

Ambulatory Sensitive Hospitalisations in Counties Manukau Health 2020 update

December 2021

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Key points

- The total number of hospitalisation in Counties Manukau (CM) Health increased on average by 1.2% per year between 2010 to 2019. However, the proportion of ambulatory sensitive hospitalisations (ASH) of total hospitalisations decreased over this period from 28% to 25%.
- The number of ASH have remained steady over the last ten years but decreasing trends for age-standardised rates show good improvements.
- Overall, the rate of ASH by ethnicity is trending downwards for all ethnicities. Specifically, Pacific population has the highest rate of ASH, followed by Maaori. Important disparities between Pacific, Maaori and European/Other and Asian are evident with Maaori and Pacific experiencing 49% and 55% excess ASH compared to European/Other in 2020, respectively.
- Most of the respiratory conditions are trending downwards, worryingly, the rates for stroke, congestive heart failure, ischemic heart disease and hypertensive disease are on the rise.
- European/Other ethnic groups recorded the highest number of ICD classified total hospitalisations in CM Health. However, the age-standardised rates show similar disparities as ASH with Pacific leading the rates of ICD classified total hospitalisations, closely followed by Maaori and significantly higher than European/Other and Asian rates.

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Introduction

ASH refers to an admission for a condition that may have been (potentially) prevented through prophylactic or therapeutic interventions deliverable in the primary care setting.¹

ASH is a system level measure and is often used as a proxy measure for access to and quality of primary care. At a community level, high admission rates may indicate systemic difficulties in accessing care in a timely fashion, poor care coordination or care continuity or structural constraints such as limited supply of primary care workers. ASH rates and admissions are also determined by supply-side factors such as hospital size (emergency departments) and admission policies, and on the demand-side by health literacy and overall social determinants of health. However, not all hospitalisations would be avoidable, justifying the deliberate use of the term 'sensitive'. Hence, while ASH classification is intended to be broadly representative of hospitalisations that could be prevented by access to primary care, the list is not exhaustive and the extent to which this is actually possible is hard to quantify.¹ Moreover, many 'unplanned' admissions are part of the standard escalation of care in the acute sense by the primary care clinicians and are not 'avoidable' given the current health service resources, and the psycho-social circumstances of patients and families. For example a person with an acute exacerbation of asthma may have followed the correct treatment escalation protocols throughout, and made good use of their primary care provider, but still require hospital-level care.

In this context, ASH by condition and population subgroups can help to identify trends over time for improvement or emerging problem areas and by extension identify priorities. This may assist CM Health in planning and help direct its resources to target the most affected groups to reduce disparities.

The purpose of this report is to update ASH figures for CM Health adults (aged 15 years and above) and address the level and variation within the CM Health in a subset of hospitalisations for conditions that may be amenable to timely and effective treatment in primary care setting. In addition, a comparison with other northern region District Health Boards (DHBs) is provided to note any differences or potential learnings.

The trends described in this report should be interpreted with caution given 2020 was an unusual year, with New Zealand responses to the COVID-19 pandemic including border closures and other infection prevention measures, which have wider benefits and harms beyond COVID-19.

¹ Jackson G, Tobias M. *Potentially avoidable hospitalisations in New Zealand, 1989-98*. Australian and New Zealand journal of public health, 25, no. 3 (2001), 212-221.

Methods

In this analysis, the information on ASH events was drawn from the National Minimum Dataset (NMDS) from the Ministry of Health. NMDS is New Zealand's national hospital discharge data collection and contains information submitted by public hospitals. Private hospitalisations for publicly funded events are also included. NMDS includes information on primary and additional diagnoses, procedures, external causes of injury, length of stay and demographic information such as age, ethnicity and area of residence.²

In New Zealand, casemix underpins the NMDS collection described above. Casemix refers to the type or mix of people treated by a hospital, providing a consistent methodology for classifying or sorting patients into groups based on the health condition or type of procedure. The casemix system used in New Zealand public hospitals is Diagnostic Related Groups (DRGs); a system that groups routinely collected data on patient variables, such as demographics and therapeutic characteristics.³

Data drawn for this report is predominantly focussed on CM Health, age and admissions only for those aged 15 years and above, going up to 85 years and above. This is different from 15 - 74 years old as per Ministry of Health's definition of ASH being applicable to patients in this age range. Each condition is classified using the primary diagnosis field, based on the International Statistical Classification and Related Health Problems, Tenth Revision, Australia Modification (ICD-10AM) codes as per Ministry of Health criteria (Appendix A). Acute admissions with a length of stay >3 hours are included in this report, consistent with the ASH definition.

The age-standardised rates indicate the rate per 1,000 people, directly standardised to the age structure of the 2018 estimated resident population sourced from Stats NZ. Age standardisation adjusts the rates of ASH to account for changes in the number of people and age structure in a population over time. It allows the comparison of rates from one year to another and by ethnicities. This is relevant considering the national target is equitable ASH rates for Maaori, Pacific and other New Zealanders.

Population of Interest:

The population of interest in this report is individuals receiving ambulatory care in CM Health (Middlemore) aged 15 years and above. This is a CM Health population 'view' based on District Health Board of domicile rather than a hospital 'view'. This includes patients who fall under CM Health but presented at another hospital in New Zealand such as Auckland City Hospital (under Auckland District Health Board). Furthermore, this report is based on the hospitalisations, i.e. the descriptions are based on numbers, rates and percentage of admissions in 2010 to 2020. Therefore, one person could be counted more than once, if they had more than one admission over this period.

² Elizabeth C., Jackson C. *The Health status of children and young people in the Northern DHBs*. Paediatric Society of New Zealand, 2011

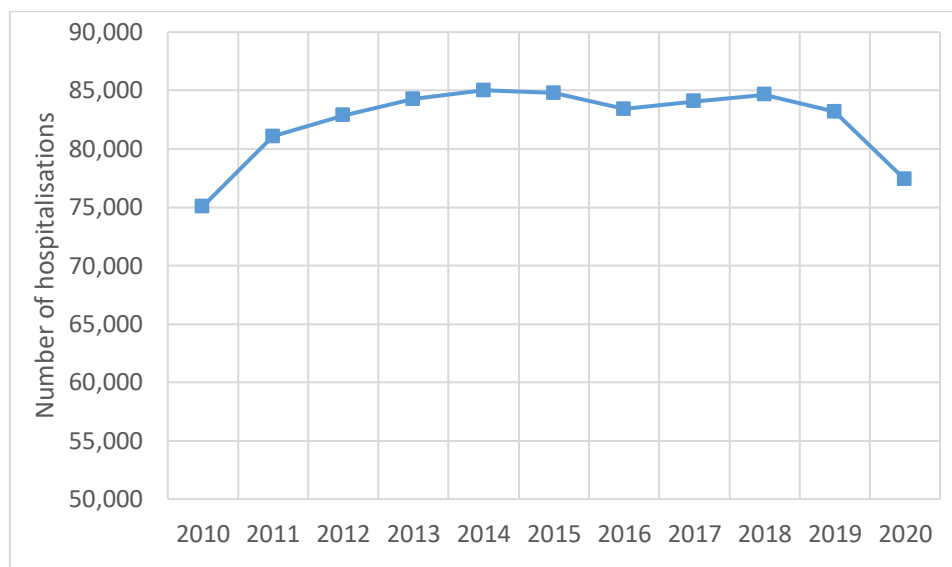
³ Rains M. *The New Zealand Casemix System - An overview*. 2015.

Results

Total Hospitalisations

In CM Health, the total number of hospitalisations, including ASH and non-ASH increased by 900 (1.2% per year on average) hospitalisations per year on average between 2010 to 2019. In 2020, the number of hospitalisations declined by seven percent from 2019. Importantly, the increase in hospitalisations predominantly occurred between 2010 and 2014 and plateaued before decreasing. Figure 1 shows the small but important changes in the total number of hospitalisations in CM Health. Compared to the other northern DHBs, CM Health has the second highest number of hospitalisations after Waitematā each year (Appendix B).

Figure 1 Total number of hospitalisations for Adults (15 years old and over), CMDHB, 2010 to 2020.



Data source: NMDS, Ministry of Health.

Table 1 shows the total number of hospitalisations by ethnicity in CM Health, the totals for Maaori, Pacific and Asian increased per year on average by 2%, 3% and 6%, respectively, between 2010 and 2019. This is compared to the other ethnic group, experiencing a consistent decline (-1% change on average each year) from 2010 to 2019. All ethnic groups experienced a decrease in the number of hospitalisations in 2020 from 2019. Of note is the decline in the number of hospitalisations in the 'European/Other' ethnic group over time, with the proportion of cases for Maaori and Pacific climbing. As per Ministry of Health's age criteria for ASH (adults - 15-74 years old), total hospitalisation data cuts are provided in Appendix C.

Table 1 The total number of hospitalisations for adults (15+ years old) by ethnicity, CMDHB, 2010 to 2020.

	Maaori	Pacific	Asian	European/ Other	Total	% Maaori and Pacific
2010	11,728	16,572	7,882	38,898	75,080	38%
2011	12,395	17,660	8,747	42,268	81,070	37%
2012	12,711	18,503	9,276	42,374	82,864	38%
2013	12,934	18,338	9,826	43,161	84,259	37%
2014	12,849	18,715	10,388	43,072	85,024	37%
2015	12,943	18,909	10,541	42,394	84,787	38%
2016	12,996	19,434	10,904	40,090	83,424	39%
2017	13,342	20,019	11,363	39,343	84,067	40%
2018	13,679	20,808	12,043	38,099	84,629	41%
2019	13,730	21,161	12,798	35,501	83,190	42%
2020	13,051	19,424	12,086	32,814	77,375	42%
2010-2019	14%	24%	54%	-11%	7%	
pa	1.4%	2.2%	4.1%	-1.3%	0.7%	

Data source: NMDS, Ministry of Health

Casemix and non-Casemix

Table 2 shows the total number of hospitalisations separated by casemix or non-casemix, including ASH and non-ASH. The number of casemix hospitalisations increased from 66,163 in 2010 to 74,220 in 2020. Although the trend for casemix hospitalisations was positive, 2020 experienced a -3.7% change (decrease) from 2019. Between 2013 to 2020, non-casemix hospitalisations on average decreased by -16% each year. Other notable changes include, the significant drop (-50% change) in 2020 from 2019 for non-casemix hospitalisations. Appendix C shows the data cuts for casemix and non-casemix hospitalisations for 15-74 year olds.

Table 2 The number of hospitalisations by casemix and non-casemix for Adults (15+ years old), CM Health, 2010 to 2020.

	Casemix	Non-casemix	Total	% casemix
2010	66,163	8,917	75,080	88%
2011	69,012	12,058	81,070	85%
2012	69,965	12,899	82,864	84%
2013	71,544	12,715	84,259	85%
2014	72,793	12,231	85,024	86%
2015	73,811	10,976	84,787	87%
2016	75,332	8,092	83,424	90%
2017	75,936	8,131	84,067	90%
2018	76,513	8,116	84,629	90%
2019	76,856	6,334	83,190	92%
2020	74,220	3,155	77,375	96%

Data source: NMDS, Ministry of Health.

Table 3 shows the number of casemix hospitalisations stratified by ASH and non-ASH in CM Health, 2010 to 2020. From 2010 to 2019, the number of ASH hospitalisations remained steady with an average percentage change of less than 1% from the previous year. In contrast the number of non-ASH increased from 47,640 in 2010 to 57,367 in 2019, an average ~2% increase per year. Appendix C shows the ASH trend as per Ministry of Health age criteria for adults.

Table 3 Casemix hospitalisation stratified by ASH and non-ASH for Adults (15+ years old), CMDHB, 2010 to 2020

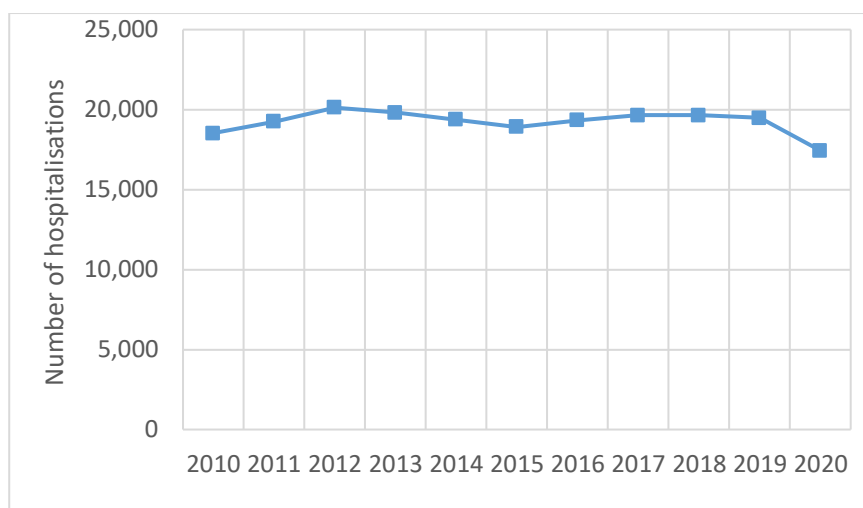
	ASH	non-ASH	Total	% ASH
2010	18,523	47,640	66,163	28%
2011	19,257	49,755	69,012	28%
2012	20,120	49,845	69,965	29%
2013	19,811	51,733	71,544	28%
2014	19,366	53,427	72,793	27%
2015	18,910	54,901	73,811	26%
2016	19,342	55,990	75,332	26%
2017	19,639	56,297	75,936	26%
2018	19,651	56,862	76,513	26%
2019	19,489	57,367	76,856	25%
2020	17,442	56,778	74,220	24%
2010-2019	2%	21%	15%	
pa	0.20%	1.90%	1.50%	

Data source: NMDS, Ministry of Health

Ambulatory Sensitive Hospitalisations

Figure 2 shows the number of ASH in CM Health increased by 110 hospitalisation on average per year from 2010 to 2019 before decreasing by 2,000 hospitalisations (-11% change from the previous year) in 2020 from 2019. In regards to other northern DHBs, the trends are similar to total hospitalisations described above. Waitematā has the highest number of hospitalisations considered avoidable, followed by CM Health, Auckland and lastly, Northland (Appendix D). While the numbers remained steady in CM Health and Auckland, Waitematā and Northland recorded increasing numbers overall. However, rates provide more insight as the numbers may be due to variation in population demography.

Figure 2 Number of ASH for adults (15+ years old) in CM Health, 2010 to 2020



Data source: NMDS, Ministry of Health

Table 4 shows the number of ASH falling for columns with green dots while the red dots represent an increase in the numbers from the previous year. The totals for Maaori, Pacific and Asian per year on average increased by 1.3%, 1.7% and 3.2%, respectively, from 2010 to 2019. This is compared to European/Other ethnic groups experiencing an average decrease of -1.2% per year over the same period. The increase in hospitalisations for Asian adults is attributable to increasing population as depicted by the decline in rates in Figure 4.

Table 4 Number of ASH for adults (15+ years old) by ethnicity and percentage change from the previous year, CM Health, 2010 to 2020

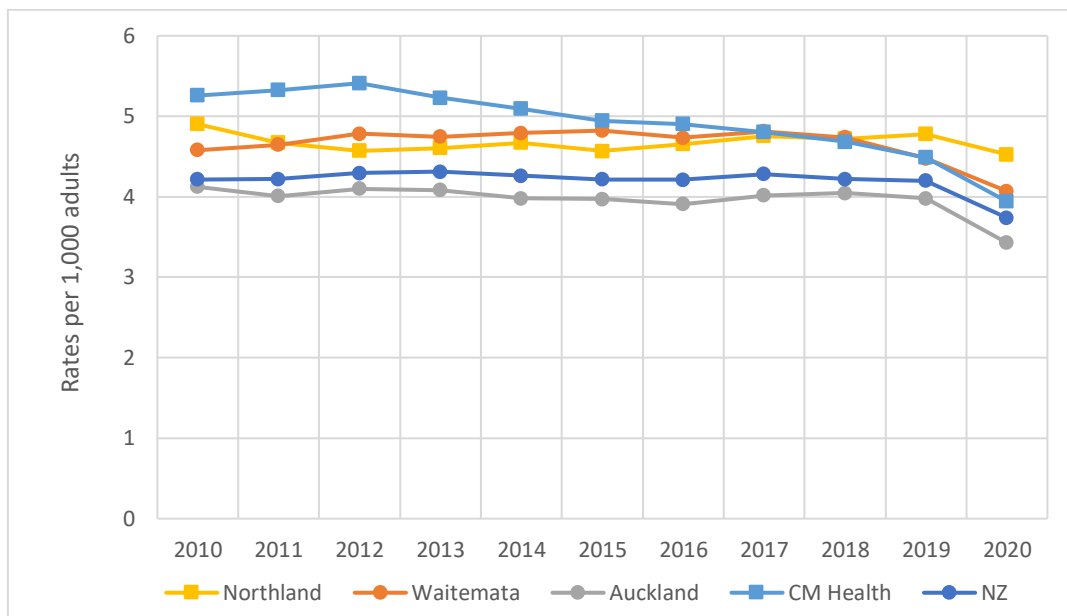
Year	Maaori		Pacific		Asian		European/Other	
	Number	% Change year to year	Number	% Difference	Number	% Difference	Number	% Difference
2010	3,350		5,243		1,930		8,000	
2011	3,484	● 4%	5,519	● 5%	2,002	● 3.7%	8,252	● 3.2%
2012	3,831	● 10%	5,875	● 6%	2,105	● 5.1%	8,311	● 0.7%
2013	3,629	● -5%	5,745	● -2%	2,162	● 2.7%	8,275	● -0.4%
2014	3,391	● -7%	5,574	● -3%	2,196	● 1.6%	8,205	● -0.9%
2015	3,464	● 2%	5,370	● -4%	2,172	● -1.1%	7,904	● -3.7%
2016	3,510	● 1%	5,813	● 8%	2,356	● 8.5%	7,663	● -3.1%
2017	3,593	● 2%	5,846	● 1%	2,405	● 2.1%	7,795	● 1.7%
2018	3,746	● 4%	6,146	● 5%	2,479	● 3.1%	7,280	● -6.6%
2019	3,735	● 0%	6,075	● -1%	2,547	● 2.7%	7,132	● -2.0%
2020	3,208	● -14%	5,298	● -13%	2,410	● -5.4%	6,526	● -8.5%

Data Source: NMDS, Ministry of Health. Columns with green dots show the number of ASH unchanged or falling while red dots represent an increase in admissions.

Age-standardised ASH rates

Although the number of ASH in CM Health have remained unchanged over the last ten years, figure 3 shows a decline in the age-standardised rates from 5 hospitalisations per 1,000 adults in 2010 to 4.3 per 1,000 in 2019 and 3.8 in 2020. This represents an average per year change of -1.8 % from 2010 to 2019 and -12.3% in 2020 from the previous year (Table 5). Table 5 reinforces the downward trajectory of ASH indicated by constant negative percentage changes in CM Health since 2013. Historically, CM Health had the highest rate of ASH among adults across the northern region DHBs, but it experienced the largest decline of 1.3 per 1,000 from 2010 to 2020. The current rate is closely aligned with Waitematā, above Auckland and NZ total and below Northland (table included in Appendix E).

Figure 3 Age-standardised rate of ASH per 1,000 adults (15+ years old) in the northern region DHBs,, 2010 to 2020



Data source: NMDS, Ministry of Health.

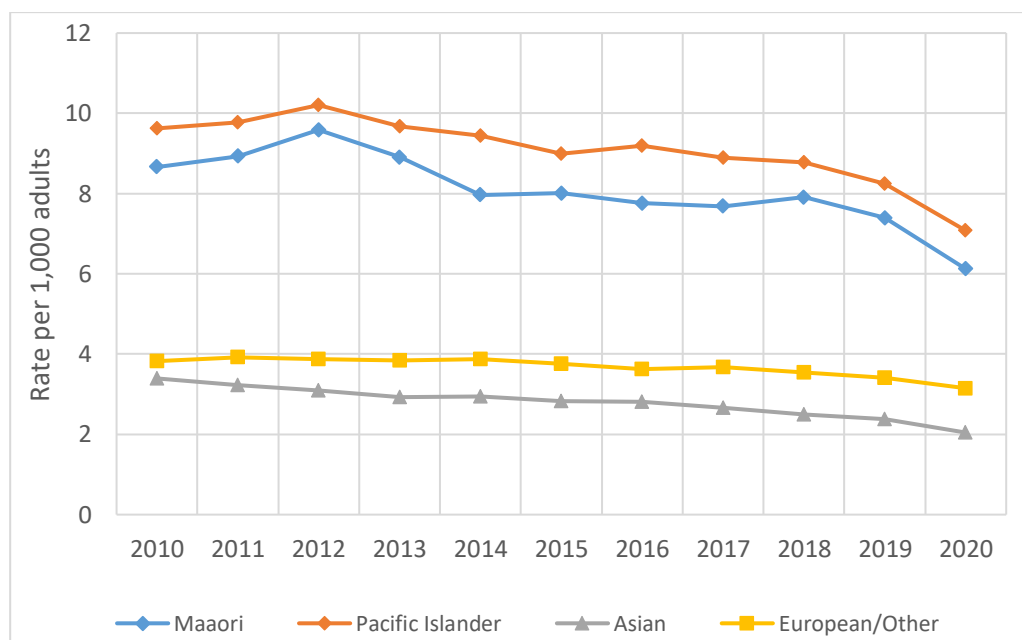
Table 5 The percentage change in rates from the previous year for adults (15+ years old) in the Northern DHBs, 2010-2020

	Northland	Waitemata	Auckland	CM Health
2010				
2011	● -4.6%	● 1.4%	● -3.4%	● 1.1%
2012	● -2.0%	● 2.6%	● 2.4%	● 1.2%
2013	● -0.3%	● -0.7%	● -0.4%	● -3.5%
2014	● 1.7%	● 0.5%	● -3.3%	● -1.8%
2015	● -4.4%	● -0.1%	● -0.1%	● -3.4%
2016	● 2.9%	● -3.2%	● -1.0%	● -1.3%
2017	● 2.6%	● 1.8%	● 3.0%	● -1.0%
2018	● -1.4%	● -0.6%	● 0.9%	● -2.5%
2019	● 1.8%	● -6.2%	● -2.2%	● -4.5%
2020	● -6.2%	● -9.4%	● -14.4%	● -12.7%

Data Source: NMDS, Ministry of Health. Columns with green dots show the number of ASH unchanged or falling while red dots represent an increase in admissions.

Figure 4 shows the overall rate of ASH in CM Health by ethnicity is trending downwards. However, disparities between Maaori, Pacific and European/Other and Asian are evident. The Pacific population has the highest rate of ASH for adults, decreasing from 9.6 to 8.2 hospitalisations per 1,000 from 2010 to 2019. On average the rate for Pacific population decreased by -1.6% per year over this period. Similarly, the rate of ASH for Maaori decreased from 8.6 to 7.4 hospitalisations per 1,000 adults from 2010 to 2019, average per year change of -1.6% over this period. The rate of ASH for European/Other decreased from 3.8 to 3.4 per 1,000 (-1.3% per year change on average) from 2010 to 2019. Lastly, the rates for Asian population decreased from 3.4 to 2.4 per 1,000 (-3.9% per year change on average) from 2010 to 2019. All ethnic groups recorded a significant decrease in 2020 from the previous year.

Figure 4 Rate of ASH in adults (15+ years old) by ethnicity in CM Health, 2010 to 2020



Source: NMDS, Ministry of Health.

Concentrating on the ethnic disparities in CM Health, compared to the European/Other the rate of ASH for Maaori and Pacific is 3 and 3.9 per 1,000 higher in 2020, respectively. Notably, the gaps in rates are higher by 0.2 and 0.4 per 1,000 for Maaori and Pacific, respectively, compared to national level differences. These trends are reversed for Asian comparisons and similar trends exist for previous years.

Table 6 Rate of ASH by ethnicity in CM Health and New Zealand in 2020

	Maaori	Pacific	Asian	European/Other	Total	M:E/O	P:E/O	A:E/O
CM	6.1	7.1	2.0	3.1	3.8	3.0	3.9	-1.1
NZ	6.0	6.8	2.1	3.2	3.5	2.8	3.6	-1.1
Difference	0.1	0.3	-0.0	-0.1	0.2	0.2	0.46	0.1

Source: NMDS, Ministry of Health.

Table 7 presents the proportion of hospitalisations that could potentially be reduced if Maaori had the same rate of hospitalisation in each age group as “European/Other” ethnicities (reference group), their rate of hospitalisations would decrease by 49%. Similarly, the rate of ASH for Pacific individuals domiciled in CM Health would decrease by 55% with “European/Other” ethnicity as the comparator. Although the overall rates are decreasing for all ethnicities (as shown in Table 5), relative differences between Maaori and Pacific and Other ethnic groups ASH rates have remained the same overtime.

Table 7 Potential reduction (attributable fraction) in ASH for adults (15+ years old) in CM Health, 2010-2020

	Age-std rate per 1000 population by ethnicity				Excess compared to Euro/Other	
	Maaori	Pacific	Asian	European/Other	Maaori	Pacific
2010	8.7	9.6	3.4	3.8	55%	60%
2011	8.9	9.8	3.2	3.9	56%	60%
2012	9.6	10.2	3.1	3.9	60%	62%
2013	8.9	9.7	2.9	3.8	57%	60%
2014	8.0	9.4	2.9	3.9	51%	59%
2015	8.0	9.0	2.8	3.8	53%	58%
2016	7.8	9.2	2.8	3.6	53%	60%
2017	7.7	8.9	2.7	3.7	52%	59%
2018	7.9	8.8	2.5	3.5	55%	60%
2019	7.4	8.2	2.4	3.4	54%	59%
2020	6.1	7.1	2.0	3.1	49%	55%

Source: NMDS, Ministry of Health.

Table 8 shows the rate of ASH in CM Health is as expected positively associated with age. As the age increases (age-group), the rate per 1,000 increases. Specifically, on average the rate of ASH is 2 and 5.5 times higher for 45-64 and 65+ year olds, respectively, compared to 15-44 year olds. The total rate is influenced by higher rates amongst 65+ year old and lower rates amongst 14-44 year olds, therefore, the adult rate of ASH is closely aligned with 45-64 year olds. There are good reductions for 45-64 and 65+ year olds from 2010-2019, with again the significant drop to 2020. However, the rates for the three age-groups are higher in CM Health compared to New Zealand total rates. Additionally, the gap in these three age-groups between CM Health and New Zealand is getting smaller and comparable for 15-44 year olds (Appendix F).

Table 8 Age-standardised rate of ASH per 1,000 adults by age, CM Health, 2010 to 2020

	15-44	45-64	65+	Total (15+)
2010	2.4	4.9	13.5	5.3
2011	2.4	5.0	13.7	5.3
2012	2.5	5.1	13.9	5.4
2013	2.4	5.0	13.4	5.2
2014	2.3	4.9	13.0	5.1
2015	2.2	4.8	12.6	5.0
2016	2.3	4.9	12.1	4.9
2017	2.2	4.8	12.0	4.8
2018	2.1	4.5	12.0	4.7
2019	1.9	4.5	11.4	4.5
2020	1.8	3.9	9.9	3.9
2010-2019	-19%	-11%	-17%	-16%
pa	-2.5%	-1.3%	-2.3%	-2.0%

Source: NMDS, Ministry of Health.

Rates of ASH by condition – CM Health

ASH conditions are defined by a set of ICD10 codes (using primary diagnosis only) and are grouped into chapters. For example, conditions grouped into the respiratory chapter for adults include asthma, bronchiectasis, chronic obstructive pulmonary disease (COPD), pneumonia, upper and lower respiratory infections and ears, nose and throat (ENT) infections. Asthma includes codes for asthma and status asthmaticus, excluding wheeze as it is not applicable to adults. More information on the various diagnosis included in the ASH group of conditions can be found online at Nationwide Service Framework Library under Accountability.⁴

Table 9 List of ASH conditions for adults (15+ years old) by chapter as per Ministry of Health

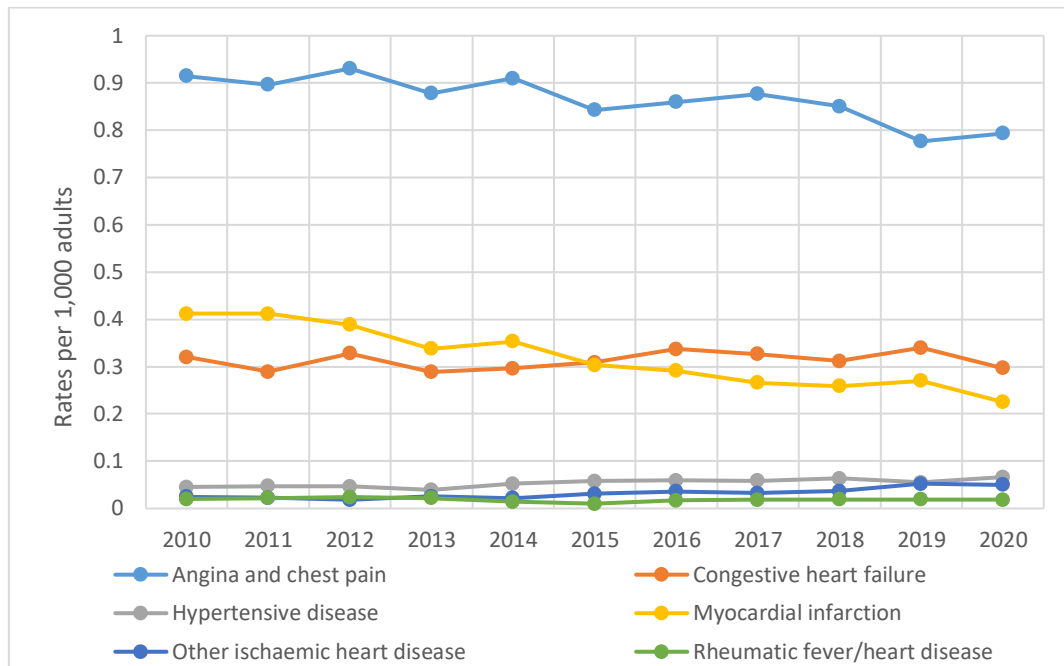
ASH Chapter	ASH Conditions					
Respiratory	Asthma	Pneumonia	Bronchiectasis	Upper respiratory tract and ENT infections	COPD	
Dental	Dental conditions					
Dermatological	Cellulitis	Dermatitis and eczema				
Gastrointestinal	Gastroenteritis/dehydration	Constipation	GORD (Gastro-oesophageal reflux disease)	Nutrition deficiency and anaemia	Peptic ulcer	
Cardiovascular	Angina and chest pain	Congestive heart failure	Hypertensive disease	Myocardial infarction	Other ischemic heart disease	Rheumatic fever/heart disease
Other	Cervical cancer	Diabetes	Epilepsy	Kidney/ urinary infection	Sexually transmitted infections	Stroke

⁴ Nationwide Service Framework Library, *Ambulatory sensitive (avoidable) hospitalisations [website]*, <https://nsfl.health.govt.nz/accountability/performance-and-monitoring/data-quarterly-reports-and-reporting/ambulatory-sensitive> (accessed 16 August 2021).

Cardiovascular chapter

Figure 5 shows angina and chest pain has a significantly higher rate of hospitalisation compared to other conditions under the cardiovascular chapter in CM Health. The rate of angina and chest pain decreased from 0.9 in 2010 to 0.8 per 1,000 adults in 2019, average per year change of -1.7%.

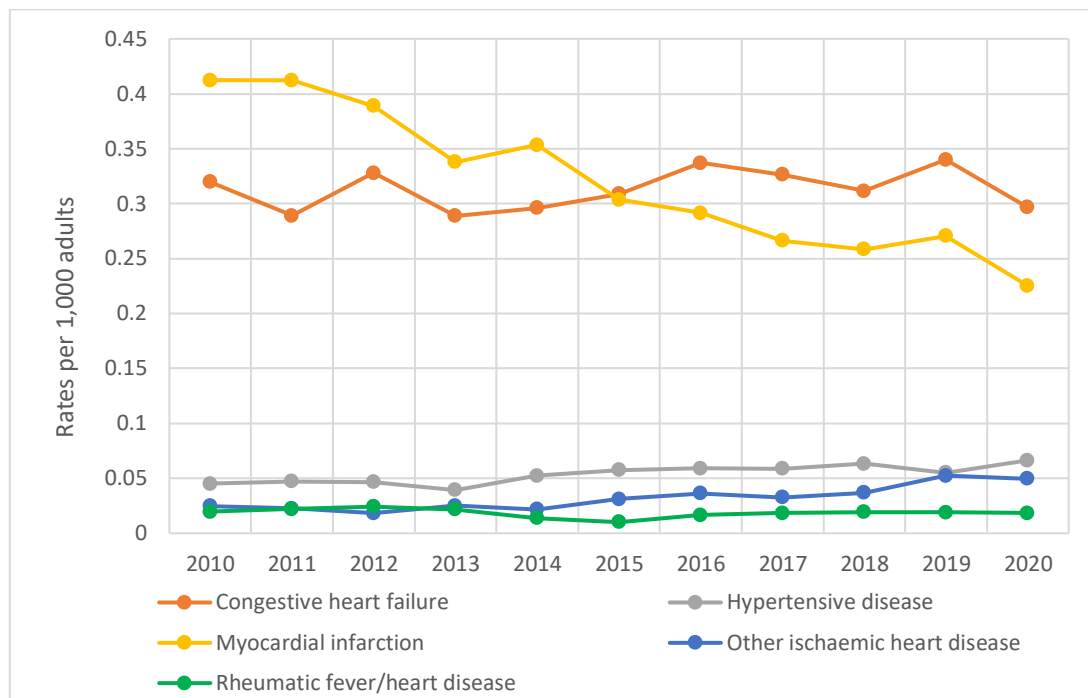
Figure 5 Rates of ASH for conditions under cardiovascular chapter in adults (15+ years old) in CM Health, 2010-2020



Source: NMDS, Ministry of Health.

Figure 6 shows the trend in rates of ASH for cardiovascular conditions excluding angina and chest pain. Similar to angina and chest pain, the rates of ASH for myocardial infarction decreased on average by -4.4% per year from 2010 to 2019, -5.6% per year from 2010 to 2020. The remaining cardiovascular conditions are relatively much less common and showed little change from 2010 to 2019.

Figure 6 Rates of ASH conditions under cardiovascular chapter excluding angina and chest pain in adults (15+ years old), CM Health, 2010 to 2020



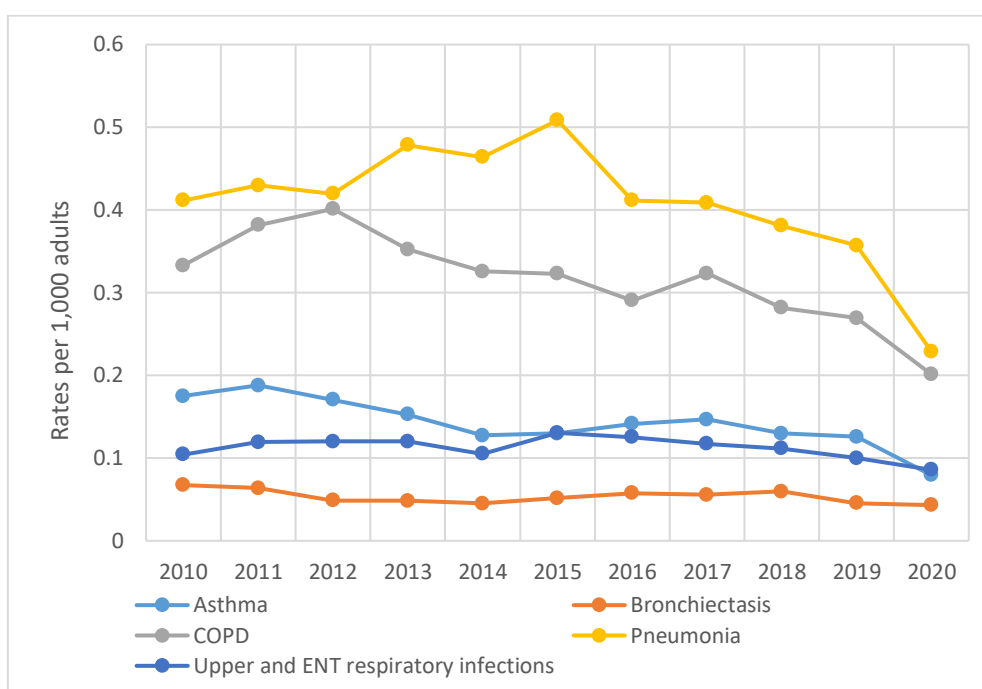
Source: NMDS, Ministry of Health.

Compared to others the rates for angina and chest pain are on average 15% and 12% lower than Northland and Waitematā but 11% and 1% higher than Auckland and New Zealand per year from 2010 to 2019 (Appendix G). Importantly, rates in CM Health decreased over this period, while the rates increased in Northland and fell in Waitematā only after an increase. Similarly, the rates for myocardial infarction in CM Health are on average 34% and 15% lower than Northland and Waitematā but 40% and 2% higher than Auckland and New Zealand per year over the same time period. CM Health experienced the highest per year change in the northern region. In 2010, the rates of hypertensive disease were highest in Northland and decreased over time, however, all Auckland metro DHBs and New Zealand have increased slightly. Specifically, the rates in Auckland and Waitematā increased rapidly in 2017 and 2018, surpassing CM Health. Compared to New Zealand, CM Health sits above the national trends with an average difference of 33% higher rate per year from 2010 to 2019. The rate of rheumatic fever/heart disease in CM Health is significantly higher than other regional DHBs and New Zealand total.

Respiratory Chapter

Figure 7 shows the rates for most of the respiratory conditions in CM Health falling from 2010 to 2020. Specifically, the rate of pneumonia increased from 0.4 in 2010 to 0.51 per 1,000 adults in 2015, before falling to 0.36 in 2019 and further in 2020. Similarly, the rates of COPD, upper and ENT respiratory infections and asthma initially increased but decreased to 0.27, 0.10 and 0.13 per 1,000 in 2019 (average per year change of -1.9%, 0.10% and -3.2%) and further in 2020. Lastly, the rates for bronchiectasis have also been decreasing on average by -3.4% per year from 2010 to 2019 and further in 2020.

Figure 7 Causes of ASH for Respiratory Conditions in Adults (15+ years old), CMDHB, 2010-2020



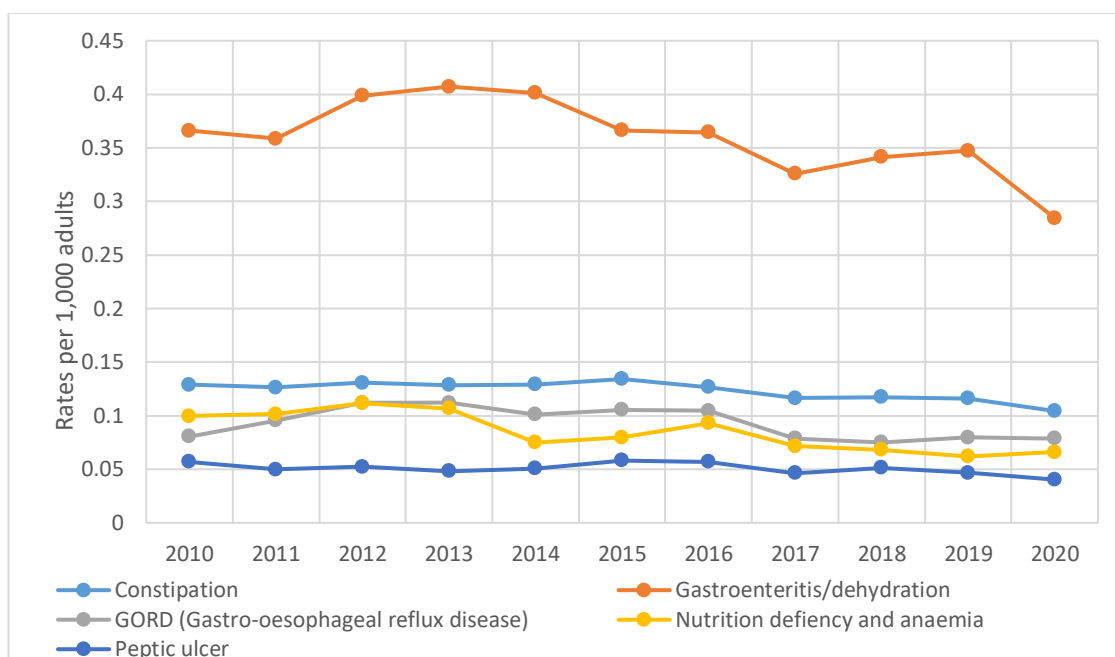
Source: NMDS, Ministry of Health.

Compared to CM Health, the rates of pneumonia are on average 16%, 31%, 31% and 21% lower in Northland, Waitematā, Auckland and New Zealand, respectively per year (Appendix G). CM Health has the highest rate of pneumonia in the selected areas but decreasing since 2015 and comparable to other areas in 2019 and 2020. The rates of COPD have been falling across the northern region and New Zealand, specifically, the gap between CM Health and Waitematā, Auckland and New Zealand is becoming smaller over time. In regards to asthma, CM Health had considerably higher rates than other Auckland metro DHBs and New Zealand, however, the gap has reduced in the recent years. While the rate of bronchiectasis has been increasing across the Auckland metro DHBs and New Zealand, Waitematā and Auckland rates spiked in 2016 and 2017, surpassing CM Health. This increase has been slower for New Zealand total and Northland rates have decreased. Lastly, upper respiratory and ENT infections were higher in CM Health than other areas of interest and in the recent years the rates have increased for other DHBs and New Zealand, becoming comparable to CM Health.

Gastrointestinal Chapter

Figure 8 shows the rates of gastrointestinal conditions in adults decreasing overall. Specifically, gastroenteritis/dehydration remains the leading cause of ASH in this chapter, decreasing from 0.37 to 0.35 (-0.4% average per year change) hospitalisations per 1,000 adults from 2010 to 2019, respectively. The rates for constipation, nutrition deficiency and anaemia and peptic ulcer are also decreasing on average by -1%, -4% and -1.6% per year, respectively, from 2010 to 2019. Lastly, gastro-oesophageal reflux disease (GORD) initially increased but has been on the decline in the recent years.

Figure 8 Causes of ASH for Gastrointestinal Conditions in Adults (15+ years old), CMDHB, 2010-2020



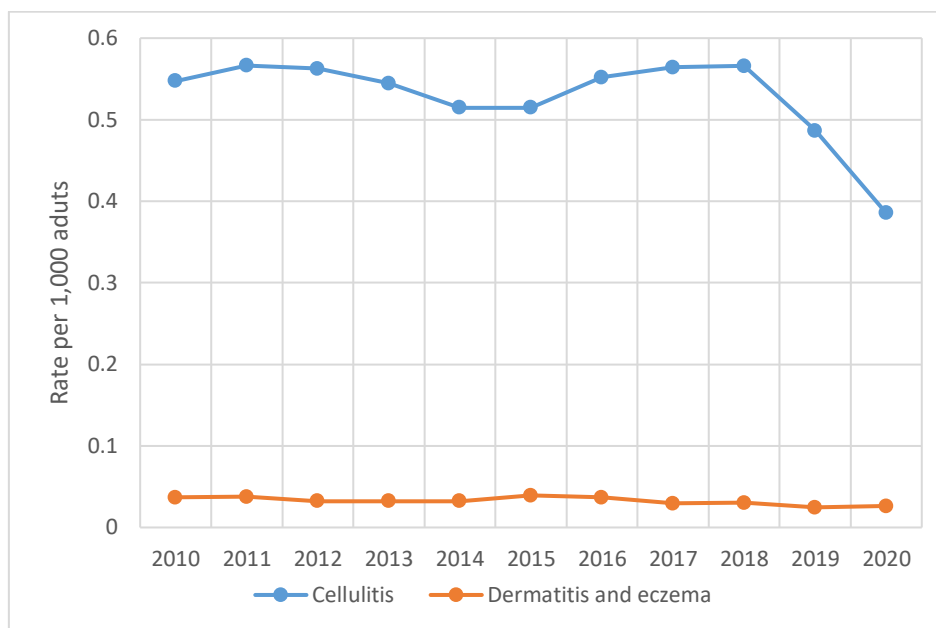
Source: NMDS, Ministry of Health.

Compared to the northern region, CM Health had the highest rate of gastroenteritis/dehydration initially but in the recent years, the rates are comparable to Auckland, Northland and New Zealand and sit below Waitematā levels (Appendix G). Similarly, the rates of constipation have decreased significantly in CM Health and are comparable to New Zealand total, while the rates in Auckland and Waitematā have increased. Rates for nutrition deficiency and anaemia in CM Health decreased significantly becoming comparable to Auckland. Across the northern region, the rates are highest in Waitematā on average by 34% each year, followed by Northland 42% each year. New Zealand totals have been on the rise on average by 30% per year from 2010 to 2019. As shown in Figure 8, the rates of GORD initially increased in CM Health, in the recent years the rates are comparable to Auckland and Waitematā. However, the rates in CM Health are relatively higher than Northland and New Zealand on average by 54% and 39%, respectively, per year. In regards to GORD, the rates for CM Health remain the highest but the gap to other northern regional DHBs is becoming smaller, as is to New Zealand total. The average trends/differences for the gastrointestinal conditions remain when 2020 is included.

Dermatological Chapter

Figure 9 shows the rate of cellulitis is significantly higher than dermatitis and eczema in CM Health from 2010 to 2020. The long-term trend in both conditions is downwards with cellulitis and dermatitis and eczema on average decreasing by -1.1% and -3.3% per year, respectively. Other notable changes include the significant drop in the rate of cellulitis from 2018 to 2020.

Figure 9 Rates of ASH for Dermatological Conditions in adults (15+ years old) CM Health,, 2010-2020



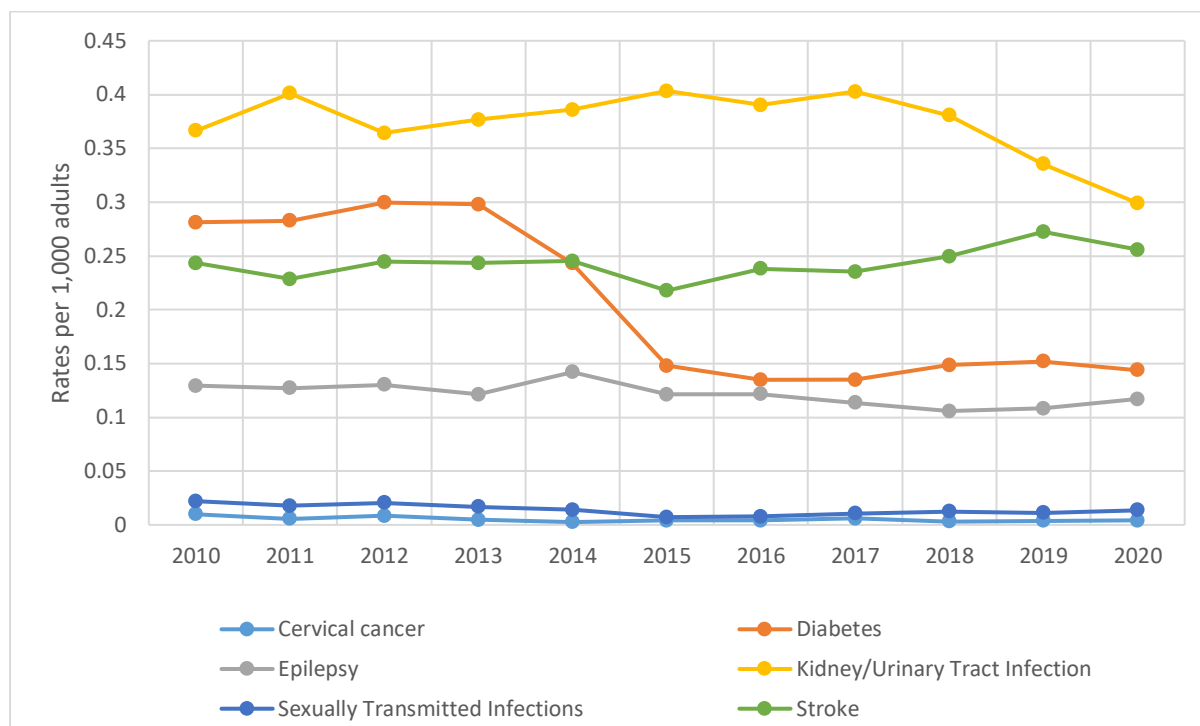
Source: NMDS, Ministry of Health

Compared to CM Health, the rates for cellulitis are significantly lower on average each year in Northland (-32%), Waitematā (-40%), Auckland (-23%) and New Zealand (35%) (Appendix G). Historically, CM Health had the highest rate of dermatitis and eczema in the northern region but the overall trend shows the rates increasing in Waitematā and Auckland, surpassing CM Health in the recent years. New Zealand total has been flat and is below CM Health. Other notable changes include the decrease in rates of dermatitis and eczema in Northland, the lowest in the northern region.

Other Chapter

Figure 10 shows the rate of other conditions considered as ASH. In CM Health the rates are highest in kidney/urinary tract infections but have been declining since 2017. The rate of diabetes decreased significant in 2014 and 2015 by -18% and -39%, respectively, in line with a change in the hospital coding standards for diabetes, otherwise the trend has remained flat despite a rapidly rising prevalence of diabetes. One would have expected stroke to be falling at a similar pace to ischaemic heart disease – the lack of change may warrant further investigation.

Figure 10 Rate of ASH for other conditions in CM Health adults (15+ years old), 2010 to 2020



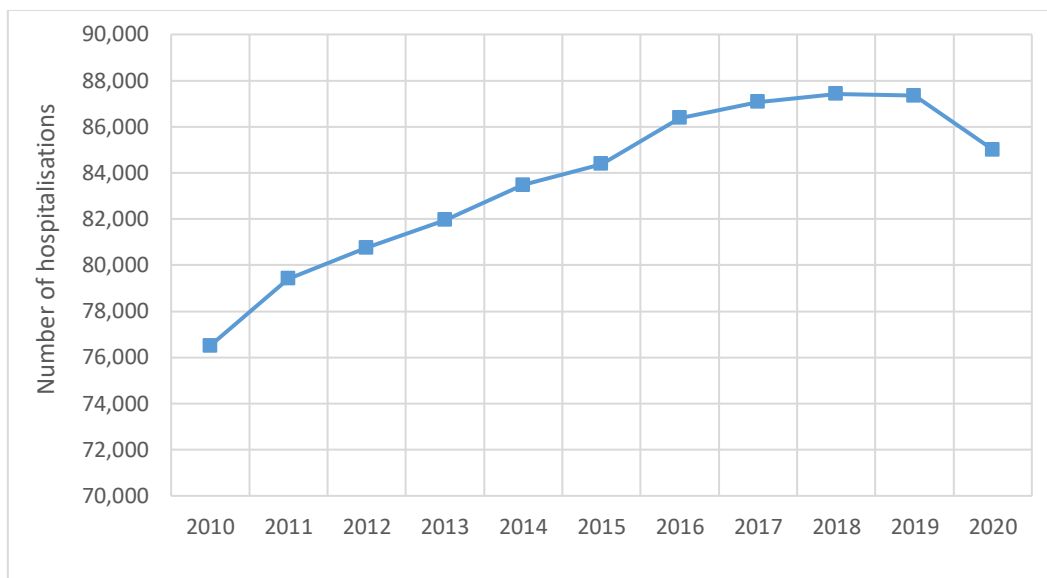
Source: NMDS, Ministry of Health.

Compared to CM Health, the rate of kidney/urinary tract infections in Waitematā follows a similar trajectory but CM Health has been declining faster than Waitematā in the recent years and becoming comparable with Auckland and Northland (Appendix G). The closing of the gap is influenced by rates increasing in Auckland, Northland and New Zealand. Due to the significant reduction in the rate of diabetes in 2014 and 2015 across the selected regions, the gap between CM and other areas has become smaller and sits above Auckland (average per year difference of 19% since 2015), Waitematā (32%) and New Zealand (11%) but below Northland. Rates of stroke were largely the same across the decade apart from Auckland DHB showing a decrease; the lack of a fall is worrying. In regards to epilepsy, the rates are on the rise in Northland, while the CM Health is decreasing and comparable to Auckland and sits just below Waitematā. The rates for cervical cancer were initially highest in CM Health but decreased over time and are now more comparable to Auckland and New Zealand with an average per year difference of 2%. However, the rates have spiked in Northland in the recent years. Lastly, sexually transmitted infections in CM Health remain the highest with an average difference of 30%, 94%, 13% and 42% per year compared to Northland, Waitematā, Auckland, and New Zealand, respectively.

Total Hospitalisations by ICD Chapters

The previous section described ASH accounts for under 30% of the casemix hospitalisations, meaning non-ASH accounts for approximately more than two thirds of the casemix and total hospitalisations (including all medical and surgical events). Figure 11 shows increasing number of total hospitalisations from 76,512 in 2010 to 87,443 in 2019 and decreasing to 85,000 in 2020. On average, total hospitalisations increased by 1.7% each year between 2010 and 2019; and decreased by -2.8% in 2020 from 2019.

Figure 11 Total number of hospitalisations in adults (15+ years old), CMDHB, 2010 – 2020



Data source: NMDS, Ministry of Health.

Figure 12 shows the number of ICD classified hospitalisations in CM Health by ethnicity, 2010 to 2020. Similar to ASH, the highest number of hospitalisations are in Pacific followed Maaori, European/Other and Asian. Although these are numbers and do not reflect population demographics, the same trend is evident in rates. Figure 13 shows the rates per 1,000 adults is decreasing across all ethnic groups but there are considerable differences between Maaori, Pacific and non-Maaori, non-Pacific. In CM, the rates of hospitalisation for Maaori and Pacific decreased on average by -1 and 0.9% per year from 2010 to 2019, respectively. While the rates for Asian and European/Other decreased on average by -1.9% and -0.5% per year from 2010 to 2019, respectively.

Figure 12 The number of ICD classified hospitalisations in CM Health adults (15+ years old) by ethnicity, CMDHB, 2010 – 2020

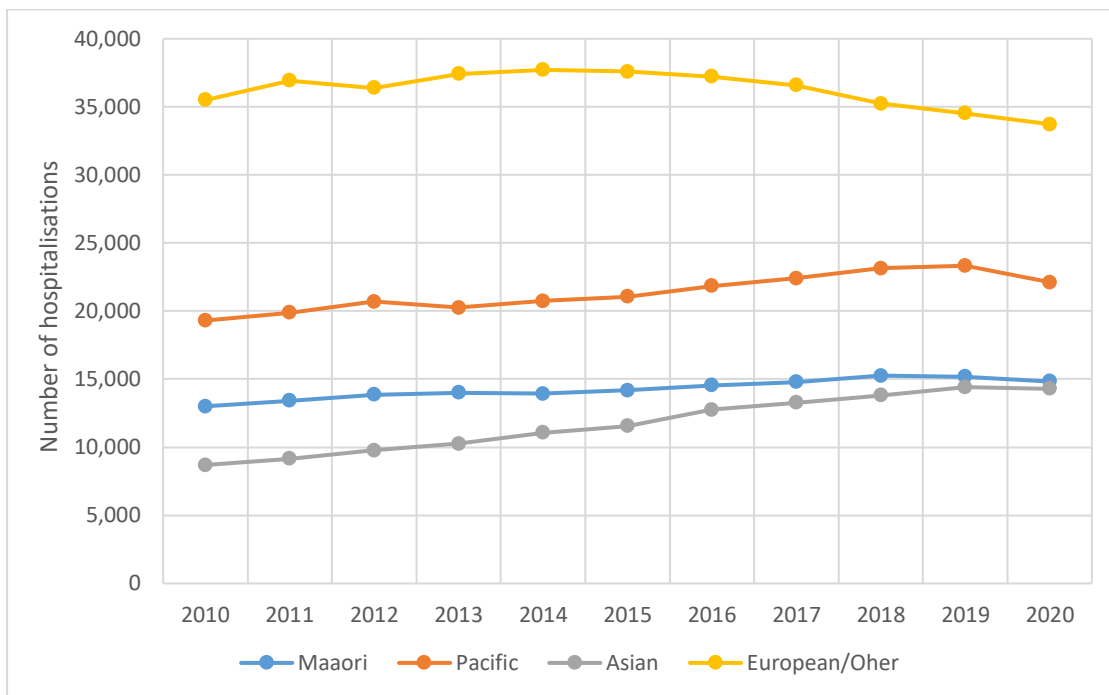
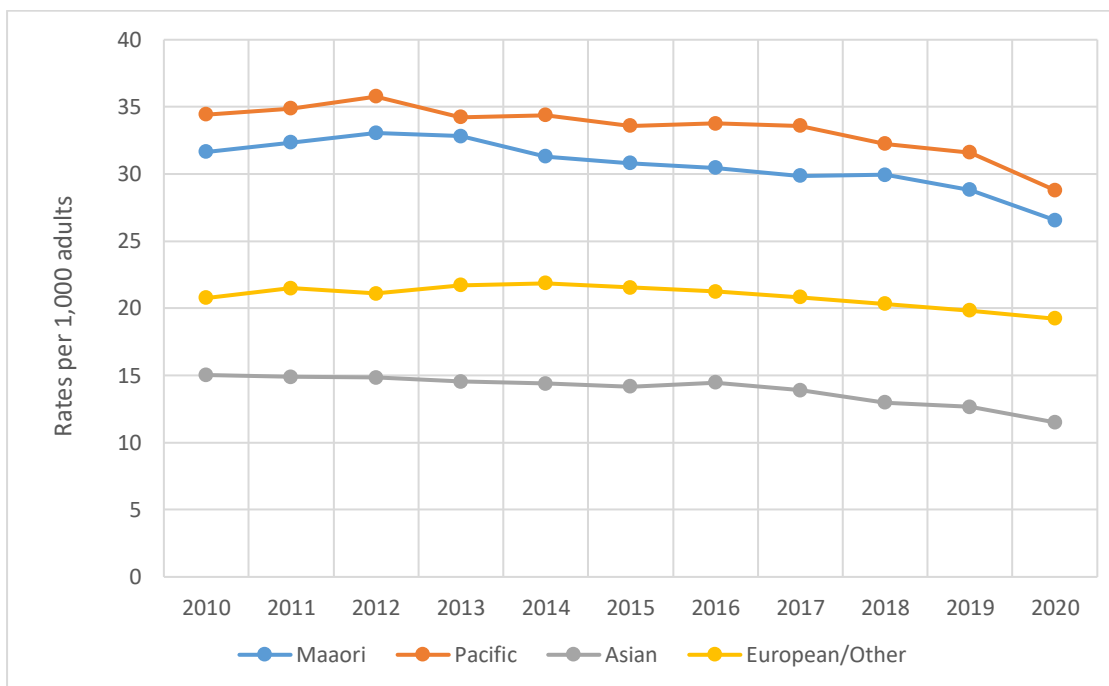


Figure 13 The age-standard rate of ICD classified hospitalisations in CM Health adults (15+ years old) by ethnicity, 2010 to 2020



Data source: NMDS, Ministry of Health.

Table 10 shows the rate of hospitalisations by ICD chapters in CM Health from 2010 to 2020. Pregnancy, childbirth and the puerperium followed by Injury, poisoning and certain other consequences of external causes had the highest rate of hospitalisation in 2010 and remain the highest in 2020, however, there has been a decrease in the rates over time. While most conditions have been decreasing, diseases of the nervous system, eye and adnexa, ear and mastoid process have been on the rise.

Table 10 Rate of total hospitalisations per 1,000 adults(15+ years old) categorised by ICD chapters in CM Health, 2010-2020

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
I Certain infectious and parasitic diseases	0.63	0.64	0.66	0.64	0.65	0.60	0.60	0.59	0.58	0.61	0.51
II Neoplasms	1.78	1.64	1.48	1.49	1.40	1.41	1.40	1.32	1.28	1.18	1.09
III Diseases of the blood and blood-forming organs and certain disorders involving the immune mechanism	0.29	0.28	0.30	0.29	0.24	0.22	0.23	0.20	0.20	0.18	0.18
IV Endocrine, nutritional and metabolic diseases	0.85	0.85	0.91	0.91	0.69	0.46	0.42	0.46	0.42	0.46	0.44
V Mental and behavioural disorders	0.18	0.20	0.20	0.21	0.23	0.26	0.23	0.20	0.20	0.20	0.19
VI Diseases of the nervous system	0.53	0.62	0.61	0.64	0.69	0.64	0.61	0.63	0.60	0.61	0.62
VII Diseases of the eye and adnexa	0.73	0.81	0.69	0.74	0.83	0.84	0.91	0.87	0.99	1.08	1.05
VIII Diseases of the ear and mastoid process	0.15	0.16	0.16	0.17	0.17	0.18	0.16	0.16	0.15	0.15	0.16
IX Diseases of the circulatory system	2.45	2.42	2.43	2.30	2.31	2.18	2.25	2.22	2.17	2.21	2.06
X Diseases of the respiratory system	1.69	1.85	1.86	1.81	1.78	1.90	1.72	1.85	1.67	1.65	1.08
XI Diseases of the digestive system	1.84	2.01	1.96	1.91	1.97	1.99	1.89	1.84	1.78	1.81	1.81
XII Diseases of the skin and subcutaneous tissue	0.79	0.79	0.75	0.73	0.70	0.72	0.76	0.76	0.74	0.66	0.55
XIII Diseases of the musculoskeletal system and connective tissue	1.19	1.28	1.22	1.27	1.22	1.22	1.20	1.15	1.07	0.98	1.03
XIV Diseases of the genitourinary system	1.50	1.54	1.52	1.62	1.65	1.64	1.62	1.54	1.49	1.41	1.39
XV Pregnancy, childbirth and the puerperium	3.05	2.99	3.07	2.95	2.93	2.80	2.79	2.69	2.46	2.37	2.40
XVII Congenital malformations, deformations and chromosomal abnormalities	0.04	0.05	0.04	0.04	0.05	0.04	0.04	0.03	0.03	0.04	0.03
XVIII Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified	2.45	2.41	2.52	2.52	2.60	2.53	2.58	2.49	2.43	2.29	2.25
XIX Injury, poisoning and certain other consequences of external causes	2.77	2.76	2.75	2.80	2.76	2.79	2.75	2.78	2.69	2.57	2.36
XXI Factors influencing health status and contact with health services	0.49	0.49	0.47	0.49	0.49	0.50	0.50	0.50	0.50	0.42	0.36

Appendices

Appendix A: ASH Conditions⁵

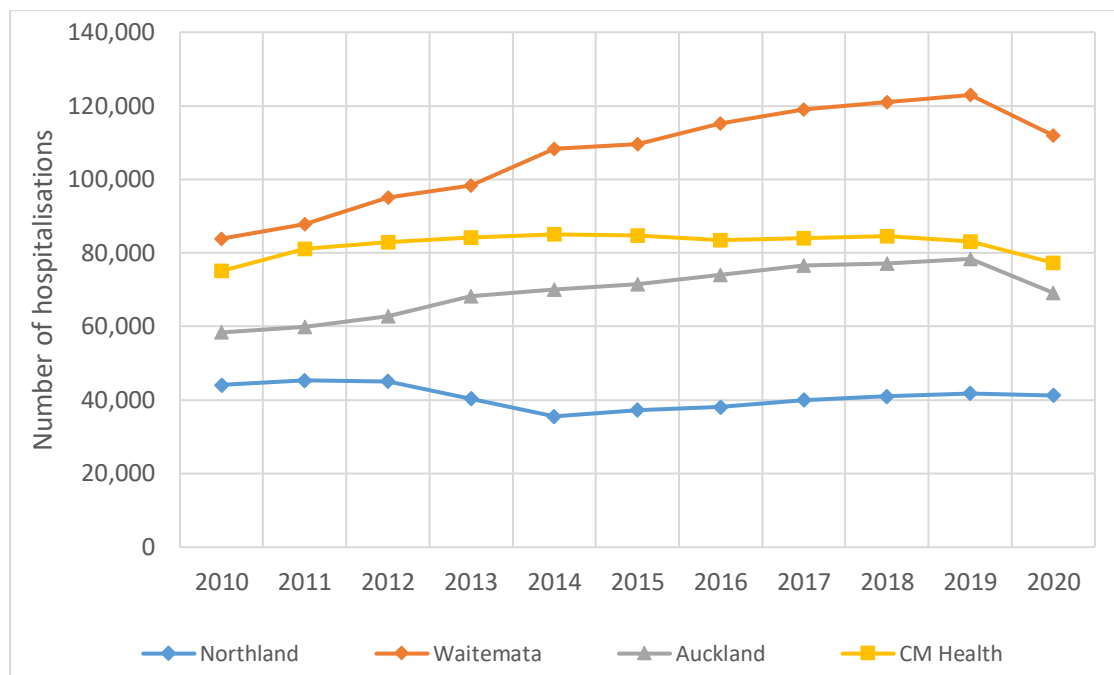
Table 11 List of conditions under ASH by chapter

ASH Chapter	ASH Condition
Cardiovascular	Angina and chest pain
	Congestive heart failure
	Hypertensive disease
	Myocardial infarction
	Other ischemic heart disease
	Rheumatic fever/heart disease
Dental	Dental conditions
Dermatological	Cellulitis
	Dermatitis and eczema
Gastrointestinal	Constipation
	Gastroenteritis/dehydration
	GORD (Gastro-oesophageal reflux disease)
	Nutrition deficiency and anaemia
	Peptic ulcer
Respiratory	Asthma
	Bronchiectasis
	COPD
	Lower respiratory infections
	Pneumonia
	Upper and ENT respiratory infections
Vaccine preventable disease	Vaccine preventable MMR
	Other vaccine preventable disease
Other	Cervical cancer
	Diabetes
	Epilepsy
	Kidney/urinary infection
	Sexually transmitted infections
	Stroke

⁵ Nationwide Service Framework Library, *Ambulatory sensitive (avoidable) hospitalisations [website]*, <https://nsfl.health.govt.nz/accountability/performance-and-monitoring/data-quarterly-reports-and-reporting/ambulatory-sensitive> (accessed 16 August 2021).

Appendix B: Northern Region comparisons – Total hospitalisations

Figure 14 Total number of hospitalisations in the northern region DHBs for adults (15+ years old) from 2010 to 2020



Appendix C: Data cuts as per Ministry of Health 15-74 years old

Figure 15 The total number of hospitalisations aged 15-74, CMDHB, 2010 to 2020.

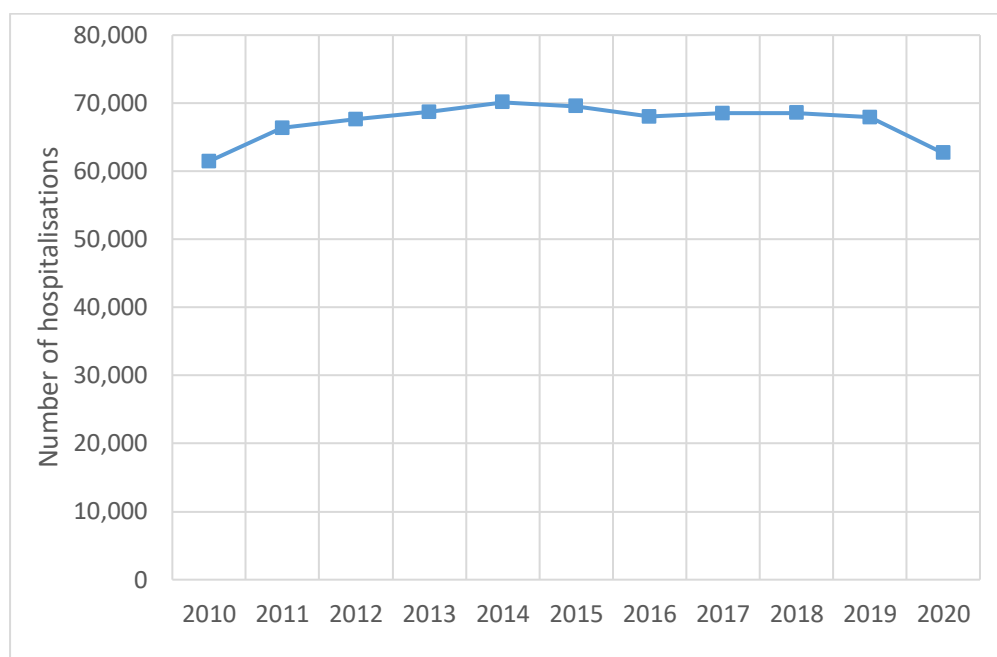


Table 12 The total number of hospitalisations aged 15-74 by ethnicity and percentage difference from the previous year, CMDHB, 2010 to 2020.

	Maaori		Pacific		Asian		European/Other	
	Number	% change year to year	Number	% Difference	Number	% Difference	Number	% Difference
2010	11,228		15,278		7,018		27,935	
2011	11,750	4.7%	16,240	6.3%	7,815	11.4%	30,557	9.4%
2012	11,987	2.0%	16,882	4.0%	8,281	6.0%	30,491	-0.2%
2013	12,186	1.7%	16,683	-1.2%	8,682	4.8%	31,185	2.3%
2014	12,080	-0.9%	17,098	2.5%	9,256	6.6%	31,679	1.6%
2015	12,161	0.7%	17,262	1.0%	9,297	0.4%	30,824	-2.7%
2016	12,200	0.3%	17,649	2.2%	9,554	2.8%	28,619	-7.2%
2017	12,423	1.8%	18,157	2.9%	9,948	4.1%	27,987	-2.2%
2018	12,726	2.4%	18,775	3.4%	10,354	4.1%	26,711	-4.6%
2019	12,801	0.6%	19,041	1.4%	11,037	6.6%	25,060	-6.2%
2020	12,158	-5.0%	17,382	-8.7%	10,279	-6.9%	22,878	-8.7%

Table 13 The number of hospitalisations separated by casemix and non-casemix for Adults (15-74 years old) and the percentage change from the previous year

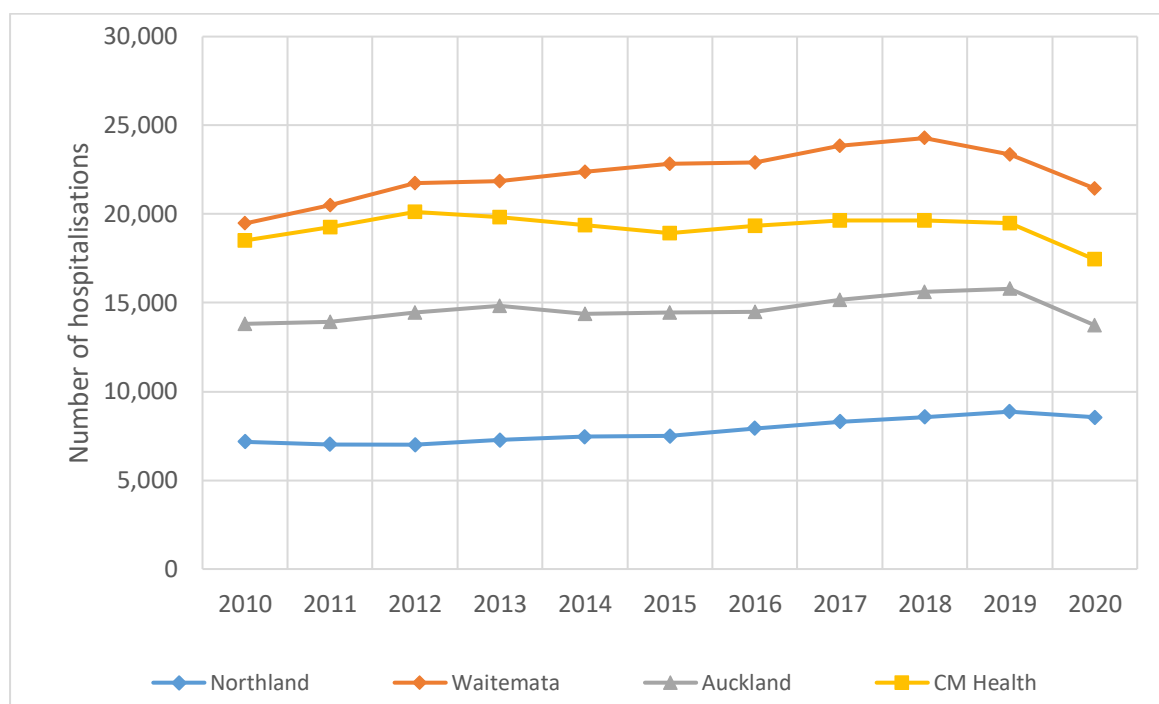
	Casemix		Non-casemix	
2010	54,382		7,077	
2011	56,673	4.2%	9,689	36.9%
2012	57,562	1.6%	10,079	4.0%
2013	58,641	1.9%	10,095	0.2%
2014	59,908	2.2%	10,205	1.1%
2015	60,412	0.8%	9,132	-10.5%
2016	61,475	1.8%	6,547	-28.3%
2017	61,840	0.6%	6,675	2.0%
2018	61,925	0.1%	6,641	-0.5%
2019	62,300	0.6%	5,639	-15.1%
2020	60,019	-3.7%	2,678	-52.5%

Table 14 The number of casemix hospitalisations separated by ASH and non-ASH in CM Health adults (15+ years old) from 2010 to 2020

Year	ASH	non-ASH
2010	14,643	39,739
2011	15,169	41,504
2012	15,753	41,809
2013	15,394	43,247
2014	15,111	44,797
2015	14,666	45,746
2016	15,110	46,365
2017	15,205	46,635
2018	15,329	46,596
2019	15,081	47,219
2020	13,591	46,428

Appendix D: Northern Region comparisons – ASH

Figure 16 Number of ASH in the northern region DHBs for adults (15+ years old) from, 2010 to 2020



Appendix E: Northern Region comparisons – ASH

Table 15 Total rate of ASH in adults (15+ years old) in the northern region DHBs and NZ, 2010 to 2020

	Northland	Waitematā	Auckland	CM Health	NZ	CM vs NZ percentage difference
2010	4.90	4.58	4.12	5.26	4.21	-20%
2011	4.67	4.65	4.01	5.33	4.22	-21%
2012	4.57	4.78	4.10	5.41	4.29	-21%
2013	4.61	4.75	4.08	5.23	4.31	-18%
2014	4.67	4.79	3.98	5.09	4.26	-16%
2015	4.57	4.82	3.97	4.95	4.22	-15%
2016	4.65	4.73	3.91	4.90	4.21	-14%
2017	4.76	4.81	4.01	4.80	4.28	-11%
2018	4.72	4.74	4.05	4.68	4.22	-10%
2019	4.78	4.48	3.98	4.49	4.20	-6%
2020	4.53	4.07	3.43	3.94	3.74	-5%
2010-2019	0.3%	-0.2%	-2.6%	-15.7%	-0.6%	
pa	0.0%	0.0%	-0.3%	-1.6%	-0.1%	

Appendix F: Total ASH in the northern region DHBs and NZ by age group

Table 16 Total rate of ASH in the northern region DHBs and NZ for 15-44 year olds, 2010 to 2020

	Northland	Waitematā	Auckland	CM Health	NZ	CM vs NZ Percentage difference
2010	2.35	1.90	1.57	2.41	1.77	-27%
2011	2.31	2.03	1.63	2.42	1.81	-25%
2012	2.18	2.04	1.66	2.46	1.86	-24%
2013	2.30	1.99	1.74	2.38	1.91	-20%
2014	2.35	2.03	1.69	2.32	1.89	-19%
2015	2.14	2.09	1.70	2.20	1.89	-14%
2016	2.27	2.03	1.75	2.26	1.89	-16%
2017	2.20	2.06	1.74	2.15	1.93	-10%
2018	2.13	1.99	1.70	2.08	1.88	-10%
2019	2.38	1.91	1.76	1.94	1.89	-3%
2020	2.26	1.72	1.54	1.77	1.69	-5%
2010-2019	-2.8%	0.2%	8.9%	-18.9%	5.6%	
pa	-0.3%	0.0%	0.9%	-1.9%	0.6%	

Table 17 Total rate of ASH in the northern regions DHBs and NZ for 45-64 year olds, 2010 to 2020

	Northland	Waitematā	Auckland	CM Health	NZ	CM vs NZ percentage difference
2010	4.29	4.03	3.75	4.93	3.73	-24%
2011	4.07	3.9	3.46	5.02	3.67	-27%
2012	4.17	4.10	3.63	5.08	3.79	-25%
2013	4.03	4.22	3.63	4.96	3.85	-22%
2014	4.22	4.20	3.53	4.86	3.80	-22%
2015	4.27	4.40	3.55	4.81	3.79	-21%
2016	4.28	4.30	3.50	4.85	3.84	-21%
2017	4.65	4.35	3.65	4.75	3.94	-17%
2018	4.62	4.27	3.69	4.52	3.90	-14%
2019	4.44	4.06	3.60	4.45	3.84	-14%
2020	4.37	3.76	3.21	3.87	3.5	-10%
2010-2019	11.2%	6.1%	0.0%	-10.6%	4.8%	
pa	1.1%	0.6%	0.0%	-1.1%	0.5%	

Table 18 Total rate of ASH in the northern region DHBs and NZ for 65+, 2010 to 2020

	Northland	Waitematā	Auckland	CM Health	NZ	CM vs NZ percentage difference
2010	12.80	12.74	11.62	13.49	11.62	-14%
2011	12.06	12.94	11.35	13.67	11.66	-15%
2012	11.70	13.33	11.47	13.93	11.69	-16%
2013	11.78	13.05	11.15	13.35	11.55	-13%
2014	11.68	13.23	10.89	12.95	11.41	-12%
2015	11.61	12.89	10.78	12.58	11.21	-11%
2016	11.70	12.73	10.42	12.12	11.09	-8%
2017	11.82	12.98	10.73	12.03	11.19	-7%
2018	11.87	12.91	10.97	11.98	11.05	-8%
2019	11.80	12.11	10.60	11.42	11.03	-3%
2020	10.90	10.91	8.87	9.91	9.65	-3%
2010-2019	-4.5%	-3.7%	-8.5%	-17.2%	-6.4%	
pa	-0.5%	-0.4%	-0.8%	-1.7%	-0.6%	

Table 19 Total rate of ASH in the northern region DHBs and NZ for adults (15+ years olds), 2010 to 2020

	Northland	Waitematā	Auckland	CM Health	NZ	CM vs NZ percentage difference
2010	4.90	4.58	4.12	5.26	4.21	-20%
2011	4.67	4.65	4.01	5.33	4.22	-21%
2012	4.57	4.78	4.10	5.41	4.29	-21%
2013	4.61	4.75	4.08	5.23	4.31	-18%
2014	4.67	4.79	3.98	5.09	4.26	-16%
2015	4.57	4.82	3.97	4.95	4.22	-15%
2016	4.65	4.73	3.91	4.90	4.21	-14%
2017	4.76	4.81	4.01	4.80	4.28	-11%
2018	4.72	4.74	4.05	4.68	4.22	-10%
2019	4.78	4.48	3.98	4.49	4.20	-6%
2020	4.53	4.07	3.43	3.94	3.74	-5%
2010-2019	0.3%	-0.2%	-2.6%	-15.7%	-0.6%	
pa	0.0%	0.0%	-0.3%	-1.6%	-0.1%	

Appendix G: ASH rates by condition in the northern region DHBs and New Zealand totals

Table 20 Rate of ASH by condition and year in CM Health for adults (15+ years old) 2010 to 2020

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Angina and chest pain	0.91	0.90	0.93	0.88	0.91	0.84	0.86	0.88	0.85	0.78	0.79
Asthma	0.17	0.19	0.17	0.15	0.13	0.13	0.14	0.15	0.13	0.13	0.08
Bronchiectasis	0.07	0.06	0.05	0.05	0.04	0.05	0.06	0.06	0.06	0.05	0.04
Cellulitis	0.55	0.57	0.56	0.54	0.51	0.51	0.55	0.56	0.57	0.49	0.39
Cervical cancer	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Congestive heart failure	0.32	0.29	0.33	0.29	0.30	0.31	0.34	0.33	0.31	0.34	0.30
Constipation	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.12	0.12	0.12	0.10
COPD	0.33	0.38	0.40	0.35	0.33	0.32	0.29	0.32	0.28	0.27	0.20
Dental conditions	0.06	0.06	0.05	0.05	0.04	0.05	0.04	0.04	0.03	0.04	0.03
Dermatitis and eczema	0.04	0.04	0.03	0.03	0.03	0.04	0.04	0.03	0.03	0.02	0.03
Diabetes	0.28	0.28	0.30	0.30	0.24	0.15	0.13	0.13	0.15	0.15	0.14
Epilepsy	0.13	0.13	0.13	0.12	0.14	0.12	0.12	0.11	0.11	0.11	0.12
Gastroenteritis/dehydration	0.37	0.36	0.40	0.41	0.40	0.37	0.36	0.33	0.34	0.35	0.28
GORD (Gastro-oesophageal reflux disease)	0.08	0.10	0.11	0.11	0.10	0.11	0.10	0.08	0.07	0.08	0.08
Hypertensive disease	0.05	0.05	0.05	0.04	0.05	0.06	0.06	0.06	0.06	0.06	0.07
Kidney/urinary infection	0.37	0.40	0.36	0.38	0.39	0.40	0.39	0.40	0.38	0.33	0.30
Myocardial infarction	0.41	0.41	0.39	0.34	0.35	0.30	0.29	0.27	0.26	0.27	0.23
Nutrition deficiency and anaemia	0.10	0.10	0.11	0.11	0.08	0.08	0.09	0.07	0.07	0.06	0.07
Other ischaemic heart disease	0.02	0.02	0.02	0.03	0.02	0.03	0.04	0.03	0.04	0.05	0.05
Peptic ulcer	0.06	0.05	0.05	0.05	0.05	0.06	0.06	0.05	0.05	0.05	0.04
Pneumonia	0.41	0.43	0.42	0.48	0.46	0.51	0.41	0.41	0.38	0.36	0.23
Rheumatic fever/heart disease	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.02	0.02	0.02	0.02
Sexually transmitted infections	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stroke	0.24	0.23	0.24	0.24	0.25	0.22	0.24	0.24	0.25	0.27	0.26
Total ASH	5.26	5.33	5.41	5.23	5.09	4.95	4.90	4.80	4.68	4.49	3.94
Upper and ENT respiratory infections	0.10	0.12	0.12	0.12	0.11	0.13	0.13	0.12	0.11	0.10	0.09

Table 21 Rate of ASH by condition and year in Auckland DHB for adults (15+ years old), 2010 to 2020

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Angina and chest pain	0.71	0.63	0.72	0.70	0.70	0.70	0.69	0.73	0.75	0.74	0.71
Asthma	0.13	0.13	0.12	0.11	0.11	0.11	0.10	0.12	0.11	0.11	0.08
Bronchiectasis	0.04	0.05	0.04	0.04	0.04	0.05	0.04	0.05	0.04	0.04	0.03
Cellulitis	0.38	0.41	0.40	0.43	0.38	0.40	0.42	0.44	0.46	0.44	0.34
Cervical cancer	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Congestive heart failure	0.26	0.23	0.24	0.22	0.24	0.23	0.24	0.25	0.24	0.26	0.24
Constipation	0.11	0.12	0.11	0.13	0.13	0.13	0.13	0.14	0.14	0.14	0.13
COPD	0.30	0.30	0.29	0.26	0.24	0.25	0.26	0.24	0.25	0.25	0.16
Dental conditions	0.04	0.03	0.04	0.03	0.03	0.03	0.04	0.03	0.03	0.03	0.02
Dermatitis and eczema	0.03	0.03	0.03	0.03	0.04	0.03	0.04	0.03	0.03	0.03	0.03
Diabetes	0.23	0.21	0.20	0.22	0.18	0.11	0.10	0.12	0.12	0.13	0.12
Epilepsy	0.12	0.13	0.13	0.12	0.12	0.12	0.11	0.11	0.10	0.10	0.10
Gastroenteritis/dehydration	0.33	0.31	0.37	0.39	0.38	0.34	0.37	0.35	0.34	0.35	0.28
GORD (Gastro-oesophageal reflux disease)	0.08	0.08	0.08	0.09	0.09	0.09	0.08	0.08	0.08	0.08	0.09
Hypertensive disease	0.03	0.03	0.04	0.05	0.05	0.05	0.06	0.06	0.08	0.08	0.08
Kidney/urinary infection	0.31	0.31	0.32	0.35	0.31	0.38	0.33	0.34	0.36	0.35	0.30
Myocardial infarction	0.25	0.22	0.24	0.19	0.19	0.18	0.18	0.17	0.19	0.17	0.15
Nutrition deficiency and anaemia	0.06	0.08	0.08	0.07	0.09	0.08	0.07	0.07	0.06	0.06	0.07
Other ischaemic heart disease	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01
Peptic ulcer	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03
Pneumonia	0.32	0.31	0.29	0.28	0.29	0.30	0.28	0.30	0.29	0.25	0.15
Rheumatic fever/heart disease	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Sexually transmitted infections	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stroke	0.20	0.22	0.19	0.20	0.20	0.18	0.19	0.20	0.18	0.17	0.17
Total ASH	4.12	4.01	4.10	4.08	3.98	3.97	3.91	4.01	4.05	3.98	3.43
Upper and ENT respiratory infections	0.09	0.11	0.10	0.10	0.10	0.12	0.12	0.12	0.11	0.13	0.10

Table 22 Rate of ASH by condition and year in Waitematā DHB for adults (15+ years old), 2010 to 2020

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Angina and chest pain	0.97	0.96	0.99	1.05	1.05	1.11	1.08	1.03	0.97	0.89	0.88
Asthma	0.13	0.14	0.12	0.11	0.10	0.13	0.11	0.13	0.13	0.13	0.12
Bronchiectasis	0.03	0.03	0.02	0.03	0.03	0.04	0.02	0.03	0.03	0.02	0.03
Cellulitis	0.35	0.39	0.39	0.38	0.39	0.40	0.40	0.40	0.39	0.39	0.32
Cervical cancer	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Congestive heart failure	0.24	0.22	0.23	0.24	0.24	0.24	0.21	0.26	0.28	0.25	0.25
Constipation	0.10	0.10	0.11	0.11	0.11	0.13	0.12	0.13	0.13	0.14	0.12
COPD	0.34	0.33	0.31	0.27	0.29	0.26	0.24	0.25	0.26	0.23	0.18
Dental conditions	0.05	0.05	0.04	0.04	0.04	0.05	0.04	0.03	0.03	0.03	0.02
Dermatitis and eczema	0.03	0.03	0.03	0.02	0.03	0.03	0.02	0.03	0.03	0.03	0.03
Diabetes	0.19	0.19	0.19	0.21	0.19	0.12	0.10	0.10	0.12	0.11	0.10
Epilepsy	0.12	0.12	0.13	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.11
Gastroenteritis/dehydration	0.36	0.36	0.41	0.41	0.41	0.41	0.37	0.39	0.38	0.37	0.31
GORD (Gastro-oesophageal reflux disease)	0.08	0.09	0.09	0.10	0.09	0.10	0.09	0.09	0.08	0.08	0.09
Hypertensive disease	0.04	0.03	0.03	0.04	0.05	0.04	0.05	0.05	0.07	0.07	0.07
Kidney/urinary infection	0.31	0.34	0.36	0.39	0.41	0.39	0.40	0.42	0.41	0.38	0.32
Myocardial infarction	0.45	0.44	0.44	0.40	0.38	0.34	0.37	0.35	0.37	0.33	0.33
Nutrition deficiency and anaemia	0.11	0.10	0.11	0.10	0.13	0.16	0.20	0.22	0.18	0.19	0.17
Other ischaemic heart disease	0.04	0.04	0.06	0.06	0.05	0.06	0.08	0.06	0.06	0.06	0.06
Peptic ulcer	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.03	0.03
Pneumonia	0.27	0.32	0.35	0.32	0.31	0.35	0.34	0.36	0.33	0.30	0.22
Rheumatic fever/heart disease	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.01
Sexually transmitted infections	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.01
Stroke	0.23	0.21	0.22	0.19	0.20	0.20	0.20	0.22	0.21	0.21	0.21
Total ASH	4.58	4.65	4.78	4.75	4.79	4.82	4.73	4.81	4.74	4.48	4.07
Upper and ENT respiratory infections	0.09	0.09	0.09	0.11	0.10	0.10	0.10	0.12	0.11	0.11	0.08

Table 23 Rate of ASH by condition and year in Northland DHB for adults (15+ years old), 2010 to 2020

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Angina and chest pain	0.95	0.85	0.83	0.87	0.90	0.79	0.93	0.90	0.94	0.91	1.04
Asthma	0.11	0.10	0.12	0.12	0.12	0.14	0.10	0.12	0.10	0.16	0.09
Bronchiectasis	0.03	0.02	0.02	0.03	0.02	0.03	0.02	0.02	0.03	0.03	0.03
Cellulitis	0.34	0.37	0.32	0.36	0.34	0.34	0.39	0.39	0.39	0.42	0.33
Cervical cancer	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
Congestive heart failure	0.24	0.22	0.22	0.24	0.24	0.27	0.26	0.26	0.28	0.29	0.28
Constipation	0.09	0.11	0.11	0.15	0.15	0.15	0.13	0.11	0.10	0.12	0.14
COPD	0.43	0.40	0.38	0.36	0.35	0.37	0.33	0.37	0.34	0.31	0.27
Dental conditions	0.09	0.09	0.07	0.08	0.07	0.10	0.09	0.09	0.06	0.08	0.07
Dermatitis and eczema	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.01
Diabetes	0.37	0.29	0.31	0.27	0.20	0.16	0.14	0.17	0.16	0.17	0.16
Epilepsy	0.17	0.16	0.13	0.13	0.16	0.15	0.14	0.15	0.16	0.18	0.20
Gastroenteritis/dehydration	0.35	0.35	0.39	0.38	0.36	0.30	0.33	0.34	0.34	0.33	0.32
GORD (Gastro-oesophageal reflux disease)	0.04	0.05	0.04	0.05	0.04	0.06	0.04	0.04	0.04	0.04	0.05
Hypertensive disease	0.06	0.05	0.04	0.04	0.03	0.03	0.04	0.02	0.03	0.03	0.03
Kidney/urinary infection	0.30	0.30	0.27	0.32	0.35	0.33	0.33	0.35	0.30	0.35	0.31
Myocardial infarction	0.47	0.45	0.53	0.41	0.41	0.35	0.40	0.43	0.43	0.43	0.40
Nutrition deficiency and anaemia	0.08	0.07	0.07	0.10	0.10	0.17	0.15	0.14	0.15	0.13	0.14
Other ischaemic heart disease	0.02	0.01	0.01	0.02	0.02	0.02	0.03	0.02	0.04	0.05	0.04
Peptic ulcer	0.04	0.03	0.03	0.04	0.03	0.03	0.04	0.03	0.03	0.03	0.03
Pneumonia	0.35	0.31	0.32	0.30	0.42	0.40	0.39	0.38	0.37	0.33	0.23
Rheumatic fever/heart disease	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.01
Sexually transmitted infections	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.00	0.01	0.00
Stroke	0.22	0.26	0.23	0.22	0.23	0.24	0.23	0.24	0.26	0.23	0.22
Total ASH	4.90	4.67	4.57	4.61	4.67	4.57	4.65	4.76	4.72	4.78	4.53
Upper and ENT respiratory infections	0.07	0.11	0.10	0.08	0.10	0.09	0.11	0.12	0.12	0.12	0.09

Table 24 Rate of ASH by condition and year in New Zealand adults, 2010 to 2020

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Angina and chest pain	0.85	0.82	0.83	0.87	0.86	0.84	0.86	0.85	0.83	0.80	0.79
Asthma	0.12	0.12	0.11	0.10	0.10	0.11	0.10	0.12	0.11	0.12	0.09
Bronchiectasis	0.02	0.03	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02
Cellulitis	0.33	0.35	0.34	0.35	0.34	0.34	0.36	0.37	0.37	0.36	0.31
Cervical cancer	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Congestive heart failure	0.24	0.24	0.24	0.24	0.24	0.25	0.24	0.26	0.26	0.27	0.25
Constipation	0.10	0.10	0.11	0.11	0.11	0.11	0.12	0.11	0.11	0.11	0.11
COPD	0.34	0.34	0.33	0.31	0.31	0.30	0.28	0.30	0.28	0.29	0.21
Dental conditions	0.07	0.07	0.06	0.06	0.06	0.07	0.07	0.06	0.06	0.06	0.05
Dermatitis and eczema	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Diabetes	0.21	0.20	0.21	0.23	0.18	0.13	0.12	0.13	0.13	0.13	0.13
Epilepsy	0.13	0.13	0.13	0.14	0.14	0.13	0.13	0.13	0.13	0.14	0.13
Gastroenteritis/dehydration	0.31	0.32	0.36	0.37	0.37	0.34	0.35	0.34	0.34	0.34	0.30
GORD (Gastro-oesophageal reflux disease)	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	0.05	0.05
Hypertensive disease	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.05
Kidney/urinary infection	0.26	0.27	0.27	0.29	0.29	0.30	0.29	0.29	0.30	0.29	0.26
Myocardial infarction	0.38	0.35	0.36	0.32	0.31	0.29	0.30	0.29	0.30	0.29	0.27
Nutrition deficiency and anaemia	0.08	0.08	0.09	0.09	0.11	0.13	0.12	0.13	0.12	0.12	0.11
Other ischaemic heart disease	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03
Peptic ulcer	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03
Pneumonia	0.31	0.33	0.32	0.32	0.35	0.36	0.34	0.37	0.34	0.33	0.22
Rheumatic fever/heart disease	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Sexually transmitted infections	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Stroke	0.21	0.21	0.21	0.20	0.20	0.20	0.20	0.20	0.21	0.21	0.21
Total ASH	4.21	4.22	4.29	4.31	4.26	4.22	4.21	4.28	4.22	4.20	3.74
Upper and ENT respiratory infections	0.08	0.09	0.09	0.09	0.09	0.10	0.10	0.11	0.10	0.10	0.08