diseases 10th version (ICD-10) guidelines [11]. Repeated admissions of the same person were recorded as different admissions. Patients who had incomplete information were excluded. The study was approved by the Ethics and Research Committee of the institution (FMCY/REC/ECC/2020/499). Data obtained were analyzed using SPSS version 22 [12]. Continuous variables were compared using Student T-test and presented as mean  $\pm$  standard deviation, while categorical variables were compared with chi-square test and represented as proportions. A p value of  $< 0.05$  was considered significant.

## RESULTS

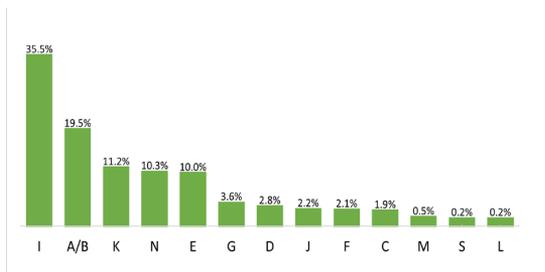
### Socio-demographics characteristics of the study population

Out of the 1,878 patients admitted during the study period, 96 were excluded because of incomplete documentation. Among the 1,782 subjects used for the final data analysis, five hundred and twenty-seven subjects were admitted into the medical wards in 2017, five hundred and forty-three in 2018 and seven hundred and twelve in 2019 respectively.

There were more males (933, 52.4%) than females (849, 47.6%) and this pattern was similar throughout the three-year study period, although not statistically significant ( $\chi^2=5.81$   $p=0.21$ ). All age groups were represented in the annual admission of patients over the 3 years of study.

**Table 1: Sociodemographic characteristic of participants in the study group**

Characteristics	2017	2018	2019	Cumulative	
	Total N =527(%)	Total N =543(%)	Total N =712(%)	Total N (%)	X <sup>2</sup>
<b>=1782</b>					
Sex					
Male	265(50.3)	276(50.8)	392(55.1)	933(52.4)	5.81 0.21
Female	262(49.7)	267(49.2)	320(44.9)	849(47.6)	
Age group(years)					
17-29	53(10.1)	55(10.1)	73(10.3)	181(10.2)	
30-39	82(15.6)	97(17.9)	84(11.8)	263(14.8)	
40-49	85(16.1)	99(18.2)	128(18.0)	312(17.5)	
50-59	105(19.9)	92(16.9)	132(18.5)	329(18.5)	
60-69	100(19.0)	95(17.5)	136(19.1)	331(18.6)	
70-79	72(13.7)	78(14.4)	111(15.6)	261(14.6)	
≥80	30(5.7)	27(5.0)	48(6.7)	105(5.8)	
Mean Age (SD) in years	52.54(17.64)	51.83(17.44)	53.83(17.59)		
Age range(years)	17-104	17-93	17-96		

**Figure 1; Cumulative frequencies of medical admissions using ICD-10**

A/B(Infected and parasitic disorders), C (Malignant neoplasm), D(Disease of blood and blood-forming organs) E(Endocrine and metabolic disorders), F(Mental and behavioural disorders), G(Diseases of the Nervous system) I(Diseases of the Circulatory system) J(Diseases of the Respiratory system) K(Diseases of the Digestive system) L(Diseases of the skin and subcutaneous tissues) M(Diseases of the musculoskeletal system) N(Diseases of the Genitourinary system) S(Injury, poisoning and other consequences of external cause).

The ages of patients admitted ranged from 17 years to 104 years. The mean ages of the recruited subjects were 52.54 (SD = 17.64), 51.83 (SD = 17.44) and 53.83 (SD = 17.59) in 2017, 2018 and 2019 respectively. The majority of the admitted

patients were in their 5th, 6th and 7th decades of life (Table 1).

#### Cumulative frequencies of various medical conditions in various specialties

Diseases of the circulatory system accounted for the highest burden of medical admission (35.5%) over the 3 years of study. Infectious disease accounted for 19.5% of medical admissions. Admissions due to disorders of the digestive system, genitourinary system and endocrine system were also common, with prevalence's of 11.2%, 10.3%, and 10.0%, respectively. Diseases affecting the skin and subcutaneous tissue and toxin ingestion were the least common indications for medical admissions with a similar prevalence of 0.2% (Figure 1 and Table 2).

Stroke (43.5%) and congestive cardiac failure (33.6%) accounted for majority of the circulatory disorders. HIV (59.9%) was the leading cause of infectious disease admission over the years of study, and the highest prevalence of HIV was recorded in 2018. Tuberculosis was the second leading cause of infectious disease admission. Diabetic complications accounted for the majority of endocrine admissions, with hyperglycemic

**Table 2: Classification of diseases using ICD -10 classification**

ICD-10 Disease classification	CODE	2017	2018	2019
		Total N=527(%)	Total N=543(%)	Total N=712(%)
Infectious and parasitic disorders	A/B	89(16.9)	127(23.5)	131(18.4)
Malignant neoplasm	C	8(2.1)	7(1.8)	12(1.8)
Disease of blood and blood forming organs	D	14(2.7)	19(3.5)	16(2.3)
Endocrine and metabolic disorders	E	58(11.0)	52(9.6)	69(9.7)
Mental and behavioral disorders	F	9(1.7)	6(1.1)	22(3.1)
Diseases of the Nervous system	G	21(4.0)	29(5.3)	15(2.1)
Diseases of the Circulatory system	I	197(37.4)	168(30.9)	268(37.7)
Diseases of the Respiratory system	J	8(1.52)	19(3.5)	12(1.7)
Diseases of the Digestive system	K	69(12.5)	61(10.7)	77(10.7)
Diseases of the skin and subcutaneous tissues	L	1(0.2)	0(0.0)	3(0.4)
Diseases of the musculoskeletal system	M	4(0.8)	0(0.0)	5(0.7)
Diseases of the Genitourinary system	N	47(8.8)	55(10.1)	81(11.4)
Injury, poisoning and other consequences of external cause	S	2(0.4)	0(0.0)	1(0.1)

hyperosmolar syndrome consistently contributing to the highest prevalence of endocrine admissions over the three years of study (38% vs 61.6% vs 68.1%, respectively). Chronic liver disease (46.9%) was recorded as the most common indication for gastroenterology admission, while chronic kidney disease was the leading indication for admission into the Nephrology unit over the three years of study (70.3% vs 63.7% vs 60.5%). The contribution of other diseases to medical admissions is represented in Appendix 1.

A significant proportion (73.6%  $p=0.002$ ) of the admitted patients were treated and discharged by the attending medical unit, a mortality of 16.5% was recorded during the period of study, 9.4% of the patients were discharged against medical advice and 0.5% transferred to the intensive care unit as a result of worsening of symptoms as illustrated in Table 3.

Patients diagnosed of malignant diseases had the highest mortality of 25.9% while that from

**Table 3: Outcome of medical admissions over the period of study**

Outcome	2017(%)	2018(%)	2019(%)	Total (%) N=1782	df	p-value	
Discharged	377(71.5)	389(71.6)	545(76.5)	1311(73.6)	37.200	16	0.002*
DAMA	58(11.0)	57(10.5)	52(7.3)	167(9.4)			
Dead	88(16.7)	95(17.5)	111(15.6)	294(16.5)			
Transferred to ICU	4(0.8)	2(0.4)	4(0.6)	10(0.5)			

DAMA- Discharged against medical advice, ICU- Intensive care unit

**Table 4: Outcome of admission in the various specialties**

Specialties	Discharged	DAMA	Dead	ICU Total
	Total n (%)	Total n(%)	Total n(%)	n(%)
Diseases of the circulatory system	468(73.9)	49(7.8)	112(17.7)	4(0.6)
Endocrine and metabolic disorders	146(81.6))	12(6.7)	21(11.7)	0(0.0)
Diseases of the Digestive system	151(72.9)	23(11.2)	33(15.9)	0(0.0)
Diseases of the blood and blood forming organs	38(77.6)	5(10.2)	6(12.2)	0(0.0)
Infectious disease	239(68.9)	43(12.4)	65(18.7)	0(0.0)
Diseases of the Genito-urinary system	124(67.8)	24(13.1)	34(18.6)	1(0.5)
Diseases of the nervous system	52(80.0)	3(4.6)	6(9.2)	4(6.2)
Diseases of the Respiratory	29(74.3)	4(10.3)	5(12.8)	1(2.6)
Musculoskeletal system	7(77.8)	2(22.2)	0(0.0)	0(0.0)
Injury and poisoning	0(0.0)	3(100)	0(0.0)	0(0.0)
Diseases of the skin and subcutaneous tissue	3(75.0)	1(25.0)	0(0.0)	0(0.0)
Mental and behavioural disorders	34(91.9)	0(0.0)	3(8.1)	0(0.0)
Malignant diseases	20(74.1)	0(0.0)	7(25.9)	0(0.0)

DAMA- Discharged against medical advice, ICU- Intensive care unit

**Table 5: The duration of stay of the patients in the hospital**

Outcome	N(1772)	Mean(SD)	t	p-value	CI
Discharged	1311	11.27(8.20)	4.47	0.03*	1.487-3.807
DAMA	167	8.67(9.76)			
Dead	294	7.90(7.49)			

infectious, genitourinary and circulatory system were comparable 18.7%vs 18.6 % vs 17.7% respectively. The lowest mortality was among patients who were diagnosed of mental and behavioural disorders (8.1%), while there was no death among patients diagnosed of skin, toxic and musculoskeletal disorders as represented in Table 4.

The average duration of admission for subjects who were discharged by the attending medical unit was significantly higher (11.27±8.20, p=0.03) than those who were discharged against medical advice (8.67±9.76) and those who died during their hospital stay (7.90±7.49) (Table 5).

## DISCUSSION

The pattern of medical admissions in Federal Medical Centre, Yenagoa may portray the medical illnesses that are common in the community, thereby suggesting the prioritization of community

health Interventions. Generally, more males were admitted into the ward than females, although the difference was insignificant (p=0.21). This pattern of male preponderance is consistent with studies in similar geographical areas [13,14,15]. This could be explained by this study's high prevalence of cardiovascular diseases. Male sex is a recognized risk factor for cardiovascular diseases owing to the protective effect of estrogen during the premenopausal years; additionally, men are more likely to be engaged in cardiovascular risk factors such as excessive alcohol consumption and cigarette smoking [16,17]. Globally, women are less likely to have access to health care owing to economic vulnerability, lower social status, and limited access to education and decision-making power [18].

The majority of the admitted subjects were in their 6th and 7th decade of life. Older adults pose a major burden to the health care system. Aging, which is associated with oxidative stress and

inflammation, is an independent risk factor for cardiovascular disease [19,20]. Our sample also highly represented patients in their 5th decade of life. This group of patients belongs to the working class, and illness in this group could have a negative impact on the gross domestic product with the consequent global economic loss [21].

Our current findings indicate that cardiovascular diseases were the leading cause of admissions into the medical ward, consistent with existing literature [2,22,23]. Globalization and the adoption of a sedentary lifestyle in developing countries have certainly been implicated in this regard. Also, the rising prevalence of undetected and untreated hypertension may explain the high rate of cardiovascular diseases in low-income countries [3]. Stroke was consistently the most common cardiovascular disease, and its prevalence was found to follow an upward trend over the years of study. Nwafor et al. [23] found in a tertiary hospital in Southern Nigeria that cerebrovascular accidents and heart failure were the major causes of these cardiovascular admissions [23]. However, this is contrary to a study conducted in Benin, Nigeria, by Osarenkhoe et al. [24], where malaria accounted for the greatest burden of hospital admissions. This difference could be explained by the predominance of younger age groups in the study who are more likely to present with complications of malaria [15].

The second leading cause of medical admissions during the study period was infectious diseases (19.5%). During the twentieth century, there was a dramatic decline in the burden of infectious diseases owing to improved sanitation and immunization, but current research shows a resurgence of these infectious diseases even in developed countries [25]. In this study, human immune-deficiency virus (HIV) was the most common infectious disease, and the prevalence of HIV slightly increased from 2017-2018, with a subsequent decline in 2019. This is expected as the South zone had the highest burden of HIV in Nigeria in 2018, with Bayelsa State recording a prevalence of 1.9% [26]. Mycobacterium tuberculosis (TB) infection, which is synergistically associated with HIV, also accounted for a considerable proportion of these infectious diseases. Rising HIV prevalence rates are significantly correlated with increased TB incidence rates and this confluence, usually referred to as a syndemy, is higher among people in resource-limited countries [27,28].

Chronic kidney disease (CKD) was the primary indication for admission into the nephrology unit over the 3 years of study. However, the etiology of chronic kidney disease was not reflected in the majority of the patients. The high prevalence of hypertensive and diabetic complications in this study may explain the high prevalence of CKD. Both hypertension and diabetes are significantly associated with albuminuria and reduction of glomerular filtration rate (eGFR), thereby enhancing the progression of chronic kidney disease [29,30].

The least prevalent cause of medical admission were dermatological diseases and toxic ingestion. Prior studies have shown that attending physicians usually neglect many patients hospitalized with co-existing dermatological conditions because they are considered medical conditions preferably managed on an outpatient basis [31]. Toxicological conditions were rare. This could be a result of the increased use of herbal drugs due to the unavailability of antidotes in rural areas [32]. Therefore, most patients are not likely to present to the hospital, except if it is life threatening.

An overall mortality of 16.5% was found during the admission period, which is consistent with reports from studies conducted in similar geographical areas, where the mortality from medical admission ranges from 12.3% to 19.8% [13,14,33]. Malignant diseases were the most common cause of death during the period of admission, although the small population of patients with the malignant disease cannot be used to make a valid conclusion. There is a rising trend of cancers in Africa, owing to the adoption of the Western lifestyle, and it is also expected that mortality will have an upward trend due to inadequate treatment facilities in low-resource areas. This report differs from that of Sadiq et al. [34], who had cardiovascular disease responsible for most of the mortality. The difference could be a result of the exclusion of patients on chemotherapy. Patients who died during the course of their heir medical admission had a significantly lower average length of hospital stay. Although the severity of medical illness and co-morbidities were not assessed in this study, patients in low- and middle-income countries usually have delayed presentation, affecting life expectancy.

There are some limitations for consideration. Changes made to patient diagnoses during

their hospital admission following elaborate laboratory investigations were not reflected in the final diagnosis. Data on the educational and socioeconomic status of the patients were not collected, and hence their impact on the health-seeking behavior of the patients was not represented. The study also failed to address other co-morbidities or complications associated with the primary diagnosis, which can impact the admission outcome.

## CONCLUSION

Although non-communicable diseases are the major indications for medical admissions in Yenagoa, communicable diseases are still quite prevalent. Therefore, health policies should be targeted towards reducing the global burden of these diseases by risk modifications at the community level.

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**Appendix 1: Contribution of various illnesses to the medical admissions using ICD-10**

ICD-10	Medical Conditions	2017 n (%)	2018 n (%)	2019 n (%)	Total n(%)
Diseases of the circulatory system	Stroke	81(41.1)	72(42.8)	122(45.7)	275(43.5)
	Acute coronary syndrome	1(0.5)	3(1.8)	6(2.3)	10(1.6)
	Acute left ventricular failure	4(2.0)	5(3.0)	7(2.6)	16(2.5)
	Cardiogenic shock	1(0.5)	0(0)	1(0.4)	2(0.3)
	Congestive cardiac failure	63(32.0)	59(35.1)	91(34.0)	213(33.6)
	Cor-pulmonale	6(3.1)	1(0.6)	1(0.4)	8(1.3)
	Hypertensive heart disease	13(6.6)	15(8.9)	14(5.2)	42(6.6)
	Hypertensive Emergency	4(2.0)	2(1.2)	6(2.3)	12(1.9)
	Hypertensive Encephalopathy	14(7.2)	8(4.8)	15(5.6)	37(5.8)
	Pulmonary Embolism	1(0.5)	0(0)	1(0.4)	2(0.3)
	Constrictive Pericarditis	1(0.5)	1(0.6)	1(0.4)	3(0.5)
	Peripheral vascular disease	0(0.0)	2(1.2)	2(0.7)	4(0.6)
	Arrhythmia	1(0.5)	0(0.0)	0(0.0)	1(0.2)
	HOCM	1(0.5)	0(0.0)	0(0.0)	1(0.2)
Transient Ischemic attack	5(2.5)	0(0.0)	0(0.0)	5(0.8)	
Deep vein thrombosis	1(0.5)	0(0.0)	1(0.4)	2(0.3)	
Diseases of the skin and subcutaneous tissue	Bullous Pemphigoid	0(0.0)	0(0.0)	1(33.3)	1(25.0)
	Stevenson Johnson	0(0.0)	0(0.0)	1(33.3)	1(25.0)
	Varicella Zooster	1(100)	0(0.0)	1(33.3)	2(50.0)
Endocrine and metabolic disorders	Diabetic Ketoacidosis	16(27.7)	10(19.2)	15(21.8)	41(22.9)
	HHS	22(38.0)	32(61.6)	47(68.1)	101(56.4)
	Hyperthyroidism	3(5.1)	0(0.0)	1(1.4)	4(2.2)
	Hypoglycemia	11(18.9)	7(13.5)	6(8.7)	24(13.4)
	Phaeochromocytoma	0(0)	1(1.9)	0(0.0)	1(0.6)
	Diabetic foot ulcer	4(6.9)	1(1.9)	0(0.0)	5(2.8)
	Addison disease	1(1.7)	1(1.9)	0(0.0)	2(1.1)
	Cushing syndrome	1(1.7)	0(0.0)	0(0.0)	1(0.6)
Diseases of the Digestive system	Chronic liver disease	28(40.5)	30(49.2)	39(50.7)	97(46.9)
	Cystic liver disease	0(0.0)	0(0.0)	1(1.3)	1(0.5)
	Acute viral hepatitis	0(0.0)	0(0.0)	1(1.3)	1(0.5)
	Gastroenteritis	7(10.1)	4(6.6)	8(10.4)	19(9.2)
	Inflammatory bowel disease	3(4.3)	1(1.6)	3(3.9)	7(3.4)
	Cholestatic Jaundice	1(1.5)	0(0.0)	1(1.3)	2(0.9)
	Acute Exacerbation of PUD	3(4.3)	4(6.6)	6(7.8)	13(6.3)
	Acute gastritis	1(1.5)	2(3.3)	0(0.0)	3(1.4)
	Upper gastrointestinal bleeding	22(31.8)	15(24.6)	17(22.0)	54(26.0)
	Lower gastrointestinal bleeding	0(0.0)	1(1.6)	0(0.0)	1(0.5)
	Acute pancreatitis	0(0.0)	1(1.6)	0(0.0)	1(0.5)
	Liver abscess	1(1.5)	0(0.0)	0(0.0)	1(0.5)
	Esophageal cancer	1(1.5)	0(0.0)	1(1.3)	2(0.9)
	Gastric Cancer	1(1.5)	1(1.6)	0(0.0)	2(0.9)
Primary liver cell cancer	1(1.5)	2(3.3)	0(0.0)	3(1.4)	
Malignant diseases	Non-hodgkins disease	1(12.5)	3(42.8)	3(25.0)	7(25.9)
	Multiple myeloma	1(12.5)	1(14.3)	3(25.0)	5(18.5)
	Maltoma	0(0.0)	0(0.0)	1(8.3)	1(3.7)
	Bronchogenic carcinoma	4(50.0)	2(28.6)	1(8.3)	7(25.9)
	Chronic lymphocytic leukemia	2(25.0)	1(14.3)	2(16.7)	5(18.5)
	Chronic myeloid leukemia	0(0.0)	0(0.0)	2(16.7)	2(7.4)
	Anemia	3(21.4)	4(21.1)	1(6.2)	8(16.3)
	Sickle cell disease	10(71.4)	14(73.7)	15(93.8)	39(79.6)

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Diseases of the blood and blood forming organs	Aplastic anemia	1(7.2)	1(5.2)	0(0.0)	2(4.1)
Infectious disease	Cholera	0(0.0)	0(0.0)	3(2.3)	3(0.9)
	Tuberculosis	24(26.9)	25(19.6)	32(24.5)	81(23.3)
	Enteric Fever	0(0.0)	0(0)	1(0.8)	1(0.3)
	Malaria	0(0.0)	2(1.6)	2(1.5)	4(1.2)
	HIV	54(60.8)	83(65.4)	71(54.1)	208(59.9)
	Sepsis	9(10.1)	15(11.8)	22(16.8)	46(13.2)
Diseases of the Genito-urinary system	Tetanus	2(2.2)	2(1.6)	0(0.0)	4(1.2)
	Acute Kidney Injury	4(8.5)	2(3.6)	6(7.4)	12(6.6)
	Chronic Kidney Disease	33(70.3)	35(63.7)	49(60.5)	117(63.9)
	DM Nephropathy	1(2.1)	3(5.5)	10(12.3)	14(7.6)
	Nephrotic Syndrome	1(2.1)	3(5.5)	1(1.2)	5(2.7)
	PKD	0(0.0)	0(0.0)	1(1.2)	1(0.6)
	Pyelonephritis	4(8.5)	8(14.5)	14(17.3)	26(14.2)
	UTI	1(2.1)	2(3.6)	0(0.0)	3(1.6)
	Obstructive Uropathy	1(2.1)	1(1.8)	0(0.0)	2(1.1)
Diseases of the nervous system	Glomerulonephritis	1(2.1)	1(1.8)	0(0.0)	2(1.1)
	Renal abscess	1(2.1)	0(0.0)	0(0.0)	1(0.6)
	ICSL	2(9.5)	0(0.0)	2(13.3)	4(6.2)
	Meningoencephalitis	9(42.9)	6(20.7)	2(13.3)	17(26.2)
	Migraine	1(4.8)	0(0.0)	1(6.7)	2(3.0)
	Paraparesis	2(9.5)	2(6.9)	1(6.7)	5(7.7)
	Parkinsons disease	0(0.0)	3(10.3)	1(6.7)	4(6.2)
	Seizure Disorder	5(23.8)	10(34.6)	3(20.0)	18(27.8)
	Status Epilepsy	0(0.0)	1(3.4)	2(13.3)	3(4.6)
	Subdural hematoma	0(0.0)	3(10.3)	3(20.0)	6(9.2)
Mental and behavioural disorders	Subarachnoid haemorrhage	0(0.0)	3(10.3)	0(0.0)	3(4.6)
	Guillain barre syndrome	1(4.8)	1(3.4)	0(0.0)	2(3.0)
	Motor neuron disease	1(4.8)	0(0.0)	0(0.0)	1(1.5)
	Dementia	0(0.0)	1(16.6)	0(0.0)	1(2.7)
	Severe depression	1(11.1)	1(16.6)	1(4.6)	3(8.1)
Diseases of the Respiratory	Delirium	8(88.9)	4(66.8)	21(95.4)	33(89.2)
	Acute severe Asthma	4(50.0)	2(10.5)	2(16.6)	8(20.5)
	Pneumonia	1(12.5)	10(52.6)	5(41.8)	16(41.0)
	Acute exacerbation of COPD	2(25.0)	5(26.4)	2(16.6)	9(23.1)
	Pleural effusion	0(0.0)	0(0.0)	3(25.0)	3(7.7)
	Bronchiectasis	0(0.0)	2(10.5)	0(0.0)	2(5.1)
Musculoskeletal system	Lung abscess	1(12.5)	0(0.0)	0(0.0)	1(2.6)
	Osteoarthritis	0(0.0)	0(0.0)	1(20.0)	1(11.1)
	Rheumatoid arthritis	2(50.0)	0(0.0)	0(0.0)	2(22.2)
Injury, poisoning and other consequences of external cause	SLE	2(50.0)	0(0.0)	4(80.0)	6(66.7)
	Organophosphate poisoning	2(100)	0(0.0)	1(100)	3(100)

*HOCM-Hypertrophic obstructive cardiomyopathy, HHS- Hyperglycaemic hyperosmolar state, PUD- Peptic ulcer disease, HIV- Human immunodeficiency virus, PKD- polycystic kidney disease, UTI-Urinary tract infection, ICSL-intracranial space occupying lesion, COPD-chronic obstructive pulmonary disease, SLE-systemic lupus erythematosus.*