

# Prevalence of chronic diseases in the population covered by medical schemes in South Africa

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May 2018

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## Executive Summary

The Medical Schemes Act, No. 131 of 1998 makes it mandatory for medical schemes to cover costs for the diagnosis, treatment or care of a defined set of benefits or Prescribed Minimum Benefits (PMBs), regardless of the benefit option members have selected. PMBs include any medical condition which meets the definition of an emergency, a limited set of 270 medical conditions and 26 chronic conditions defined in the Chronic Disease List (CDL). CDL specifies medication and treatment for the chronic conditions that are covered as PMBs. This law ensures that beneficiaries with chronic conditions are not risk-rated.

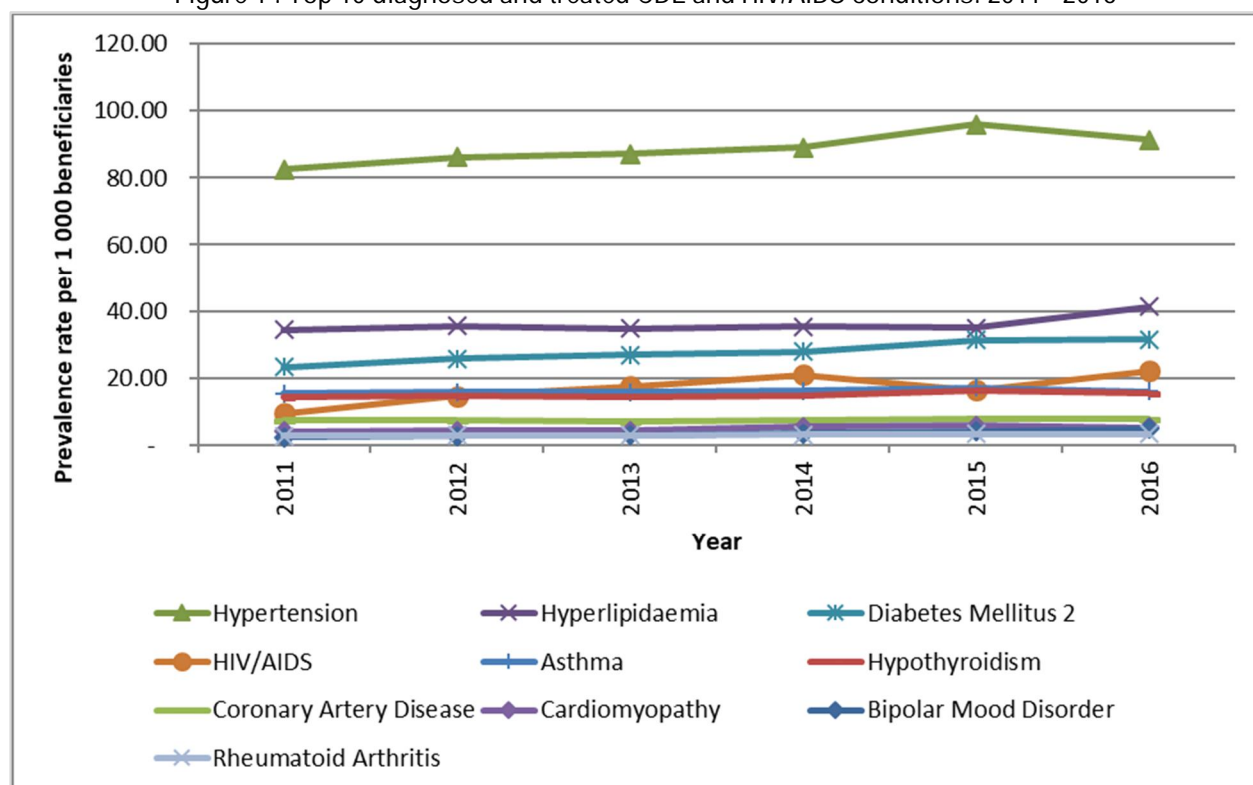
The Council for Medical schemes (CMS) conducted a retrospective study of the CMS Scheme Risk Measurement (SRM) database to establish changes in the frequency of chronic diseases among beneficiaries of medical schemes between 2011 and 2016. This study is an update of the *“Prevalence of chronic diseases in the population covered by medical schemes in South Africa”* published by CMS in February 2017.

This report analyses prevalence as defined in the SRM process using the Entry and Verification (E&V) criteria while Annexure A of this report analyses a more relaxed definition of prevalence (i.e. prevalence of conditions listed as CDLs whether treated and registered on a program or not).

The findings of this study indicate that in 2016, the upward trend in diagnosis and treatment of many conditions on the chronic disease list continued. The top 10 ranking of chronic conditions according to prevalence rates did not change significantly between 2015 and 2016. Hyperlipidaemia has increased significantly due to increases of over 20% in prevalence rates of certain medical schemes. Increases in over 7% was observed for beneficiaries suffering from multiple chronic conditions (CC2 and CC4, of 7.2% and 8% respectively), which indicates deteriorating risk profiles of medical schemes. Total expenditure on PMBs constitutes 54% (R73.1 billion) of total risk benefits paid in 2016. The expenditure on CDLs make-up around 20% of the expenditure on PMBs. It is therefore important for schemes to make a concerted effort to register beneficiaries on the disease management programmes they provide. Currently only about 50% of beneficiaries claiming for CDL conditions are registered on a disease management programme.

The top 10 ranked CDLs and HIV/AIDS (chronic conditions with the highest prevalence rates) are hypertension, hyperlipidaemia, diabetes mellitus 2, HIV/AIDS, asthma, hypothyroidism, coronary artery disease, cardiomyopathy, epilepsy, and bipolar mood disorder (Figure 1). The CDLs listed as top 10 ranking CDLs had prevalence rates of at least 3 per 1 000 beneficiaries in 2016.

Figure 1 : Top 10 diagnosed and treated CDL and HIV/AIDS conditions: 2011 - 2016



Hypertension, hyperlipidaemia and diabetes mellitus 2 continued to be the highest prevalent CDLs in medical schemes beneficiaries with the prevalence of more than 20 per 1 000 beneficiaries. HIV/AIDS moved up to fourth position due to correction in the reporting by a very large open medical scheme (Table 1). A detailed summary of the top 10 prevalence ranking CDLs (and HIV/AIDS) is given in Table 1.

Table 1: Prevalence of treated chronic conditions (Cases/1 000 beneficiaries), 2015 and 2016

Rank (2014)	Condition	Type	Prevalence			% Changes		Average growth rate (per year %) 2011 to 2016
			2011	2015	2016	2015 vs 2016	2011 vs 2016	
1 (1)	HYP	Total	82.58	96.05	91.33	-4.91	10.60	2.04
		Open	85.53	92.96	88.54	-4.75	3.52	0.69
		Restricted	79.10	100.08	94.92	-5.16	20.00	3.71
2 (2)	HYL	Total	34.43	34.90	41.22	18.10	19.70	3.66
		Open	39.21	42.71	42.37	-0.79	8.05	1.56
		Restricted	28.79	24.72	39.74	60.78	38.01	6.66
3 (3)	DM2	Total	23.30	31.21	31.54	1.05	35.35	6.24
		Open	21.25	26.86	28.63	6.63	34.77	6.15
		Restricted	25.73	36.90	35.28	-4.40	37.09	6.51
4 (5)	HIV	Total	9.38	16.40	22.08	34.66	135.36	18.67
		Open	6.00	12.72	12.56	-1.22	109.27	15.92
		Restricted	13.37	26.01	34.31	31.93	156.65	20.74
5 (4)	AST	Total	15.36	17.13	16.02	-6.48	4.32	0.85
		Open	15.49	16.74	15.96	-4.62	3.03	0.60
		Restricted	15.20	17.65	16.10	-8.78	5.92	1.16
6 (6)	TDH	Total	14.28	16.24	15.33	-5.59	7.35	1.43
		Open	15.26	16.49	15.27	-7.39	0.06	0.01
		Restricted	13.13	15.92	15.41	-3.17	17.38	3.26
7 (7)	IHD	Total	7.27	7.94	7.63	-3.91	4.92	0.97
		Open	8.60	9.19	8.81	-4.21	2.45	0.49
		Restricted	5.71	6.31	6.12	-2.96	7.16	1.39
8 (8)	CMY	Total	4.14	5.77	5.34	-7.34	29.11	5.24
		Open	4.32	5.21	5.17	-0.72	19.67	3.66
		Restricted	3.92	6.49	5.56	-14.33	41.86	7.24
9 (9)	EPL	Total	4.13	4.65	4.45	-4.14	7.89	1.53
		Open	4.38	4.66	4.51	-3.27	3.03	0.60
		Restricted	3.84	4.63	4.39	-5.26	14.29	2.71
10 (10)	BMD	Total	2.38	3.97	3.98	0.31	67.13	10.82
		Open	2.82	4.74	4.74	0.12	68.44	10.99
		Restricted	1.87	2.97	3.01	1.21	60.57	9.93

Table 1 and Figure 2 depict trends in the top 10 common conditions between 2011 and 2016. Hypertension retained its rank as the highest prevalent CDL in medical schemes' beneficiaries with an overall prevalence rate of 91.33 per 1 000 beneficiaries in 2016. Hypertension prevalence decreased by 4.91% in 2016 as compared to 2015. This is due to a decrease in over 20% for rates reported of by 10 medical schemes. Over the period between 2011 and 2016, hypertension prevalence increased by 10.6% resulting in the average annual growth rate of 2.04% per year for the period. The decline in hypertension prevalence was observed in both open and restricted schemes for the period under review.

Hyperlipidaemia remained the 2<sup>nd</sup> ranked CDL in terms of prevalence and increased by 18.1% between 2015 and 2016. This increase is due to increases of over 20% in prevalence rates of 10 medical schemes, with the biggest increase noted for Government Employees Medical Scheme (GEMS). Between 2011 and 2016, the prevalence of hyperlipidaemia increased by 25.18% resulting in an average growth rate of 4.59% per year for the period under review.



Diabetes mellitus type 2 is still the 3<sup>rd</sup> ranked CDL in terms of prevalence. Between 2010 and 2015, prevalence of diabetes mellitus type 2 increased by 42.85% (from 22.08 to 31.54 per 1 000). This represents an average growth rate of 7.39% per year for the period between 2011 and 2016.

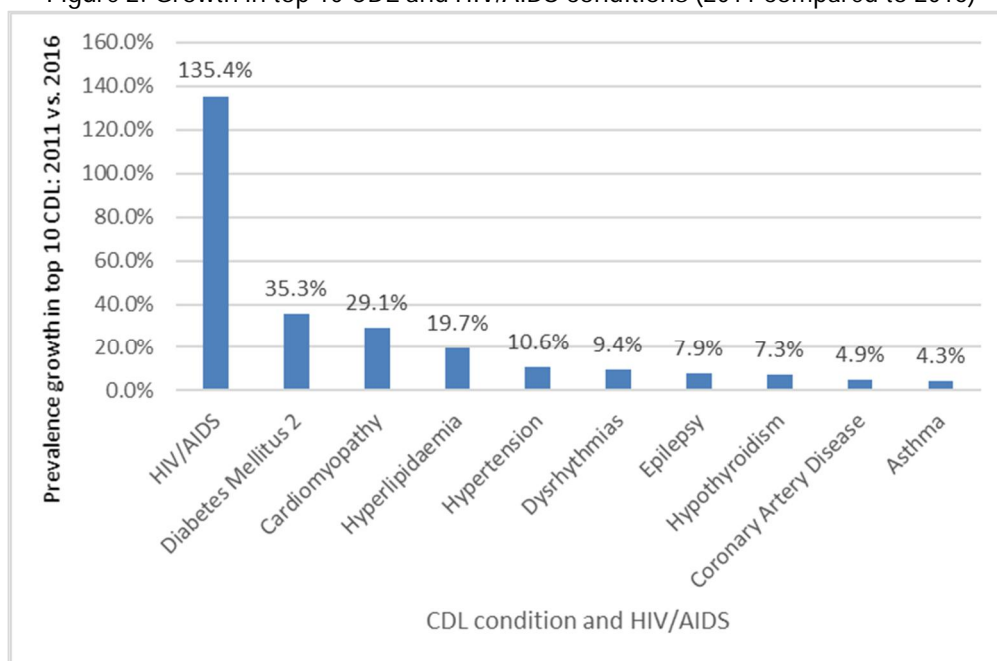
HIV/AIDS ranked the 4<sup>th</sup> chronic condition in terms of prevalence. Between 2011 and 2016, treated HIV/AIDS prevalence increased by about 156.31%. This resulted in the average growth rate of about 20.71% per year for the period under review.

The treated HIV/AIDS prevalence increased from 16.40 per 1 000 beneficiaries in 2015 to 22.08 per 1 000 beneficiaries in 2016 which is mostly attributable to certain medical schemes correcting their reporting of HIV/AIDS prevalence.

There has been a minor decrease observed in the prevalence rate of cardiomyopathy (CMY) of 7.34% between 2015 and 2016. This can be ascribed to the exclusion of certain medical schemes from analysis, due to large increases reported.

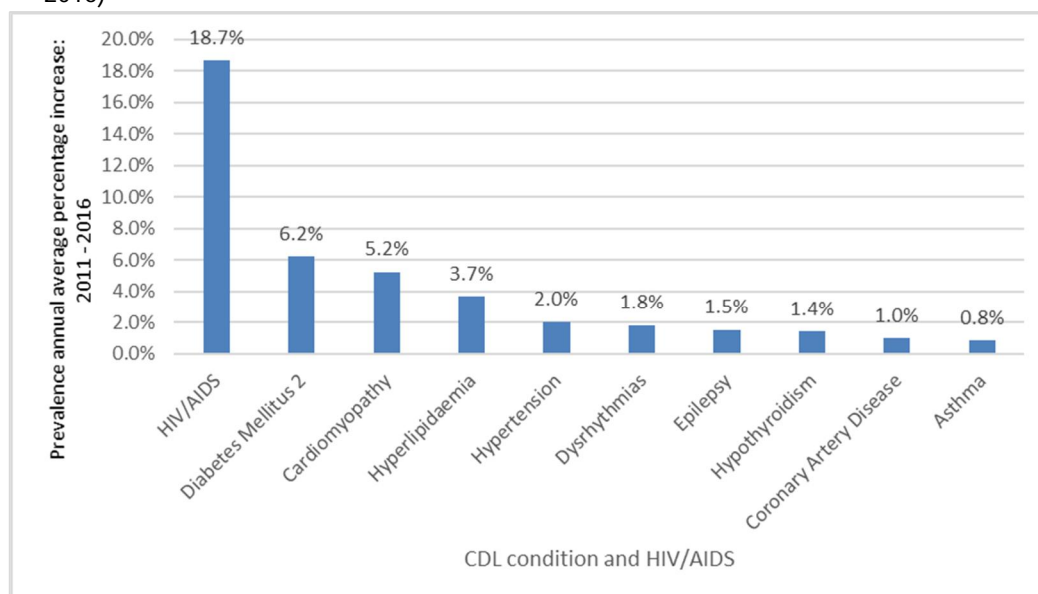
The rate of increase in the prevalence of bipolar mood disorder has reduced significantly between 2015 and 2016, with the rate only increasing by 0.31%, when compared to the annual average increase of 10.8% between 2011 and 2016.

Figure 2: Growth in top 10 CDL and HIV/AIDS conditions (2011 compared to 2016)



Other CDL conditions had prevalence rates that are below 16 per 1 000 beneficiaries (as shown in Table 1). The average growth rates per year for the top 10 CDL conditions (for the period 2011 and 2016) are as summarised in Figure 3 below. According to Figure 3, HIV/AIDS has been the fastest increasing condition followed by diabetes mellitus type 2 with the average growth rate of these CDLs being above 9% per year. Other conditions, though increasing, had annual average growth rates that were below 5% per year.

Figure 3: Annual average growth rate (per year) in top 10 CDL and HIV/AIDS conditions (2011 to 2016)



The upward trend in the number of medical scheme beneficiaries who were diagnosed and treated for multiple CDL conditions continued in 2016. This might have a negative impact on the risk profiles of medical schemes. The deterioration in risk profiles should be a concern for medical schemes.

Much of the upward trend could still be generally attributed to improved data management systems of medical schemes and administrators, the deteriorating disease profile and increased beneficiary awareness of entitlements, as well as changes in care-seeking behaviour.

## Introduction

The Medical Schemes Act, No.131 of 1998 makes it mandatory for medical schemes to cover costs for the diagnosis, treatment or care of a defined set of benefits or Prescribed Minimum Benefits (PMBs), regardless of the benefit option members have selected. PMBs include any medical condition which meets the definition of an emergency, a limited set of 270 medical conditions and 26 chronic conditions defined in the Chronic Disease List (CDL). The CDL specifies medication and treatment for the chronic conditions that are covered as PMBs.

The recent study conducted by the CMS evaluated the prevalence of CDLs and HIV/AIDS in medical schemes as reported in the CMS Scheme Risk Measurement (SRM) database for the period 2009 to 2014, and was published in December 2015 [47]. The study was a follow up to the 2014 study which evaluated the CMS Scheme Risk Measurement database for the period 2008 to 2013, with a further update published in 2017.

In 2016/17 the CMS conducted a retrospective study of the CMS Scheme Risk Measurement database for the period 2011 to 2016. This report presents the results of the retrospective review of the trends in the prevalence of chronic diseases in the medical schemes industry from 2011 to 2016. This is a follow-up to the *“Prevalence of chronic diseases in the population covered by medical schemes in South Africa”* published by the CMS in February 2016.

It should be noted that CDL and HIV/AIDS prevalence in prior reports as well as in this report, is defined in line with the SRM definition of prevalence as guided by the Entry and Verification (E&V) criteria. Thus, prevalence in these reports has been interpreted as prevalence of diagnosed and treated CDL conditions of medical scheme beneficiaries.

This report analyses prevalence as defined in the SRM process using the Entry and Verification (E&V) criteria, while Annexure A of this report analyses a more relaxed definition of prevalence (i.e. prevalence of conditions listed as CDLs whether treated and registered on a program or not). A data sheet with prevalence for each CDL condition by age band will be made available on the CMS website.

## Literature review

### 1.1 Chronic respiratory conditions

Chronic respiratory diseases (CRDs) are among the leading causes of death worldwide. The prevalence of respiratory diseases is expected to rise in low- and middle-income countries because of increasing urbanisation amongst other factors [1]. The most common chronic respiratory diseases in South Africa are asthma and chronic obstructive pulmonary disease [2].

Asthma is the major non-communicable disease globally. About 235 million people are affected by Asthma globally [3]. Studies suggest that an additional 100 million people may be living with asthma by 2025 [1]. Asthma is one of the most common childhood diseases [3, 4]. Most asthma-related deaths occur in low- and lower-middle income countries [3]. In South Africa, Asthma prevalence is estimated to be on the region of "5.1 - 7.1%" of the population [6]. Asthma is one of the commonest childhood diseases in South Africa as well [4].

Chronic obstructive pulmonary disease (COPD) is estimated to have caused about 3 million deaths globally in 2015 (that is, 5% of all deaths globally in 2015). COPD prevalence is estimated to likely increase in coming years due to higher smoking prevalence and aging populations in many countries [7].

The prevalence of bronchiectasis is unknown largely because the symptoms are variable and the diagnosis is often not easily made. Cases of bronchiectasis are more common in women than men [8].

### 1.2 Cardiovascular conditions

Cardiovascular conditions are the number 1 cause of death globally. More people die annually from CVDs than from any other cause [9]. More than 17 million people die annually from cardiovascular disease [10]. Cardiovascular diseases that are covered in the CDL include cardiomyopathy (CMY), ischaemic heart disease (IHD), dysrhythmias (DYS) and hypertension (HYP).

A review of heart diseases in Africa shows that the cardiomyopathies continue to be important causes of morbidity and mortality in the population [11]. CMY is a relatively common condition in South Africa, and one of the major contributors to heart failure in Africa. The prevalence of heart failure across the world is unknown, but hospital-based studies indicate that CMY accounts for 20% of all heart failure admissions in African hospitals [12].

The epidemiology of ischaemic heart disease (IHD) in Sub Saharan Africa (SSA) remains largely enigmatic. Major obstacles to the understanding of the condition include amongst others lack reliable health statistics [13]. Ischaemic heart disease continues to be rare in Africa [11]. Although IHD in Sub Saharan Africa remains relatively uncommon, its prevalence is predicted to rise due to the rising prevalence of risk factors, especially hypertension, diabetes, overweight and obesity, physical inactivity, increased tobacco use and dyslipidaemia [13].

High blood pressure / hypertension is a leading risk factor for cardiovascular diseases such as heart attacks and strokes, and it is treatable. It is estimated that the number of people in the world with hypertension is around 1.13 billion, nearly doubling since 1975 [14]. HYP is a highly prevalent condition in South Africa [14]. In South Africa, HYP is estimated to be affecting about 4.4 million people as estimated by the Statistics South Africa [15].

### 1.3 Chronic renal disease

About 10% of the population worldwide is affected by chronic kidney diseases. Access to affordable treatment remains a challenge globally [16]. In middle-income countries, renal replacement therapy remains unaffordable for the majority of patients [17]. Over 2 million people worldwide currently receive treatment with dialysis or a kidney transplant to stay alive, yet this number may only represent 10% of people who actually need treatment to live [16].

There is a lack of renal registries in majority of countries in Africa which means that there are no reliable statistics about the prevalence of chronic kidney disease and end stage renal disease in the majority of African countries [18]. Chronic kidney diseases are however estimated to affect as much as 15% of the South African population [19].

### 1.4 Gastrointestinal disorders

Gastrointestinal disorders covered as PMBs include inflammatory bowel diseases such as Crohn's disease and Ulcerative Colitis [12]. According to epidemiological investigations, the prevalence of Crohn's disease (CSD) in industrialized countries is higher than developing countries. However, in recent years the rate of CSD in industrialized countries has been stabilized while the number of patients with CSD is rising up in developing countries. The progression of CSD in developing countries is related to changes in people's lifestyle [20].

The predominant age range of patients with CSD is reported between 20 and 30; but it can happen at any age [20]. Data on the prevalence of gastrointestinal disorders (including inflammatory bowel diseases) in South Africa is scarce [12].

### 1.5 Diabetes mellitus

There are three main types of diabetes mellitus (DM), namely, Diabetes Mellitus Type 1 (DM1), Diabetes Mellitus Type 2 (DM2) and gestational diabetes (which may precede development of DM2). DM1 occurs most commonly in children and accounts for approximately 10% of all diabetes mellitus cases. DM2 diabetes accounts for about 90% of all diabetes cases, and many people who have this condition are undiagnosed. DM2 occurs most commonly in people over age 40 [12].

The number of people with diabetes has risen from 108 million in 1980 to 422 million in 2014. Diabetes prevalence has been rising more rapidly in middle- and low-income countries. Over the past decade, diabetes prevalence has risen faster in low- and middle-income countries than in high-income countries. About 25 million people in Africa region were affected by diabetes (as by 2014 data) [21]. The International Diabetes Federation show that the prevalence of

adults with type 2 diabetes mellitus (DM) is highest in low and middle-income countries, with Sub-Saharan Africa and the Indian subcontinent being highlighted as two of the regions where this rise is expected to be the greatest [22].

## 1.6 Psychiatric conditions

Psychiatric health is an integral part of health and well-being as reflected in the constitution of the World Health Organisation. The WHO included mental health as part of the Sustainable Development Goals in 2015. The gap between the need for treatment and its provision is wide all over the world. In low- and middle-income countries, between 76% and 85% of people with mental disorders receive no treatment for their disorder [23].

The two psychiatric disorders, Bipolar Mood Disorder (BMD) and Schizophrenia (SCZ) form part of the 26 chronic diseases covered as PMBs in South Africa. The WHO estimates that about 60 million people are affected by bipolar effective disorder while around schizophrenia affects about 21 million people globally [23]. Epidemiological data on psychiatric conditions in South Africa is lacking and estimates are not easy to establish [24].

## 1.7 Neurological disorders

The two neurological disorders, Epilepsy (EPL) and multiple sclerosis (MSS) form part of the 26 chronic diseases covered as PMBs in South Africa.

Epilepsy is one of the most common neurological conditions globally, estimated to constitute 0.75% of the global burden of disease. Nearly 90% of this burden occurs in low- and middle- income countries. Epilepsy is estimated to affect 69 million individuals globally [25]. There are however few large, population-based studies of the prevalence and risk factors for epilepsy in southern Africa [26].

Multiple sclerosis (MSS) is the most common disabling neurological disorder of young adults around the world. It is typically diagnosed between the ages of 20 and 40, thus affecting individuals in their most productive years [27]. According to Atlas of MS, the estimated number of people with MSS increased from 2.1 million in 2008 to 2.3 million in 2013 [28].

The ratio of male to female individuals affected by MSS is 2:1 and has remained unchanged since 2008. According to Multiple Sclerosis International Federation (MSIF), MSS prevalence in South Africa is estimated to be at the region of '0 – 5' per 100 000 people [29].

## 1.8 Auto-Immune conditions

Rheumatoid Arthritis (RHA) is a chronic systemic disease that affects the joints, connective tissues, muscle, tendons, and fibrous tissue. RHA tends to strike between the ages of 20 and 40, and is a chronic disabling condition often causing pain and deformity [30]. RHA is more prevalent in females than males and with increasing age [31].

Globally, RHA prevalence varies between 0.3% and 1% [30]. There is a lack of a formal meta-analysis on RHA prevalence rates in the Sub Saharan African region due to limited data [31].

Systemic Lupus Erythematosus (SLE) is a multisystem autoimmune disease characterised by the formation of antinuclear antibodies [32]. SLE is primarily a disease of young women [33]. Females are affected by SLE far more than males (about 4 to 12 females for every male). SLE tend to peak in the childbearing years for females [33]. The reported worldwide incidence and prevalence of SLE vary considerably; this variation is probably attributable to a variety of factors, including ethnic and geographic differences in the populations being studied, the definition of SLE applied, and the methods of case identification [34]. SLE incidence is estimated to be ranging from 2.0 to 7.6 per 100,000 with prevalence of 20 to 50 per 100,000. Approximately 15-20% of SLE occurs before the age of 19 years [32].

## 1.9 Addison's disease

Addison's disease (ADS) is a rare chronic disease leading to a deficient production of glucocorticoids, mineralocorticoids, and androgens in the adrenal cortex. ADS is a rare disease and epidemiological data are difficult to collect [35]. There is a paucity of information as to the epidemiology of ADS from the developing world [34]. Studies however, estimates South African prevalence of ADS to be 3.1 per million [36].

## 1.10 Diabetes Insipidus

Diabetes Insipidus (DBI) is an uncommon condition in South Africa. The prevalence of DBI is unknown in South Africa [12].

## 1.11 Glaucoma

The global overall glaucoma prevalence was 3.54% in 2013 [37]. The number of people (aged 40–80 years) with glaucoma worldwide was estimated to be 64.3 million in 2013, this number is expected to increase to 76.0 million in 2020 and 111.8 million in 2040. The predicted increase in glaucoma prevalence is predicted to disproportionally affect people residing in Asia and Africa [38]. The worldwide prevalence of GLC is expected to increase as a result of the rapidly aging population [12].

## 1.12 Haemophilia

Haemophilia has greater prominence in males than in females [40]. About 1 in 10 000 people are born with haemophilia [39]. In South Africa, it is estimated that there are less than 0.1 per 1 000 infants with a major haemoglobinopathy [40].

### 1.13 Parkinson's

Parkinson's disease (PAR) is the most common neurological disease after Alzheimer's disease [12]. Generally, there have been few studies of Parkinson's disease conducted in Africa leading to concerns that Parkinson's disease (PAR) is under-studied in Sub Saharan African [41]. Little is known about the epidemiology of PAR in South Africa [12].

### 1.14 Hypothyroidism

Thyroid dysfunction is one of the leading endocrine disorders globally [43]. Women are more affected by thyroid dysfunctions than men [44]. Hypothyroidism is more common in older women and increases with age [12]. The world-wide prevalence of hypothyroidism is estimated to be around 5% [42].



## Methodology

### 1.15 Data sources

This study relied on the data that was submitted by medical schemes as part of Annual Statutory Returns (ASR). Prior reports were based on data that was submitted voluntarily by the medical schemes for the purposes of SRM. In 2015, the CMS incorporated the data that was previously submitted for SRM purposes into ASR system. The separate submission of data for SRM purposes was then discontinued in 2015.

This report was compiled using the data that was submitted through the ASR system in 2017. The study relied on the data that was submitted as part A7 (Scheme risk measurement data) and part C5 (CDL prevalence & registration on a chronic disease program) of the ASR system [48].

Prevalence is defined in two different methods. The first part (section 1 to section 5) defines prevalence using the SRM definition while the second part (Annexure A) uses a more relaxed definition of prevalence which is a count of beneficiaries who have had at-least one claim for specified CDL condition during the year. The two definitions are explained in more detail in the sections below:

#### SRM prevalence definition

The first part (section 1 to section 5) of the report defines prevalence as diagnosed and treated prevalence as defined by the SRM process (this data was extracted from part A7 of the ASR system). Medical schemes use the rules set out in the "Guidelines for the Identification of Beneficiaries with Risk Factors in Accordance with the Entry and Verification Criteria v10.1" (Council for Medical Schemes, 2016) to identify each chronic disease case.

The purpose of the entry and verification criteria is to define the criteria, which must be met in the identification of beneficiaries with the risk factors used in the SRM (the criteria is intended for this purpose only and not to be construed as limitations or expansions to PMBs in terms of the Medical Schemes Act). The entry and verification criteria were developed with emphasis on the verifiability of cases and is used to ensure that there is uniformity in the way that medical schemes identify SRM risk factors. The criteria basically indicate that prevalence refers to beneficiaries which are diagnosed and treated for a condition, these beneficiaries are registered on a program and there should be proof of payment from the risk pool.

#### Annexure A prevalence definition

Annexure A of this report provides tables for a more relaxed definition of prevalence. This is the count of beneficiaries who have had at-least one claim for a specified CDL condition during the year (this data is

extracted from table C5 of the ASR system). This data was collected for the first time for 2015 in 2016 and as a result the CMS will monitor the quality of the data as time progresses. A more detailed analysis of this data will be provided in the up-coming studies once enough data is available (to conduct data quality tests using trend).

## 1.16 Analytical approach

Prevalence in this report is calculated as an annual average prevalence based on the number of beneficiaries at the end of the year. This methodology is similar to the methodology used in the 2015 report (covering the period 2009 to 2014). In the 2013 study covering the period 2006 to 2011, prevalence rates were calculated using prevalence for the month of June each year. The difference between these two approaches is not significant, but caution should be exercised when comparing the findings of the different reports.

The “Guidelines for the Identification of Beneficiaries with Risk Factors in Accordance with the Entry and Verification Criteria v10.1” (Council for Medical Schemes, 2016) was used as a guideline in analysing the results. According to these guidelines, the age band “Under 1” is not populated with CDL or HIV information, all beneficiaries under one with CDLs are included in the “NON” category. Hence, all CDL and HIV prevalence for the “Under 1” age band is zero. The treatment of beneficiaries in the age band “Under 1” was also applied to a relaxed prevalence definition as discussed in Annexure A of this report.

Section 4.4 of this report contains data on the multiple CDL conditions (or HIV/AIDS and one or more CDL conditions). These rates are calculated using “modifiers”. Modifiers refer to beneficiaries with more than one CDL condition. For the purposes of SRM, beneficiaries with two (CC2), three (CC3) or four (CC4) or more simultaneous CDL conditions are counted separately. The count of modifiers in each category is then used to calculate prevalence expressed per 1 000 beneficiaries. This calculation is only applicable to section 4.4 of this report.

The prevalence rates for rare CDL conditions such as MSS, HAE, DBI, etc. may appear volatile when depicted on a graph. This may be due to the fact that these conditions prevalence rates are low and as a result, small changes in the rate is most likely to cause volatility. The graphs of these conditions are to be interpreted with caution.

All prevalence statistics in the report was analysed at a two-digit level. There are instances where the reported percentage changes do not necessarily add up to the calculated prevalence movement. This discrepancy is mainly caused by rounding off and do not affect the validity of the reported statistics.

## 1.17 Sampling

Only data that was deemed to be of acceptable quality through the CMS ASR data quality evaluation process was included in the analysis. The proportion of beneficiaries whose data was sampled (or used) was about 99% for the 2016 data. The chronic diseases that were analysed in this study are as given in Table 2 below with the acronyms used for each chronic disease. The following conditions were effected by exclusion of schemes problematic data: IBD, CRF, IHD, COP, CMY, and BCE.

Table 2: Chronic diseases in the Chronic Disease List

Chronic Disease Code	Full Description
ADS	Addison's Disease
AST	Asthma
BCE	Bronchiectasis
BMD	Bipolar Mood Disorder
CHF	Cardiac failure <sup>1</sup>
CMY	Cardiomyopathy
COPD	Chronic Obs. Pulmonary Disease
CRF	Chronic Renal Disease
CSD	Crohn's Disease
DBI	Diabetes Insipidus
DM1	Diabetes Mellitus 1
DM2	Diabetes Mellitus 2
DYS	Dysrhythmias
EPL	Epilepsy
GLC	Glaucoma
HAE	Haemophilia
HYL	Hyperlipidaemia
HYP	Hypertension
IBD	Ulcerative Colitis
IHD	Coronary Artery Disease
MSS	Multiple Sclerosis
PAR	Parkinson's Disease
RHA	Rheumatoid Arthritis
SCZ	Schizophrenia
SLE	Systemic Lupus Erythematosus
TDH	Hypothyroidism
HIV/AIDS	HIV/AIDS <sup>2</sup>

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<sup>1</sup> CHF was combined with CMY in the prevalence tables.

<sup>2</sup> Not a CDL condition.

## Results

### 1.18 Scheme demographics

The demographic information of beneficiaries of all medical schemes are shown in Table 3. The number of beneficiaries in all schemes increased by 0.78%, the average age increased from 32.3 to 32.5, and the pensioner ratio increased from 7.7% in 2015 to 7.9% in 2016.

The number of beneficiaries in restricted schemes increased by 1.39% with the average age and pensioner ratio increasing by 0.3 and 0.2 percentage points, respectively. The number of beneficiaries in open schemes grew by 0.3% with the average age increasing by 0.2 percentage points, while the pensioner ratio increased slightly between 2015 and 2015.

Table 3: Medical schemes demographics 2016 (all beneficiaries, Annual Statutory Returns)

Attribute	Restricted			Open			Total		
	2015	2016	% change	2015	2016	% change	2015	2016	% change
Lives	3 871 070	3 924 901	1.39	4 938 453	4 953 180	0.30	8 809 523	8 878 081	0.78
Average age	30.5	30.6	0.3	33.8	34.0	0.2	32.3	32.5	0.2
Pensioner ratio	6.1%	6.3%	0.03	8.8%	9.2%	0.05	7.7%	7.9%	0.03

Table 4: Medical schemes demographics 2016 (sampled data, SRM database)

Attribute	Restricted			Open			Total		
	Total	Sampled	Proportion	Total	Sampled	Proportion	Total	Sampled	Proportion
Lives	3 924 901	3 891 159	99.14%	4 953 180	4 717 649	95.24%	8 878 081	8 608 809	96.97%
Average age	30.5	30.3		33.8	33.8		32.3	32.2	
Pensioner ratio	6.1%	5.9%		8.8%	8.8%		7.7%	7.6%	

### 1.19 Treated CDL and HIV/AIDS prevalence per scheme type

The 2015 and 2016 average prevalence per 1 000 beneficiaries for the 26 CDL conditions in open and restricted schemes are depicted in Table 5 below. Cardiomyopathy (CMY) and cardiac heart failure (CHF) are reported together as per SRM Entry and Verification criteria.

Table 5: Average prevalence per 1 000 beneficiaries for the treated 26 CDL conditions and HIV/AIDS

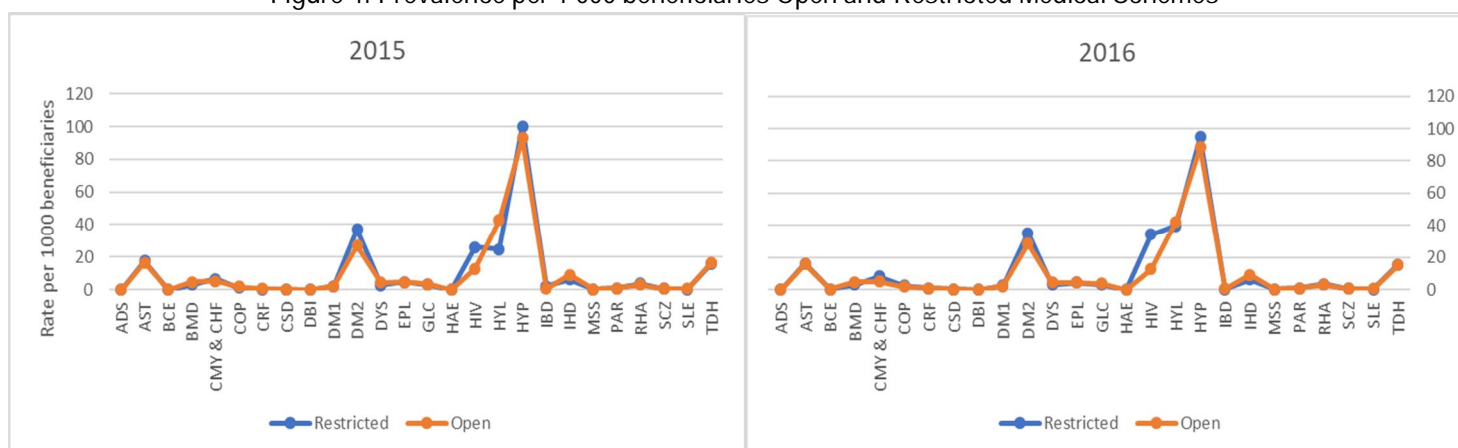
CDL Code	2016 Rank (2015)	Restricted			Open			Total		
		2015	2016	% change	2015	2016	% change	2015	2016	% change
ADS	24 (24)	0.03	0.04	0.39	0.08	0.08	-0.06	0.06	0.06	0.04
AST	5 (4)	17.65	16.10	-0.09	16.74	15.96	-0.05	17.13	16.02	-0.06
BCE	23 (23)	0.06	0.07	0.08	0.10	0.11	0.06	0.08	0.09	0.06
BMD	10 (10)	2.97	3.01	0.01	4.74	4.74	0.00	3.97	3.98	0.00
CMY	8 (8)	6.49	5.56	-0.14	5.21	5.17	-0.01	5.77	5.34	-0.07
COP	15 (15)	1.06	0.76	-0.28	1.71	1.74	0.01	1.43	1.31	-0.08
CRF	17 (19)	0.21	0.54	1.55	0.70	0.61	-0.13	0.49	0.58	0.19
CSD	21 (22)	0.08	0.13	0.60	0.31	0.30	-0.02	0.21	0.23	0.09

CDL Code	2016 Rank (2015)	Restricted			Open			Total		
		2015	2016	% change	2015	2016	% change	2015	2016	% change
DBI	25 (25)	0.05	0.02	-0.64	0.03	0.03	0.09	0.04	0.03	-0.33
DM1	14 (14)	2.09	2.58	0.24	2.12	2.16	0.02	2.10	2.34	0.11
DM2	3 (3)	36.90	35.28	-0.04	26.86	28.63	0.07	31.21	31.54	0.01
DYS	11 (11)	2.93	3.07	0.05	4.30	4.29	0.00	3.71	3.76	0.01
EPL	9 (9)	4.63	4.39	-0.05	4.66	4.51	-0.03	4.65	4.45	-0.04
GLC	12 (12)	3.15	3.18	0.01	3.56	3.65	0.03	3.38	3.45	0.02
HAE	26 (26)	0.01	0.01	0.26	0.03	0.03	-0.04	0.02	0.02	0.00
HIV	4 (5)	26.01	34.31	0.32	12.72	12.56	-0.01	16.40	22.08	0.35
HYL	2 (2)	24.72	39.74	0.61	42.71	42.37	-0.01	34.90	41.22	0.18
HYP	1 (1)	100.08	94.92	-0.05	92.96	88.54	-0.05	96.05	91.33	-0.05
IBD	19 (16)	2.08	0.25	-0.88	0.58	0.56	-0.03	1.23	0.43	-0.65
IHD	7 (7)	6.31	6.12	-0.03	9.19	8.81	-0.04	7.94	7.63	-0.04
MSS	22 (21)	0.25	0.14	-0.45	0.27	0.29	0.08	0.26	0.22	-0.14
PAR	16 (17)	0.80	0.78	-0.03	0.95	0.97	0.02	0.88	0.88	0.00
RHA	13 (13)	3.58	3.60	0.01	3.21	3.14	-0.02	3.37	3.34	-0.01
SCZ	18 (18)	0.54	0.50	-0.07	0.51	0.47	-0.09	0.52	0.48	-0.08
SLE	20 (20)	0.18	0.31	0.69	0.42	0.43	0.02	0.32	0.38	0.19
TDH	6 (6)	15.92	15.41	-0.03	16.49	15.27	-0.07	16.24	15.33	-0.06

The prevalence rank of many treated CDL conditions has remained unchanged between 2015 and 2016. The top 10 CDL conditions changed slightly with AST and HIV swapping fourth and fifth positions.

Prevalence of certain treated CDL conditions is slightly higher in restricted medical schemes as opposed to open medical schemes as depicted in figure 4 below. The prevalence rate for HIV/AIDS in restricted schemes is more than double the corresponding prevalence in open medical schemes (Table 5). Detailed changes in CDL conditions as well as HIV/AIDS are discussed in more detail in the next section.

Figure 4: Prevalence per 1 000 beneficiaries Open and Restricted Medical Schemes



## 1.20 Treated CDL and HIV/AIDS prevalence by age and gender

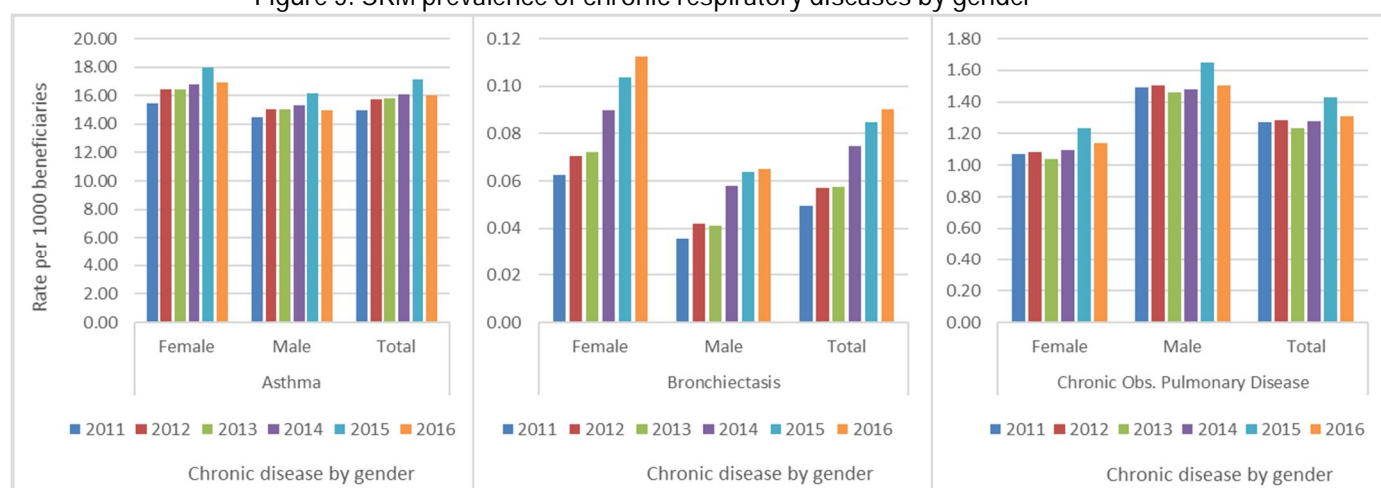
### 1.20.1 Chronic respiratory conditions

Figure 5 shows prevalence of treated chronic respiratory diseases in medical scheme beneficiaries by gender. The prevalence of asthma (AST) has decreased by 6.48% from 17.13 per 1 000 in 2015 to 16.02 in 2016. This is mainly due to 11 medical schemes having reported a decrease of over 20%.

The treated chronic obstructive pulmonary disease (COP) prevalence rate decreased by 8.3%. In 2016 just over 1.3 beneficiaries in every 1 000 was treated for COP, down from 1.43 in 2015. This decrease might be due to the exclusion of 6 medical schemes' data due to unreasonable increases observed.

The overall prevalence of treated Bronchiectasis (BCE) has remained unchanged at about 0.1 per 1 000 beneficiaries between 2011 and 2016 (Figure 5), with prevalence being higher among females compared to males.

Figure 5: SRM prevalence of chronic respiratory diseases by gender



### 1.20.2 Cardiovascular conditions

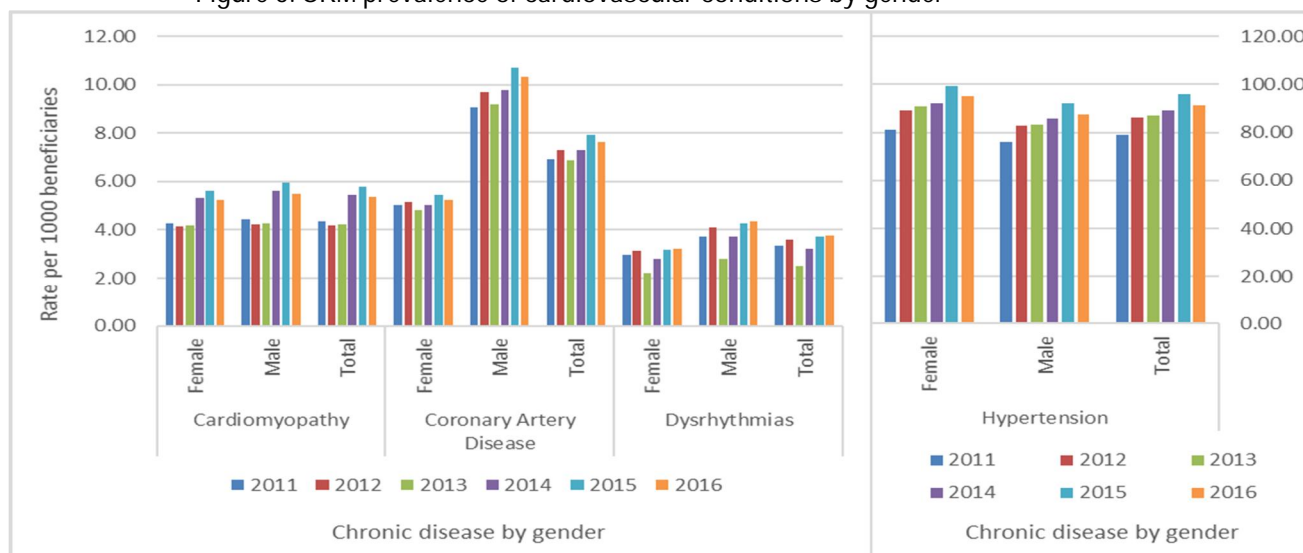
The overall prevalence of diagnosis and treatment of Cardiomyopathy (CMY) paid for by medical schemes decreased slightly by 7.34% from 5.76 per 1 000 in 2015 to 5.34 per 1 000 in 2016. This decrease might be attributable to the exclusion of a very large restricted medical scheme which reported an increase in treated prevalence of over 600% (Figure 6).

In 2016, 7.63 beneficiaries in every 1 000 were treated for coronary artery disease (IHD). This represents a slight decrease from the 7.94 per 1 000 beneficiaries treated in 2015. Many more males compared to females were treated for IHD at 10.33 and 5.22 per 1 000 beneficiaries.

Less than 4 per 1 000 beneficiaries were treated for Dysrhythmias (DYS) in 2016, having only increased by 1.36% from 3.71 in 2015 to 3.76 per 1 000 beneficiaries in 2016.

Hypertension (HYP) remained the most prevalent chronic condition among medical scheme beneficiaries, despite having decreased by 4.91%, from 96.05 per 1 000 in 2015 to 91.33 in 2016. The decline observed in 2016 appears to be a correction on schemes that had extreme increases in the previous year (2015).

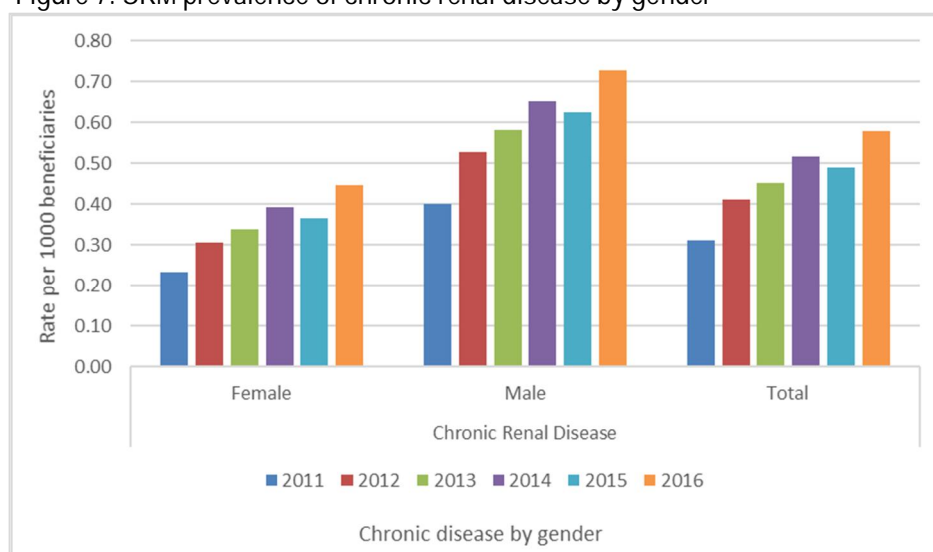
Figure 6: SRM prevalence of cardiovascular conditions by gender



### 1.20.3 Chronic renal disease

The prevalence of treated chronic renal disease (CRF) increased by 18.54% from 0.48 per 1 000 in 2015 to 0.58 per 1 000 in 2016. This unexpected increase was observed despite the exclusion of data from schemes that reported increases of over 50%. More male than female beneficiaries were treated for CRF for the period 2011 to 2016, increasing on average 8.15% for males and 6.74% for females, depicted in Figure 7 below.

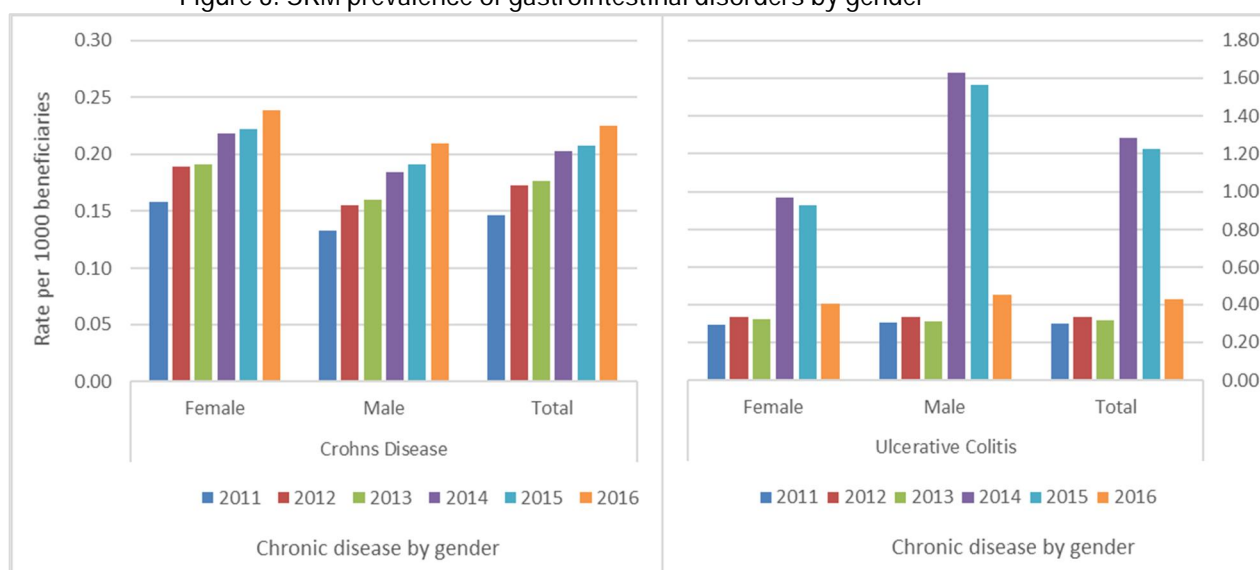
Figure 7: SRM prevalence of chronic renal disease by gender



#### 1.20.4 Gastrointestinal disorders

Treated prevalence of Crohn's disease (CSD) has gradually increased over the period from 2011 to 2016, with an average increase of 9.03%. In 2016, 0.23 in every 1 000 beneficiaries were treated for CSD. Many medical schemes reported a decrease of over 15% in the prevalence of beneficiaries treated for Ulcerative Colitis (IBD), which decreased from 1.23 per 1 000 in 2015 to 0.43 per 1 000 beneficiaries in 2016. This seems mainly attributable to medical schemes correcting previous over-reporting. Figure 8 contrasts these two gastrointestinal disorders.

Figure 8: SRM prevalence of gastrointestinal disorders by gender



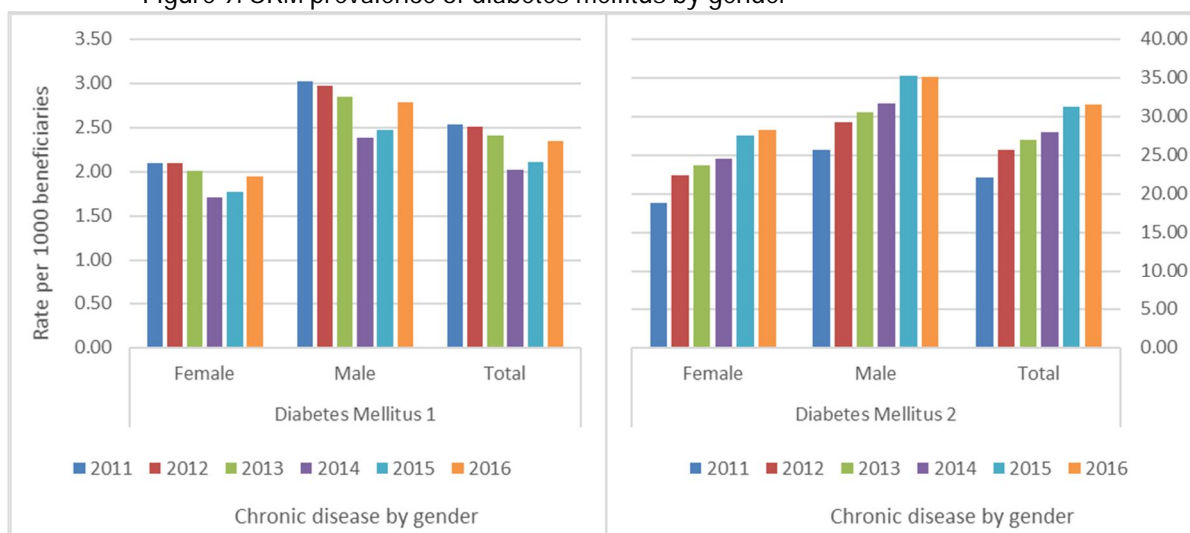
#### 1.20.5 Diabetes mellitus

Slightly more beneficiaries were treated for diabetes mellitus type 1 (DM1) in 2016 compared to 2015, with rates incidence increasing from 2.1 to 2.34 per 1 000. This however translates into a 1.6% decrease on average from 2011 rates of 2.54 per 1 000 beneficiaries. The prevalence of DM1 remains higher among males at 2.79 per 1 000 when compared to females at 1.94 per 1 000, as depicted in Figure 9.

The prevalence of diabetes mellitus type 2 (DM2) has increased on average with 7.39% between 2011 and 2016, which overshadows the 1.05% increase observed between 2015 and 2016. In 2016, 31.54 beneficiaries per 1 000 was treated for DM2, with a higher prevalence observed among male beneficiaries at 35.16 per 1 000.



Figure 9: SRM prevalence of diabetes mellitus by gender

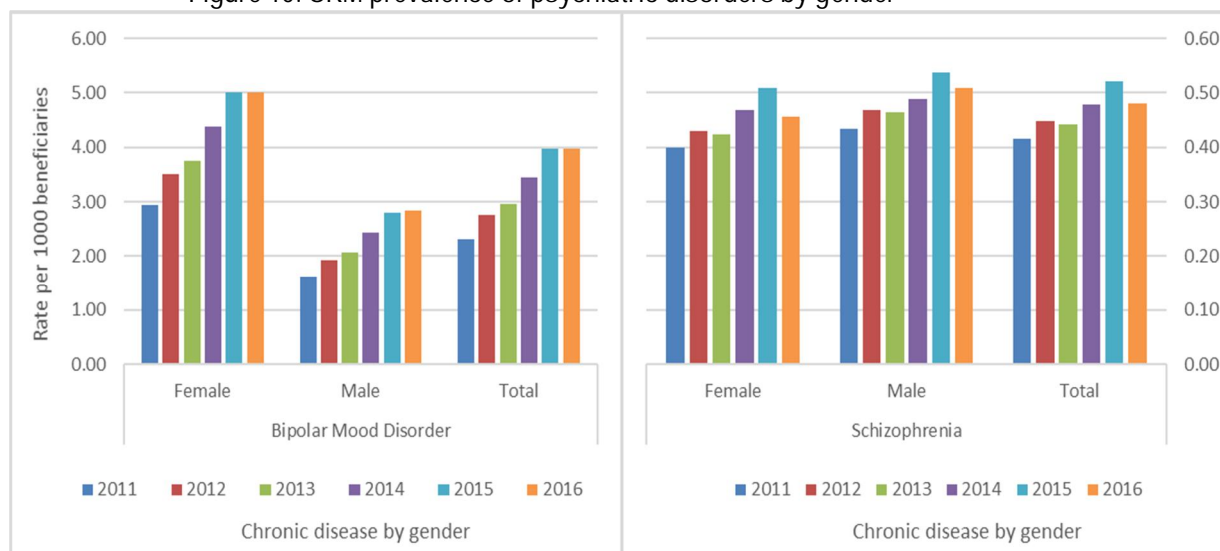


#### 1.20.6 Psychiatric conditions

The increase in the prevalence of treated bipolar mood disorder (BMD) slowed considerably between 2015 and 2016, with an increase of 0.31%. This is in stark contrast to the over 11% increase observed on average between 2011 and 2016.

The prevalence of schizophrenia (SCZ) has remained under 1 per 1 000 between 2011 and 2016. Similar rates were observed in both males and females (Figure 10).

Figure 10: SRM prevalence of psychiatric disorders by gender

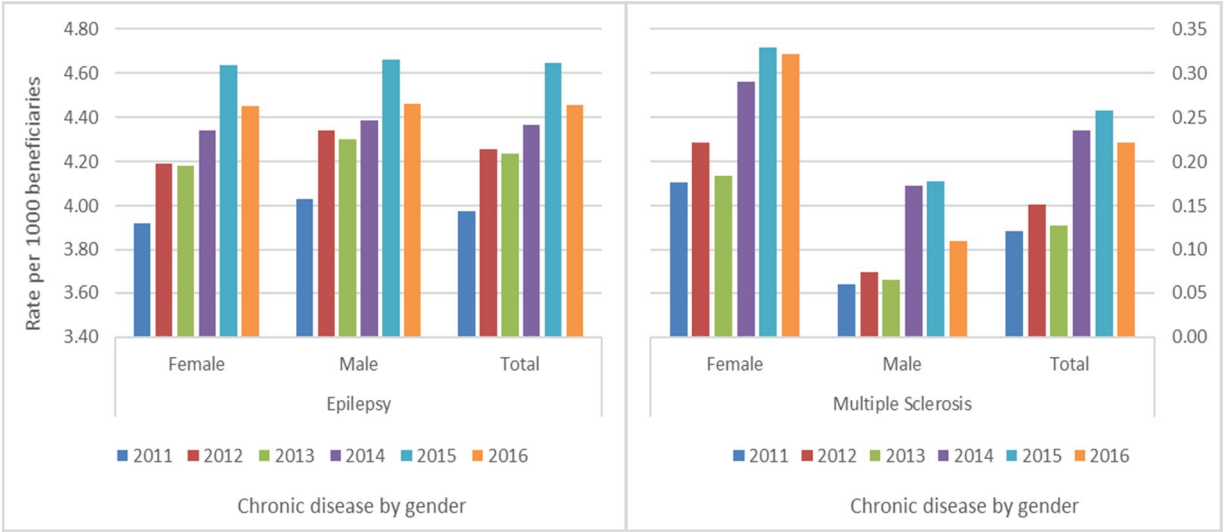


#### 1.20.7 Neurological disorders

The treated prevalence for neurological disorders decreased between 2015 and 2016. Beneficiaries treated for epilepsy (EPL) decreased from 4.64 in 2015 to 4.45 per 1 000 in 2016, with no difference in the prevalence

between males and females. Beneficiaries treated for multiple sclerosis (MSS) decreased only slightly from 0.26 in 2015 to 0.22 per 1 000 in 2016. Figure 11 highlights the differences in prevalence observed for these conditions.

Figure 11: SRM prevalence of neurological disorders by gender

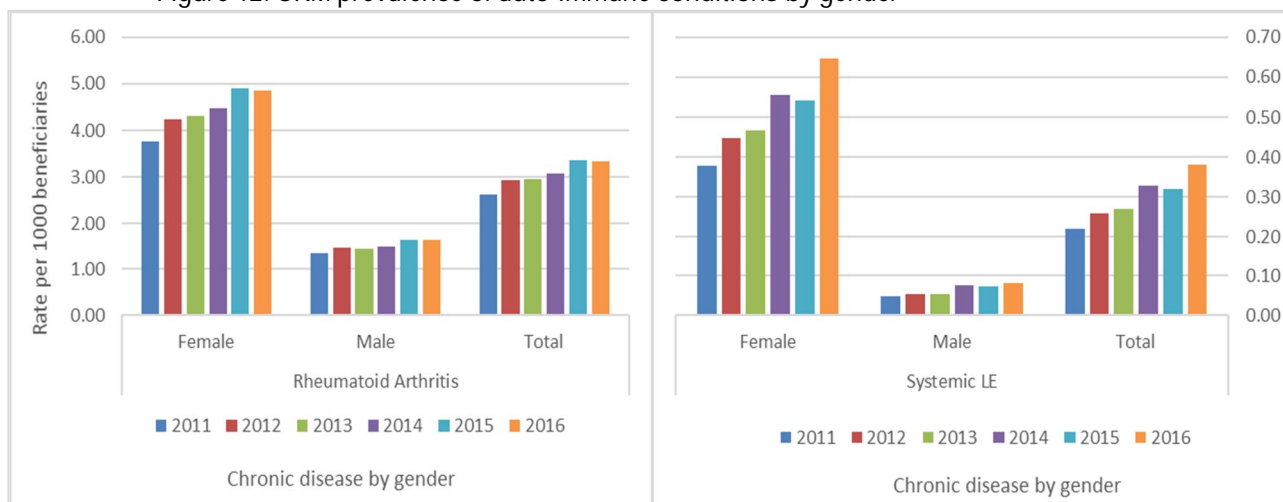


## 1.20.8 Auto-immune Conditions

Rheumatoid arthritis (RHA) treated prevalence decreased slightly between 2015 and 2016 from 3.37 to 3.34 per 1 000, with many more females treated for the condition at 4.86 per 1 000 compared to 1.64 per 1 000 male beneficiaries.

Treated prevalence of systemic lupus erythematosus (SLE) increased from 0.22 to 0.38 per 1 000 between 2011 and 2016. Prevalence of SLE is higher among females at 0.65 compared to 0.08 per 1 000 for males.

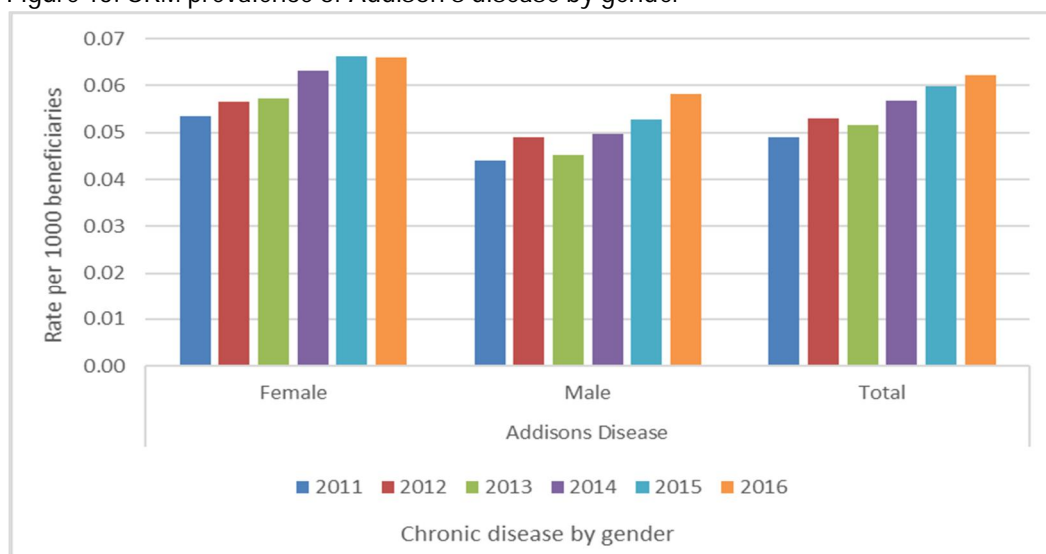
Figure 12: SRM prevalence of auto-immune conditions by gender



## 1.20.9 Addison's disease

Prevalence of beneficiaries treated for Addison's disease (ADS) remained consistently below 0.07 per 1 000 between 2011 and 2016.

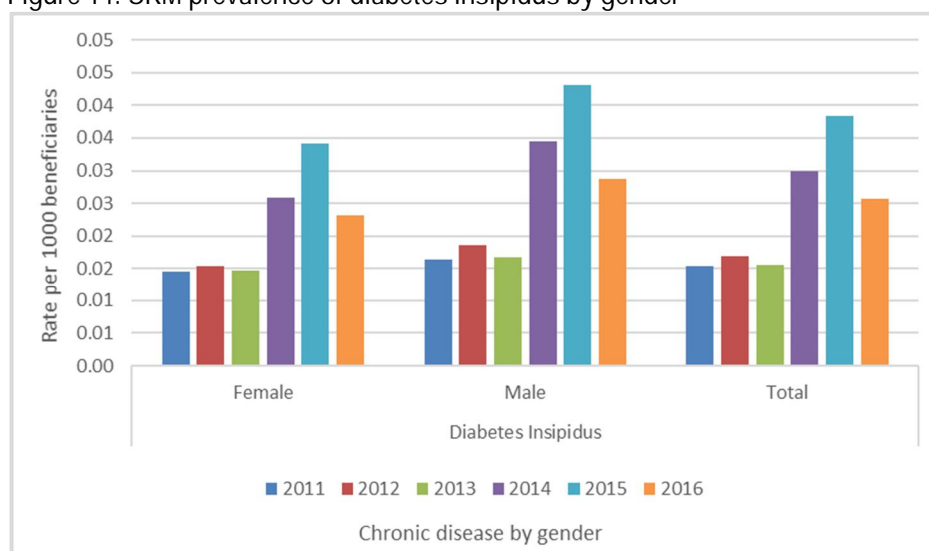
Figure 13: SRM prevalence of Addison's disease by gender



### 1.20.10 Diabetes Insipidus

The prevalence of diabetes insipidus (DBI) is rare among medical scheme beneficiaries and has not changed significantly from 2011 to 2016. In 2016, 0.03 per 1 000 beneficiaries were treated for DBI compared to 0.02 per 1 000 in 2011. (Figure 14).

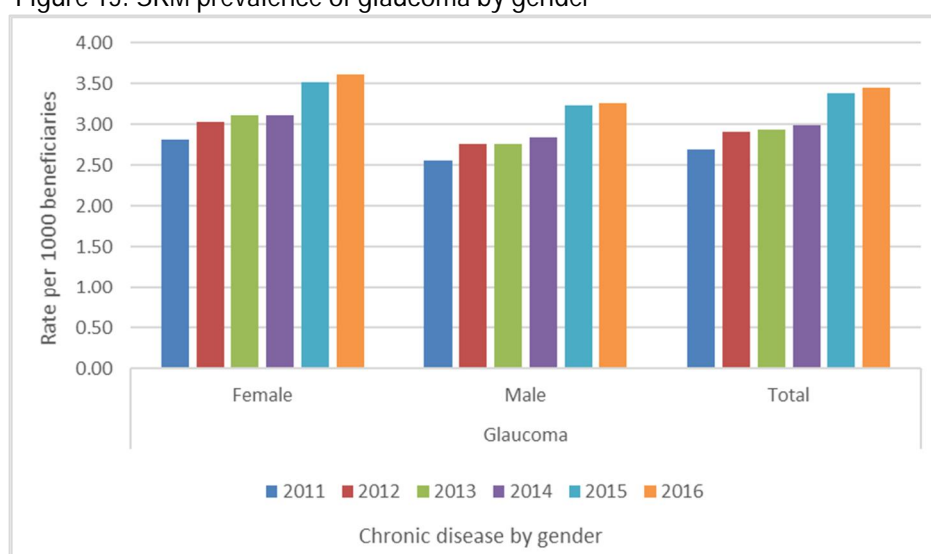
Figure 14: SRM prevalence of diabetes Insipidus by gender



### 1.20.11 Glaucoma

The prevalence of glaucoma (GLC) increased from 2.69 per 1 000 in 2011, to 3.45 per 1 000 in 2016. The prevalence among males and females show no significant differences, with females reported at 3.61 per 1 000 compared to males at 3.26 per 1 000. (Figure 15).

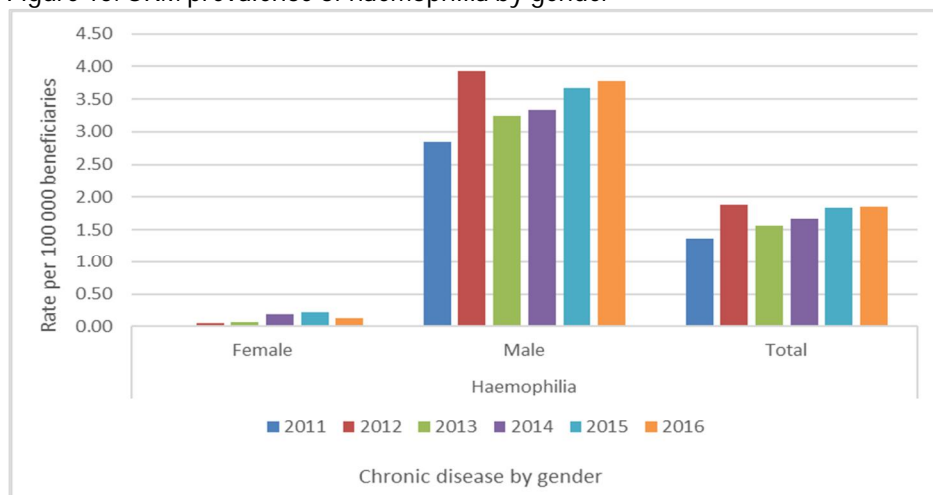
Figure 15: SRM prevalence of glaucoma by gender



### 1.20.12 Haemophilia

The prevalence for haemophilia (HAE) is very rare among medical scheme beneficiaries with 1.50 per 100 000 in 2011 to 1.85 per 100 000 in 2016. The prevalence in male beneficiaries was 3.78 per 100 000 in 2016, with 0.12 per 100 000 for females, as depicted in Figure 16.

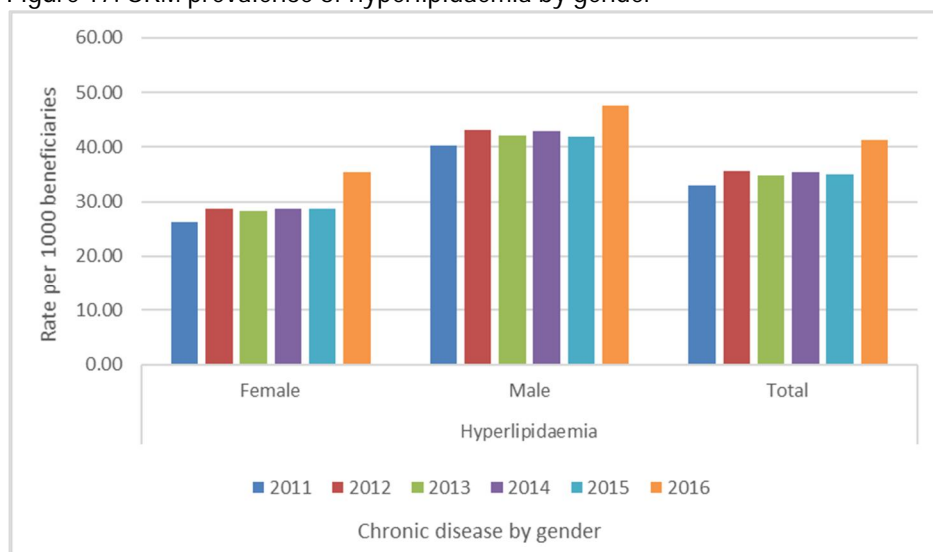
Figure 16: SRM prevalence of haemophilia by gender



### 1.20.13 Hyperlipidaemia

The prevalence of treated hyperlipidaemia (HYL) increased by 4.95% on average between 2011 and 2016. With a considerable increase of over 18% between 2015 and 2016. This increase is attributable to 11 schemes reporting increases of over 20% from 2015 to 2016. Many more male beneficiaries were treated for HYL at 47.62 per 1 000, compared to females at 35.50 per 1 000.

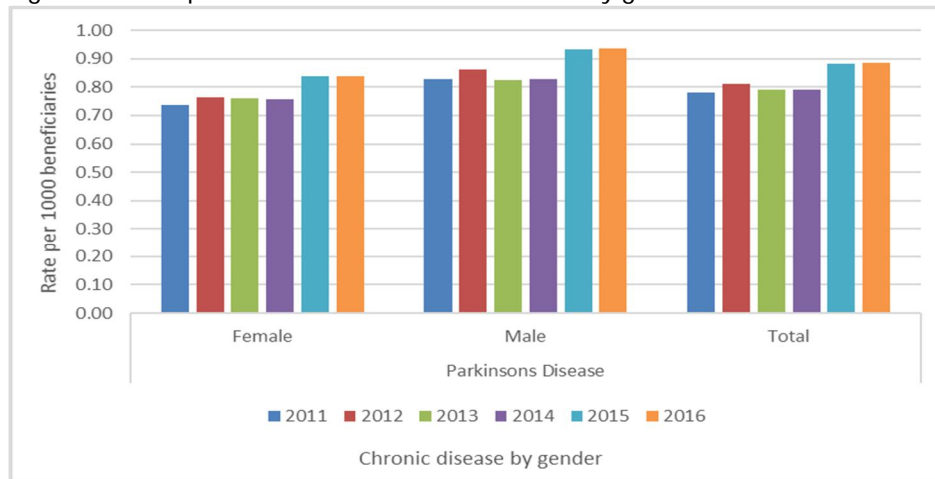
Figure 17: SRM prevalence of hyperlipidaemia by gender



#### 1.20.14 Parkinson's disease

Treated prevalence of Parkinson's disease (PAR) increased from 0.78 to 0.88 per 1 000 between 2011 and 2015, with rates remaining unchanged between 2015 and 2016 at 0.88 per 1 000 (Figure 18).

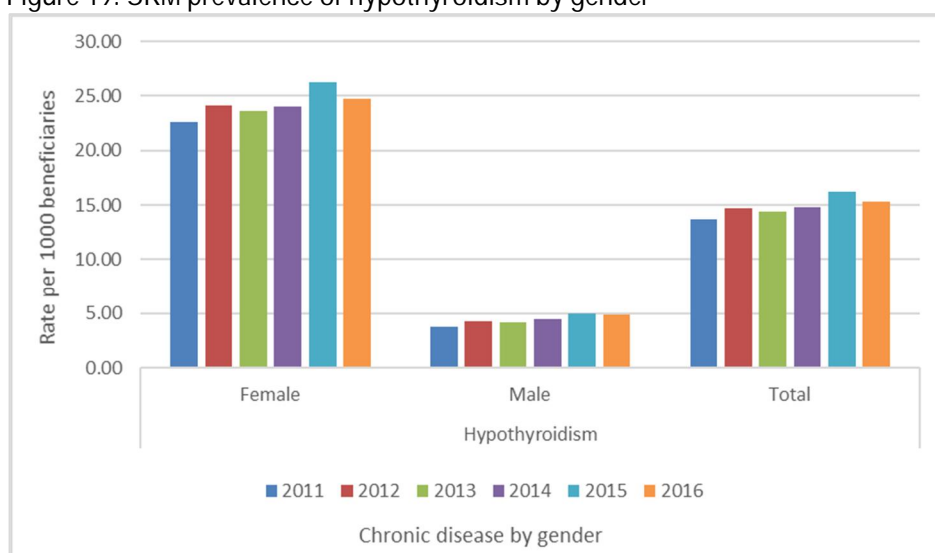
Figure 18: SRM prevalence of Parkinson's disease by gender



#### 1.20.15 Hypothyroidism

The prevalence of treated hypothyroidism (THD) has increased by 2.31% on average over the period 2011 to 2016. In 2016 15.33 per 1 000 beneficiaries were treated for THD which decreased from 16.24 per 1 000 treated in 2015. Many more females are treated for THD at 24.72 per 1 000 compared to male beneficiaries at 4.83 per 1 000, as highlighted by Figure 19.

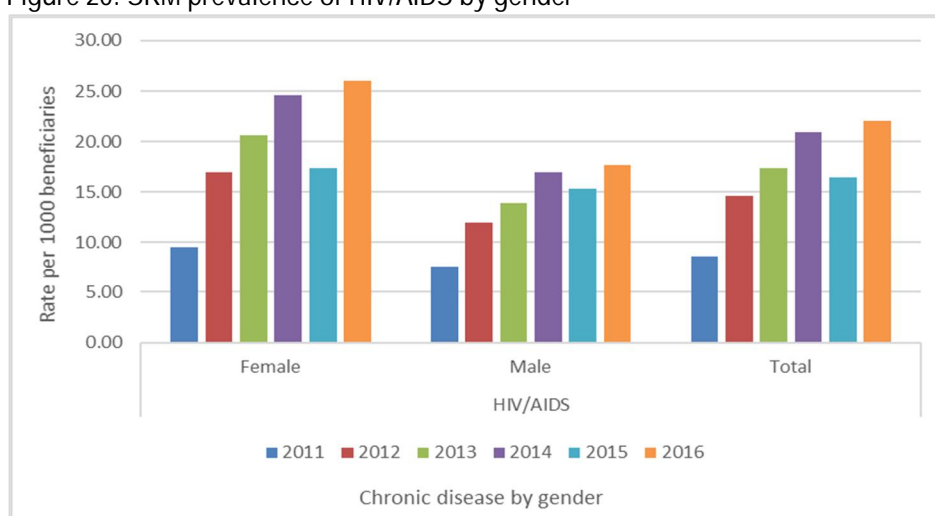
Figure 19: SRM prevalence of hypothyroidism by gender



#### 1.20.16 HIV/AIDS

The prevalence of treated HIV/AIDS increased by 34.66% between 2015 and 2016. This is due to the correction in the reporting of HIV/AIDS prevalence by certain medical schemes. The overall prevalence of treated HIV/AIDS increased on average by 20.71% over the period 2011 to 2016. Slightly more females were treated for HIV/AIDS at 26.02 per 1 000 compared to 17.68 per 1 000 male beneficiaries.

Figure 20: SRM prevalence of HIV/AIDS by gender

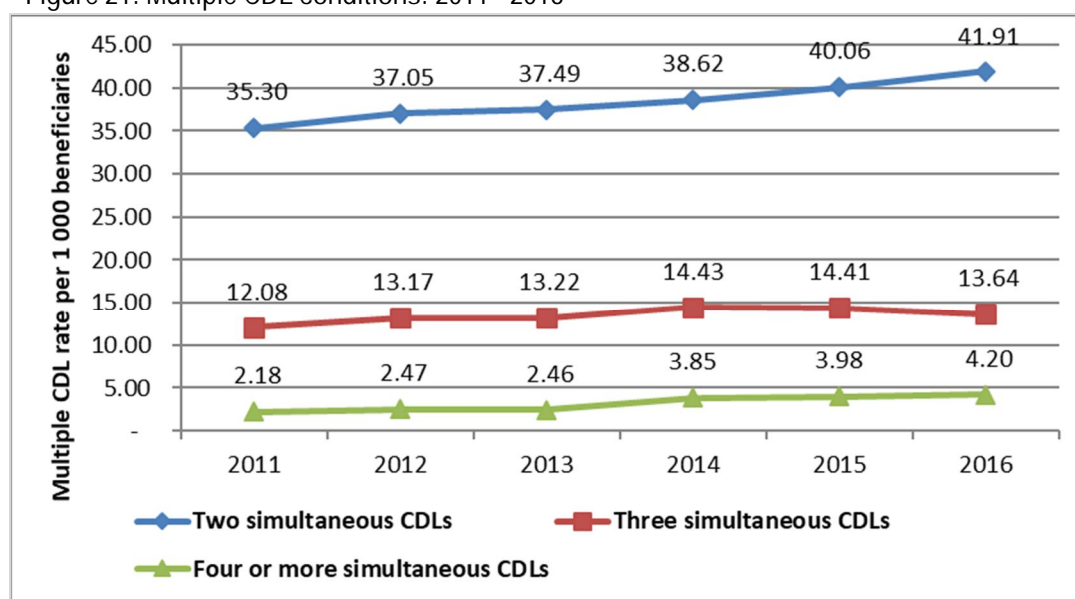


#### 1.21 Multiple CDL conditions: 2011 - 2016

In 2016 almost 42 in every 1 000 beneficiaries were treated for 2 simultaneous chronic conditions (CC2), just under 14 were treated for 3 simultaneous chronic conditions (CC3) and over 4 in every 1 000 beneficiaries were treated for four or more simultaneous chronic conditions (CC4). This relates to increases of 7.2% and

8% for CC2 and CC4, respectively. The slight decrease observed for CC3 is attributable to the exclusion of certain schemes data, due to unrealistic increases in the prevalence of CC3 reported.

Figure 21: Multiple CDL conditions: 2011 - 2016



## 1.22 Comparisons between SRM prevalence and general prevalence (a relaxed definition)<sup>3</sup>

This section gives a high-level comparison between the SRM prevalence rates and general prevalence rates (calculated using a more relaxed definition of prevalence).

Table 6 show the comparison between the SRM prevalence rates and the general prevalence rate. The results are further depicted in Figure 22. As expected, the general prevalence rates are higher than the SRM prevalence rates.

Table 6: Comparisons between SRM prevalence and general prevalence (relaxed definition)

CDL Code	SRM Prevalence			General prevalence (relaxed definition)			Difference between SRM and General prevalence	
	2015	2016	% change	2015	2016	% change	2015	2016
ADS	0.06	0.06	0.04	0.17	0.17	0.03	0.11	0.11
AST	17.05	16.02	-0.06	49.15	49.03	0.00	32.10	33.01
BCE	0.09	0.09	0.06	1.06	1.09	0.03	0.97	1.00
BMD	3.99	3.98	0.00	10.64	10.98	0.03	6.65	6.99
CMY	5.53	5.34	-0.03	4.69	5.94	0.27	-0.84	0.60
COP	1.35	1.31	-0.03	5.74	5.68	-0.01	4.39	4.36
CRF	0.40	0.58	0.45	4.50	4.68	0.04	4.10	4.10
CSD	0.21	0.23	0.05	0.77	0.80	0.04	0.55	0.57
DBI	0.02	0.03	0.13	0.37	0.26	-0.30	0.35	0.24
DM1	2.07	2.34	0.13	12.84	12.41	-0.03	10.77	10.07

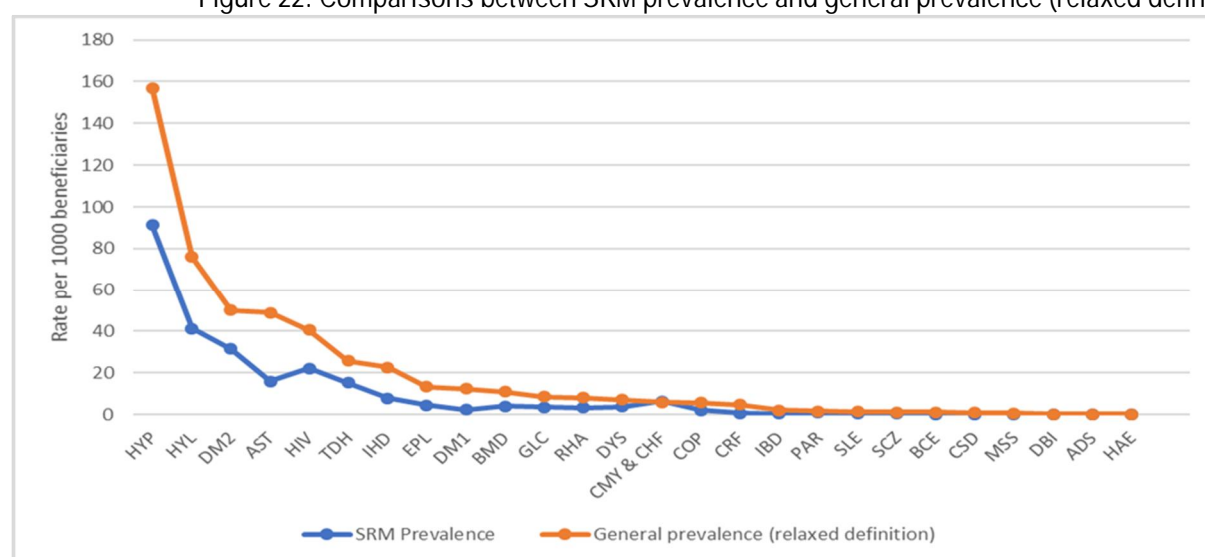
<sup>3</sup> Refer to Annexure A of this report for more detailed definition and results of general prevalence



CDL Code	SRM Prevalence			General prevalence (relaxed definition)			Difference between SRM and General prevalence	
	2015	2016	% change	2015	2016	% change	2015	2016
DM2	30.51	31.54	0.03	49.07	50.14	0.02	18.56	18.60
DYS	3.76	3.76	0.00	6.89	7.11	0.03	3.13	3.35
EPL	4.61	4.45	-0.03	13.07	13.33	0.02	8.46	8.88
GLC	3.45	3.45	0.00	8.18	8.51	0.04	4.73	5.07
HAE	0.02	0.02	0.06	0.07	0.08	0.15	0.05	0.06
HIV	12.47	22.08	0.77	38.97	40.54	0.04	26.50	18.45
HYL	35.36	41.22	0.17	71.99	75.87	0.05	36.62	34.65
HYP	95.21	91.33	-0.04	155.73	156.92	0.01	60.52	65.59
IBD	0.42	0.43	0.03	2.01	2.08	0.03	1.60	1.66
IHD	7.85	7.63	-0.03	22.97	22.60	-0.02	15.12	14.97
MSS	0.21	0.22	0.07	0.51	0.55	0.09	0.30	0.33
PAR	0.91	0.88	-0.03	1.49	1.55	0.04	0.58	0.66
RHA	3.39	3.34	-0.02	7.99	8.14	0.02	4.60	4.80
SCZ	0.50	0.48	-0.04	1.21	1.24	0.02	0.71	0.76
SLE	0.32	0.38	0.18	1.14	1.28	0.12	0.82	0.90
TDH	15.75	15.33	-0.03	24.88	25.84	0.04	9.13	10.51

\*\*\*2015 restated.

Figure 22: Comparisons between SRM prevalence and general prevalence (relaxed definition)



## Discussion

The upward trend in diagnosis and treatment of many conditions on the chronic disease list continued in 2016. The top 10 rankings of the prevalence of CDLs and HIV/AIDS according to prevalence rates did not change significantly between 2015 and 2016.

The top 10 ranked CDLs and HIV/AIDS (chronic conditions with the highest prevalent rates) are hypertension, hyperlipidaemia, diabetes mellitus 2, asthma, hypothyroidism, HIV/AIDS, coronary artery disease, epilepsy, cardiomyopathy and bipolar mood disorder. The CDLs listed as top 10 ranking CDLs had prevalence rates of at least 3 per 1 000 beneficiaries in 2015.

The reported decline in the prevalence of treated HIV/AIDS between 2014 and 2015 has been corrected by the affected medical schemes, evident by the 34.66% increase in prevalence of the condition between 2015 and 2016.

The upward trend in the number of medical scheme beneficiaries who were diagnosed and treated for multiple CDL conditions continued in 2016, excluding the slight decline of CC3 due to data issues. The increases in CC2 and CC4, might have a negative impact on the risk profiles of medical schemes. Whilst the upward trend in diagnosis and treatment of many chronic conditions on the CDL continued in 2016, this study is not yet in a position to isolate specific reasons for this increase in chronic diseases; the trend could still be generally attributed to improved data management systems of medical schemes and administrators, the deteriorating disease profile, increased beneficiary awareness of entitlements, and changes in care-seeking behaviour. The deterioration in risk profiles should be a concern for medical schemes; and schemes should ensure that value for money is attained from the managed care programmes. Schemes are encouraged to improve on the coordination of the provision of care for patients, including the improvement of the quality of process indicator data submitted through the Annual Statutory Return (ASR) which is used to calculate coverage ratios. It was found that coverage ratios for certain indicators were as low as 25% (HBA1c tests for beneficiaries registered on DM2 programmes).

## Annexure A (CDL conditions & HIV/AIDS prevalence: a more relaxed definition)

The first part (section 1 to section 5) of the report defined prevalence as diagnosed and treated prevalence as defined by the SRM process (this data was extracted from part A7 of the ASR system). Medical schemes use the rules set out in the *"Guidelines for the Identification of Beneficiaries with Risk Factors in Accordance with the Entry and Verification Criteria v10.1"* (Council for Medical Schemes, 2016) to identify each chronic disease case.

This section of the report (Annexure A) defines prevalence in a more relaxed manner without entirely being guided by the E&V criteria. Prevalence is defined as the count of beneficiaries who have had at-least one claim for a specified CDL condition during the year (this data is extracted from table C5 of the ASR system). This data was collected for the first time in 2015 and as a result the CMS will monitor the quality of the data as time progresses. A more detailed analysis of this data will be provided in the up-coming studies once enough data is available (to conduct data quality tests using trend). This annexure only provides summary tables of the data at a high level.

### 1.23 CDL and HIV/AIDS prevalence per scheme type

Table 7: Average prevalence per 1 000 beneficiaries for the 26 CDL conditions and HIV/AIDS

CDL Code	2016 Rank (2015)	Restricted			Open			Aggregated		
		2015	2016	% change	2015	2016	% change	2015	2016	% change
ADS	25 (25)	0.14	0.12	-0.17	0.19	0.22	0.14	0.17	0.17	0.03
AST	4 (3)	51.09	48.89	-0.04	47.64	49.14	0.03	49.15	49.03	0.00
BCE	21 (21)	1.62	1.73	0.07	0.61	0.59	-0.03	1.06	1.09	0.03
BMD	11 (11)	9.16	8.82	-0.04	11.81	12.66	0.07	10.64	10.98	0.03
CMY & CHF	8 (8)	16.00	17.93	0.12	12.12	12.43	0.03	13.83	14.84	0.07
COP	15 (15)	5.71	5.37	-0.06	5.75	5.91	0.03	5.74	5.68	-0.01

CDL Code	2016 Rank (2015)	Restricted			Open			Aggregated		
		2015	2016	% change	2015	2016	% change	2015	2016	% change
CRF	16 (16)	5.47	5.56	0.02	3.74	3.99	0.07	4.50	4.68	0.04
CSD	22 (22)	0.57	0.56	0.00	0.93	0.98	0.06	0.77	0.80	0.04
DBI	24 (24)	0.50	0.27	-0.46	0.27	0.25	-0.06	0.37	0.26	-0.30
DM1	10 (10)	14.19	12.80	-0.10	11.78	12.11	0.03	12.84	12.41	-0.03
DM2	3 (4)	57.30	56.60	-0.01	42.61	45.12	0.06	49.07	50.14	0.02
DYS	14 (14)	5.86	5.70	-0.03	7.69	8.21	0.07	6.89	7.11	0.03
EPL	9 (9)	13.32	12.80	-0.04	12.87	13.75	0.07	13.07	13.33	0.02
GLC	12 (12)	7.93	8.00	0.01	8.37	8.91	0.06	8.18	8.51	0.04
HAE	26 (26)	0.05	0.05	0.13	0.09	0.10	0.16	0.07	0.08	0.15
HIV	5 (5)	56.94	59.59	0.05	24.85	25.71	0.03	38.97	40.54	0.04
HYL	2 (2)	68.55	70.86	0.03	74.69	79.77	0.07	71.99	75.87	0.05
HYP	1 (1)	163.80	161.33	-0.02	149.39	153.49	0.03	155.73	156.92	0.01
IBD	17 (17)	1.87	1.85	-0.01	2.12	2.26	0.06	2.01	2.08	0.03
IHD	7 (7)	20.82	19.14	-0.08	24.66	25.29	0.03	22.97	22.60	-0.02
MSS	23 (23)	0.37	0.36	-0.02	0.61	0.70	0.14	0.51	0.55	0.09
PAR	18 (18)	1.44	1.42	-0.01	1.52	1.64	0.08	1.49	1.55	0.04
RHA	13 (13)	8.98	8.99	0.00	7.22	7.48	0.04	7.99	8.14	0.02
SCZ	20 (19)	1.34	1.38	0.03	1.11	1.12	0.01	1.21	1.24	0.02
SLE	19 (20)	1.01	1.09	0.09	1.25	1.43	0.14	1.14	1.28	0.12
TDH	6 (6)	23.05	22.84	-0.01	26.32	28.17	0.07	24.88	25.84	0.04

\*\* 2015 restated. Percentage changes may not add-up due to rounding. \*\* Note: that the table above is not SRM prevalence.

## 1.24 CDL and HIV/AIDS prevalence by Gender

Table 8: Average prevalence per 1 000 beneficiaries for the 26 CDL conditions and HIV/AIDS by gender

CDL Code	2016 Rank (2015)	Female			Male			Total		
		2015	2016	% change	2015	2016	% change	2015	2016	% change
ADS	25 (25)	0.18	0.21	13.2%	0.15	0.14	-11.3%	0.17	0.17	2.7%
AST	4 (3)	50.77	50.70	-0.1%	47.36	47.16	-0.4%	49.15	49.03	-0.3%
BCE	21 (21)	1.11	1.18	6.4%	1.00	0.99	-0.7%	1.06	1.09	3.3%
BMD	11 (11)	13.14	13.57	3.2%	7.87	8.08	2.7%	10.64	10.98	3.1%
CMY	8 (8)	13.76	14.55	5.8%	13.90	15.16	9.0%	13.83	14.84	7.3%
COP	15 (15)	5.09	5.12	0.5%	6.45	6.30	-2.3%	5.74	5.68	-1.0%
CRF	16 (16)	4.46	4.63	3.8%	4.54	4.73	4.2%	4.50	4.68	4.0%
CSD	22 (22)	0.84	0.87	4.1%	0.69	0.71	3.7%	0.77	0.80	4.0%
DBI	24 (24)	0.37	0.25	-32.6%	0.37	0.28	-26.1%	0.37	0.26	-29.5%
DM1	10 (10)	11.90	11.61	-2.4%	13.88	13.30	-4.2%	12.84	12.41	-3.3%
DM2	3 (4)	45.47	46.50	2.3%	53.07	54.22	2.2%	49.07	50.14	2.2%
DYS	14 (14)	6.22	6.36	2.2%	7.62	7.95	4.3%	6.89	7.11	3.2%
EPL	9 (9)	13.01	13.25	1.9%	13.13	13.42	2.2%	13.07	13.33	2.0%
GLC	12 (12)	8.62	8.96	4.0%	7.69	8.01	4.2%	8.18	8.51	4.1%
HAE	26 (26)	0.02	0.02	-14.2%	0.13	0.15	20.0%	0.07	0.08	15.0%
HIV	5 (5)	45.80	47.89	4.6%	31.39	32.31	2.9%	38.97	40.54	4.0%
HYL	2 (2)	63.79	67.99	6.6%	81.09	84.69	4.4%	71.99	75.87	5.4%
HYP	1 (1)	161.83	163.03	0.7%	148.96	150.08	0.8%	155.73	156.92	0.8%

CDL Code	2016 Rank (2015)	Female			Male			Total		
		2015	2016	% change	2015	2016	% change	2015	2016	% change
IBD	17 (17)	2.13	2.26	5.8%	1.88	1.89	0.4%	2.01	2.08	3.5%
IHD	7 (7)	17.28	16.94	-2.0%	29.29	28.93	-1.2%	22.97	22.60	-1.6%
MSS	23 (23)	0.72	0.77	7.7%	0.27	0.30	12.3%	0.51	0.55	9.0%
PAR	18 (18)	1.45	1.51	4.5%	1.53	1.59	3.5%	1.49	1.55	4.0%
RHA	13 (13)	11.14	11.41	2.4%	4.49	4.48	-0.3%	7.99	8.14	1.8%
SCZ	20 (19)	1.13	1.14	1.4%	1.31	1.34	2.3%	1.21	1.24	1.8%
SLE	19 (20)	1.92	2.14	11.1%	0.27	0.32	17.7%	1.14	1.28	12.2%
TDH	6 (6)	39.82	41.21	3.5%	8.30	8.64	4.1%	24.88	25.84	3.8%

*\*\* 2015 restated. Percentage changes may not add-up due to rounding. \*\* Note: that the table above is not SRM prevalence.*

## 1.25 CDL and HIV/AIDS prevalence by Age

Table 9: Average prevalence per 1 000 beneficiaries for the 26 CDL conditions and HIV/AIDS by age

CDL	1-4 years	5-9 years	10-14 years	15-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40-44 years	45-49 years	50-54 years	55-59 years	60-64 years	65-69 years	70-74 years	75-79 years	80-84 years	85 years+
ADS	0.01	0.04	0.17	0.06	0.10	0.10	0.10	0.16	0.18	0.23	0.27	0.33	0.39	0.49	0.46	0.57	0.55	0.48
AST	67.08	71.93	61.19	48.14	42.76	29.38	30.13	33.53	38.23	42.36	46.77	53.33	63.44	73.17	81.45	87.41	89.12	81.53
BCE	0.59	0.34	0.36	0.61	0.66	0.55	0.83	1.06	1.46	1.57	1.56	1.60	1.85	2.59	3.08	3.82	3.88	3.30
BMD	0.07	0.51	2.25	9.91	21.44	15.46	15.22	15.52	17.09	16.28	14.60	13.94	13.18	11.67	10.70	8.38	7.74	6.22
CHF	0.30	0.15	0.19	0.45	0.62	0.98	1.50	2.39	4.01	6.57	10.57	16.78	25.82	36.50	53.25	76.78	107.23	159.65
CMY	0.16	0.12	0.12	0.34	0.44	0.71	1.27	2.13	4.06	7.00	10.54	13.41	17.91	23.91	30.80	39.55	49.99	61.49
COP	0.78	0.49	0.34	0.36	0.48	0.64	0.84	1.16	1.97	3.22	6.10	10.90	18.43	28.92	41.86	51.07	57.04	54.29
CRF	0.32	0.38	0.53	1.63	4.55	3.04	2.89	3.86	4.33	6.05	8.08	9.35	10.68	13.09	16.18	18.97	21.14	25.24
CSD	0.12	0.08	0.12	0.41	0.97	0.78	0.83	0.88	1.12	1.08	1.11	1.35	1.63	1.72	1.92	1.69	1.61	1.42
DBI	0.03	0.04	0.06	0.10	0.13	0.09	0.13	0.21	0.33	0.41	0.64	0.70	0.74	0.64	0.63	0.60	0.43	0.30
DM1	0.54	1.68	5.44	7.17	8.13	6.14	6.83	8.36	11.63	16.91	24.39	30.18	35.37	36.57	36.20	33.81	29.19	20.82
DM2	0.50	0.68	1.45	3.60	6.40	8.88	15.79	28.38	51.20	81.95	119.68	149.62	172.40	176.01	177.91	176.61	161.12	130.92
DYS	0.09	0.20	0.33	0.98	1.14	1.01	1.20	1.64	2.41	3.75	5.79	10.07	18.70	32.45	52.04	73.71	96.75	115.32
EPL	9.66	11.54	11.46	15.10	18.07	11.05	10.09	10.58	12.56	13.19	14.42	15.87	18.28	21.27	24.21	28.54	31.13	32.33
GLC	0.20	0.41	0.71	1.26	1.72	1.61	2.06	3.05	4.54	7.11	11.09	16.64	26.22	38.87	49.67	63.39	75.52	97.46
HAE	0.05	0.21	0.21	0.07	0.10	0.05	0.04	0.06	0.05	0.03	0.05	0.05	0.06	0.05	0.03	0.05	0.03	0.02
HIV	2.81	5.99	12.90	12.78	17.24	41.42	70.57	95.96	97.87	83.72	62.39	40.38	20.20	8.65	4.00	2.32	1.01	0.52
HYL	0.12	0.31	0.85	2.32	5.88	9.42	16.84	31.68	58.08	94.01	142.27	201.64	278.36	341.04	386.36	407.74	408.63	367.51
HYP	1.27	1.21	1.95	6.37	15.77	30.85	58.22	98.45	160.21	237.57	328.59	411.47	498.51	561.57	625.85	684.85	735.97	806.67
IBD	0.39	0.32	0.46	0.98	1.80	2.09	2.28	2.51	2.79	2.76	2.86	3.28	4.02	4.58	5.04	5.05	4.96	4.62
IHD	0.15	0.13	0.33	1.31	2.35	3.36	4.94	7.58	12.90	20.48	32.49	49.34	75.45	105.75	137.63	165.84	189.59	205.82
MSS	0.01	0.02	0.05	0.18	0.49	0.53	0.69	0.78	0.98	0.89	0.97	1.04	0.94	1.00	0.73	0.64	0.74	0.20
PAR	0.01	0.01	0.02	0.03	0.14	0.06	0.07	0.11	0.18	0.42	0.78	1.61	3.56	7.21	13.62	20.74	27.87	30.19
RHA	0.24	0.32	1.00	2.21	2.44	2.56	3.37	5.20	8.06	11.45	15.92	20.74	24.89	29.09	31.23	32.98	31.69	26.56
SCZ	0.02	0.05	0.16	1.06	2.73	1.46	1.29	1.34	1.41	1.63	1.77	1.82	1.91	2.27	2.38	2.45	2.39	2.72
SLE	0.01	0.04	0.15	0.66	1.32	1.59	1.20	1.50	1.95	2.07	2.16	2.44	2.55	2.67	2.37	1.66	1.36	0.60
TDH	0.28	0.47	1.06	2.87	6.67	7.85	10.54	14.89	22.63	30.86	42.17	58.89	83.01	105.87	121.31	132.63	146.38	165.31

\*\* Note the age-band "under 1" is not populated with CDL / HIV information. All beneficiaries "Under 1" are included in the "Non CDL" category.

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