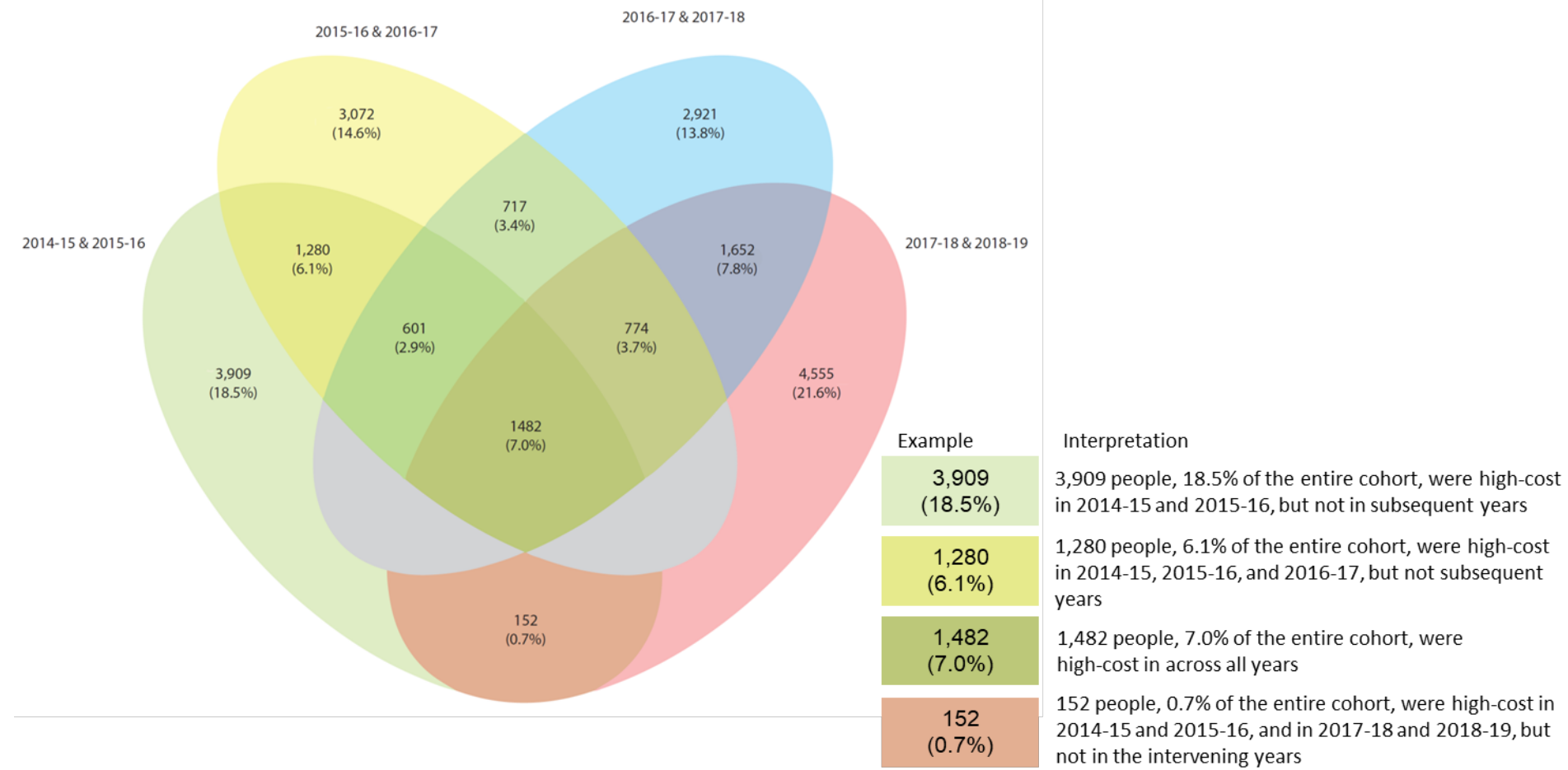


APPENDIX 1

Venn diagram of high-cost patients within the 5-year study cohort



eTable 1. Data sources of defined variables

2016 Canadian Census ¹	Alberta Health Registry ²	Provider Claims ² (Outpatient)	Discharge Abstract Data ² (Inpatient)	Ambulatory Care Classification System ² (Emergency Department)	Pharmaceutical Information Network ² (Medications)
	Age	Cumulative health encounter costs			
	Sex	Prior specialist visits	History of Homelessness		
Urban/Rural status		Primary care provider attachment	Prior hospitalizations	Prior ED visits	
		Presence of chronic comorbidities			
	History of continuing care				

eTable 2. Bayesian Information Criterion for each given number of subgroups.

Number of Groups	BIC
2	144443.8
3	132249.1
4	125715.1
5	122865.8
6	120894.2
7	119697.6
8	118335.8
9	117401.1
10	116862.1
11	115708
12	115018.3
13	114437
14	114153.5
15	114022.4
16	113878.9
17	113644.4
18	113509.8
19	113503.2
20	113366.1
21	113327.5
22	113356.5

eTable 3. Characteristics of 21 persistently high-cost subgroups defined solely by latent class analysis, and their final designations

	Overall	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17	C18	C19	C20	C21
Characteristic	n=21,115	n=809	n=801	n=575	n=1807	n=882	n=832	n=737	n=1165	n=1433	n=1335	n=1162	n=962	n=1421	n=797	n=713	n=411	n=1082	n=984	n=1282	n=1238	n=687
Age																						
Mean (SD)	60.2 (18.4)	38.1 (12.5)	58.2 (11.0)	41.2 (11.5)	63.3 (12.9)	50.2 (13.6)	59.1 (12.1)	57.7 (10.0)	39.8 (11.6)	66.0 (10.9)	78.1 (9.1)	65.1 (7.5)	36.7 (10.3)	48.5 (16.2)	58.1 (15.7)	35.2 (12.2)	59.6 (9.5)	80.5 (7.5)	61.2 (9.7)	82.8 (6.8)	79.4 (8.0)	69.1 (11.9)
18-49	27.5	82.9	18.1	77.6	14.5	49.4	16.5	15.1	79.7	6.1	0.0	0.3	91.4	51.0	27.9	86.7	9.5	0.0	6.5	0.3	0.0	4.8
50-64	29.3	15.0	56.9	21.2	38.6	37.3	51.1	64.3	19.7	40.4	8.2	46.9	8.6	34.2	37.6	11.6	60.6	1.6	63.2	0.2	2.1	32.8
65-74	19.0	2.1	22.0	1.0	28.9	11.1	25.8	19.1	0.6	34.3	23.3	47.2	0.0	10.4	20.2	1.7	27.0	19.0	23.8	7.4	24.9	29.3
75+	24.2	0.0	3.0	0.2	18.0	2.2	6.6	1.5	0.0	19.3	68.5	5.7	0.0	4.4	14.3	0.0	2.9	79.4	6.5	92.1	73.0	33.2
Male	53.9	68.1	47.1	52.3	69.2	46.4	43.4	43.8	62.1	73.3	54.8	69.2	33.1	60.3	54.8	55.3	38.9	43.7	59.5	30.3	39.0	57.4
Urban residence	86.2	90.8	95.4	81.3	91.0	89.6	90.8	99.0	91.1	98.3	89.7	75.2	90.6	88.2	34.7	91.4	91.7	96.4	92.7	92.3	94.5	4.4
History of homelessness	2.3	3.0	8.2	38.3	0.0	0.0	0.0	1.2	0.0	0.2	0.2	0.4	0.1	0.6	0.0	19.9	0.0	0.0	0.2	0.0	0.0	0.3
Continuing Care	28.2	51.9	49.7	15.5	3.7	9.3	6.5	38.9	0.0	14.7	46.6	23.8	0.2	17.9	19.2	61.6	0.0	62.8	10.4	68.3	62.1	25.8
≥1 Hospitalization, previous 12 months	35.9	3.3	89.6	85.7	0.6	79.7	4.0	3.1	0.0	75.8	0.0	0.0	51.5	0.0	28.9	81.8	13.9	94.4	84.3	0.0	60.3	74.8
ED visits, previous 12 months																						
0	42.3	68.9	0.6	0.0	74.8	4.4	76.7	53.1	80.7	10.3	62.7	91.3	10.0	90.9	0.0	2.7	60.1	0.0	14.2	82.8	8.2	1.6
1 - 4	43.2	28.3	47.9	10.3	25.1	73.4	23.2	46.3	16.9	72.3	36.8	8.7	72.2	9.0	60.7	71.5	30.9	72.7	70.7	16.3	85.1	43.7
5 - 15	12.2	2.7	39.6	60.5	0.1	20.6	0.0	0.7	2.0	16.5	0.4	0.0	15.3	0.0	32.9	22.9	8.3	26.9	14.8	0.5	6.4	44.5
16+	2.3	0.1	11.9	29.2	0.0	1.6	0.1	0.0	0.4	1.0	0.1	0.0	2.5	0.1	6.4	2.9	0.7	0.4	0.2	0.4	0.2	10.2
PCP Attachment, previous 2 years																						
<50%	66.5	74.7	85.3	96.3	38.5	59.3	49.3	65.9	40.3	52.6	78.3	67.2	65.6	61.4	86.7	85.4	24.1	82.3	58.0	81.1	87.9	78.7
50-74.9	23.2	18.7	12.2	3.7	35.3	23.5	35.8	23.9	34.2	30.6	18.0	26.9	25.3	24.5	12.8	12.1	40.6	16.1	31.3	18.3	10.5	20.1
75+	9.9	6.4	2.5	0.0	25.2	16.9	14.9	10.2	22.5	16.1	3.6	5.9	8.7	13.3	0.5	2.5	35.3	1.6	10.7	0.6	1.6	1.2
Few visits	0.4	0.2	0.0	0.0	1.0	0.3	0.0	0.0	3.0	0.7	0.1	0.0	0.4	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Types of specialist visited at least twice, previous year																						
0	19.4	26.2	1.1	2.1	6.1	0.0	1.0	13.0	15.3	0.1	21.6	67.0	0.6	100.0	31.6	0.0	4.6	2.7	0.0	40.6	3.0	16.0
1	21.2	58.5	3.5	8.2	26.6	6.9	49.8	24.4	62.8	1.5	28.5	28.0	7.6	0.0	42.5	7.3	28.0	8.3	0.0	34.1	6.7	20.2
2 - 3	36.3	15.0	31.0	53.0	54.4	36.8	44.5	50.9	21.8	27.6	42.0	5.0	65.7	0.0	25.8	78.3	48.4	37.6	43.8	22.6	53.2	43.1
4+	23.1	0.4	64.4	36.7	12.8	56.2	4.8	11.7	0.1	70.9	7.9	0.1	26.1	0.0	0.0	14.4	19.0	51.4	56.2	2.7	37.1	20.7
Alcohol Misuse	15.9	41.8	51.6	82.1	4.5	12.2	1.3	41.1	1.9	9.5	8.2	13.3	5.0	5.7	29.1	52.7	2.7	10.4	20.7	0.5	2.8	15.9
Depression	23.7	42.4	84.1	68.9	5.0	20.2	14.1	66.9	7.8	13.3	12.1	4.0	29.5	7.0	8.0	90.3	23.1	28.9	20.9	10.2	22.7	14.6
Schizophrenia	9.4	64.4	38.3	17.9	0.7	0.9	0.0	43.4	0.6	0.1	3.1	0.7	2.2	0.1	2.1	75.6	0.5	1.8	1.8	1.6	1.5	0.1
COPD	31.7	5.6	62.2	33.9	20.0	16.0	13.7	49.5	5.8	41.0	58.1	27.3	12.8	6.5	47.6	10.9	25.3	77.3	41.1	24.7	33.0	71.8
Dementia	7.2	4.7	26.0	2.6	0.0	0.0	0.0	13.6	0.0	0.6	16.3	0.0	0.1	0.6	1.0	8.3	1.2	28.0	2.0	18.5	20.5	4.1
Diabetes	35.2	6.3	61.4	22.4	59.9	60.2	4.8	40.6	2.7	82.1	57.2	43.9	5.2	4.6	32.9	8.1	28.0	55.1	8.7	22.5	29.6	65.2
CAD	34.5	0.4	49.4	11.3	43.5	5.3	6.0	27.4	1.9	90.7	92.0	29.9	3.3	1.0	7.7	2.5	28.2	89.0	24.1	29.1	39.7	78.2
Heart Failure	20.8	0.2	24.1	4.7	20.5	13.2	0.0	7.7	1.4	64.5	72.3	4.6	0.7	0.2	5.4	0.4	2.2	81.9	8.5	7.9	10.0	60.4
Hypertension	62.8	8.4	88.1	28.0	96.2	94.9	19.0	64.0	7.2	99.0	99.6	82.4	3.7	9.7	55.5	13.0	71.8	100.0	43.6	84.9	85.4	98.1
CKD	32.1	3.8	48.3	24.3	62.2	88.7	9.1	19.7	8.7	79.7	50.9	8.5	14.0	4.4	16.9	2.0	18.7	64.4	17.0	9.7	19.2	60.4
Autoimmune	8.0	0.2	0.1	0.7	0.0	1.0	0.0	0.9	63.5	1.5	1.0	0.3	29.2	0.1	1.8	0.0	97.3	0.7	0.2	1.0	1.5	1.7
Stroke	19.2	3.1	33.8	15.7	13.3	12.7	3.4	17.2	1.6	34.8	45.4	14.6	5.1	2.0	11.0	1.7	11.9	52.8	15.7	21.1	36.6	27.9
Cancer	15.7	1.6	20.1	10.1	17.0	9.6	38.6	3.4	0.0	26.9	13.8	8.3	10.9	4.5	16.4	3.5	0.0	18.9	52.1	13.5	25.2	22.4
DESIGNATION (see below)		1	1	2	3	3	4	1	6	5	5	7	6	7	7	1	6	5	8	9	9	5
	Name	Groups							Name	Groups												
1	Severe mental health conditions	1, 2, 7, 15						6	Biologic therapies for autoimmune conditions	8, 12, 16												
2	Unstable housing situations and/or substance abuse disorders	3						7	Rehabilitation after, and/or recovering from complications of, surgery	z												
3	Advanced CKD	4, 5						8	Chronic obstructive pulmonary disease or other respiratory conditions	18												
4	Treatment for cancers	6						9	Elderly patients awaiting community placement	19, 20												
5	Cardiovascular disease	9, 10, 17, 21																				

Appendix 1, as supplied by authors. Appendix to: Wick J, Campbell DJT, McAlister FA, et al. Identifying subgroups of adult high-cost health care users: a retrospective analysis. *CMAJ Open* 2022. DOI:10.9778/cmajo.20210265. Copyright © 2022 The Author(s) or their employer(s). To receive this resource in an accessible format, please contact us at cmajgroup@cmaj.ca.

eTable 4. Prevalence and cumulative cost of the top 10 diagnoses for each persistently high-cost subgroup, stratified by healthcare resource type

a. Cardiovascular disease

Prevalence				Cumulative Cost				
Hospital				Hospital				
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)		
1	J189	Pneumonia, unspecified	29.6%	11.1%	1	I500	Congestive heart failure	\$45,249,744
2	Z511	Chemotherapy session for neoplasm	17.1%	11.9%	2	Z508	Care involving use of other rehabilitation procedures	\$37,762,568
3	J441	Chronic obstructive pulmonary disease with acute exacerbation, unspecified	12.8%	6.6%	3	Z501	Other physical therapy	\$24,322,320
4	Z515	Palliative care	11.7%	7.6%	4	Z509	Care involving use of rehabilitation procedure, unspecified	\$22,463,282
5	Z509	Care involving use of rehabilitation procedure, unspecified	11.1%	7.2%	5	J440	Chronic obstructive pulmonary disease with acute lower respiratory infection	\$15,948,070
6	J690	Pneumonitis due to food and vomit	11.0%	6.1%	6	E1171	Type 2 diabetes mellitus with foot ulcer (angiopathic) (neuropathic) with gangrene	\$12,623,300
7	R53	Malaise and fatigue	10.9%	6.5%	7	J441	Chronic obstructive pulmonary disease with acute exacerbation, unspecified	\$11,489,092
8	J440	Chronic obstructive pulmonary disease with acute lower respiratory infection	10.5%	7.1%	8	E1123	Type 2 diabetes mellitus with established or advanced kidney disease	\$11,348,182
9	N390	Urinary tract infection, site not specified	9.6%	5.5%	9	N179	Acute renal failure, unspecified	\$9,136,431
10	I2510	Atherosclerotic heart disease of native coronary artery	8.4%	3.8%	10	N390	Urinary tract infection, site not specified	\$8,986,049
Emergency Department				Emergency Department				
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)		
1	I500	Congestive heart failure	33.4%	13.1%	1	Z491	Extracorporeal dialysis	\$244,583,408
2	Z512	Other chemotherapy	25.0%	25.9%	2	Z016	Radiological examination, not elsewhere classified	\$6,240,770
3	R074	Chest pain, unspecified	18.7%	13.6%	3	N189	Chronic kidney disease, unspecified	\$4,646,093
4	N390	Urinary tract infection, site not specified	17.8%	13.6%	4	Z713	Dietary counselling and surveillance	\$4,403,819
5	J189	Pneumonia, unspecified	17.5%	13.5%	5	Z512	Other chemotherapy	\$3,575,677
6	Z5188	Pain management therapy (for) Other specified medical care NEC	17.2%	16.4%	6	Z718	Other specified counselling	\$3,348,946
7	R53	Malaise and fatigue	16.5%	11.2%	7	Z719	Counselling, unspecified	\$3,260,509
8	R060	Dyspnoea	14.7%	9.2%	8	I500	Congestive heart failure	\$2,940,079
9	J441	Chronic obstructive pulmonary disease with acute exacerbation, unspecified	13.9%	8.1%	9	Z501	Other physical therapy	\$2,425,297
10	L0311	Cellulitis of lower limb	12.6%	8.7%	10	Z659	Problem related to unspecified psychosocial circumstances	\$2,342,497
Outpatient Visits				Outpatient visits				
ICD9	Description	Group	Overall	ICD9	Description	Cost (\$CAD)		
1	780	General Symptoms	76.6%	70.6%	1	585	Chronic Renal Failure	\$23,957,432
2	401	Essential Hypertension	58.8%	42.2%	2	586	Renal Failure Nos	\$5,912,714
3	428	Heart Failure	55.7%	26.2%	3	428	Heart Failure	\$4,437,935
4	250	Diabetes Mellitus	50.7%	31.5%	4	428	Chf Nos	\$3,418,880
5	585	Chronic Renal Failure#	48.8%	28.1%	5	250	Diabetes Mellitus	\$2,418,333
6	786	Resp Sys/Oth Chest Symp	48.0%	35.6%	6	799.1	Respiratory Arrest	\$2,307,338
7	4280	Chf Nos	46.4%	20.3%	7	486	Pneumonia, Organism Nos	\$2,278,772
8	486	Pneumonia, Organism Nos	44.7%	31.8%	8	780	General Symptoms	\$2,130,790
9	7809	General Symptoms Nec#	43.0%	34.9%	9	584	Acute Renal Failure	\$1,994,853
10	7865	Chest Pain	41.5%	30.9%	10	496	Chr Airway Obstruct Nec	\$1,957,692
Medications				Medications				
ATC	Description	Group	Overall	ATC	Description	Cost (\$CAD)		
1	A02BC02	Pantoprazole	74.3%	60.8%	1	N04BA02	Levodopa And Decarboxylase Inhibitor	\$13,800,000
2	C03CA01	Furosemide	69.3%	39.5%	2	B03XA02	Darbepoetin Alfa	\$9,976,371
3	B01AC06	Acetylsalicylic Acid	55.1%	31.2%	3	L04AC03	Anakinra	\$3,915,474
4	R03AC02	Salbutamol	48.5%	35.2%	4	L04AB02	Infliximab	\$3,379,206
5	N02BE01	Acetaminophen (Paracetamol)	46.3%	31.8%	5	M03AX01	Botulinum Toxin	\$2,532,925
6	N05CF01	Zopiclone	42.8%	38.9%	6	J01XA01	Vancomycin	\$1,673,003
7	C07AB02	Metoprolol	41.3%	22.5%	7	B03XA01	Erythropoietin	\$1,544,227
8	C08CA01	Amlodipine	40.9%	27.4%	8	S01LA04	Ranibizumab	\$1,457,332
9	C10AA05	Atorvastatin	40.4%	23.4%	9	A02BC02	Pantoprazole	\$1,380,797
10	N02AA59	Codeine, Combinations Excl. Psycholeptics	39.7%	38.1%	10	L04AX05	Pirfenidone	\$1,240,788

b. Rehabilitation after, and/or recovering from complications of, surgery

Prevalence					Cumulative Cost		
Hospital					Hospital		
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)	
1	Z511 Chemotherapy session for neoplasm	11.7%	11.9%	1	Z509 Care involving use of rehabilitation procedure, unspecified	\$27,239,358	
2	Z540 Convalescence following surgery	9.2%	6.4%	2	Z508 Care involving use of other rehabilitation procedures	\$22,916,142	
3	Z515 Palliative care	8.7%	7.6%	3	C920 Acute myeloblastic leukaemia [AML]	\$12,892,383	
4	J189 Pneumonia, unspecified	7.0%	11.1%	4	Z501 Other physical therapy	\$10,307,443	
5	Z5180 Pain management therapy	6.1%	4.0%	5	Z540 Convalescence following surgery	\$9,710,466	
6	J440 Chronic obstructive pulmonary disease with acute lower respiratory infection	6.0%	7.1%	6	T814 Infection following a procedure, not elsewhere classified	\$9,371,450	
7	N390 Urinary tract infection, site not specified	5.6%	5.5%	7	I500 Congestive heart failure	\$9,199,512	
8	Z509 Care involving use of rehabilitation procedure, unspecified	5.6%	7.2%	8	Z515 Palliative care	\$7,809,354	
9	Z508 Care involving use of other rehabilitation procedures	5.0%	3.6%	9	I2510 Atherosclerotic heart disease of native coronary artery	\$6,150,975	
10	J441 Chronic obstructive pulmonary disease with acute exacerbation, unspecified	4.7%	6.6%	10	J440 Chronic obstructive pulmonary disease with acute lower respiratory infection	\$4,950,091	
Emergency Department					Emergency Department		
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)	
1	Z512 Other chemotherapy	28.0%	25.9%	1	Z491 Extracorporeal dialysis	\$57,098,496	
2	Z5188 Pain management therapy (for) Other specified medical care NEC	19.8%	16.4%	2	Z016 Radiological examination, not elsewhere classified	\$6,703,625	
3	Z480 Attention to surgical dressings and sutures	15.0%	12.7%	3	Z512 Other chemotherapy	\$4,197,374	
4	R104 Other and unspecified abdominal pain	13.6%	14.6%	4	Z511 Chemotherapy session for neoplasm	\$3,043,685	
5	J189 Pneumonia, unspecified	12.5%	13.5%	5	Z719 Counselling, unspecified	\$2,525,498	
6	N390 Urinary tract infection, site not specified	11.1%	13.6%	6	N189 Chronic kidney disease, unspecified	\$2,295,326	
7	R074 Chest pain, unspecified	9.9%	13.6%	7	Z718 Other specified counselling	\$2,071,318	
8	R53 Malaise and fatigue	9.5%	11.2%	8	Z501 Other physical therapy	\$2,061,249	
9	I500 Congestive heart failure	9.2%	13.1%	9	Z713 Dietary counselling and surveillance	\$1,700,504	
10	A099 Gastroenteritis and colitis of unspecified origin	9.1%	9.3%	10	Z513 Blood transfusion (without reported diagnosis)	\$1,621,262	
Outpatient Visits					Outpatient visits		
ICD9	Description	Group	Overall	ICD9	Description	Cost (\$CAD)	
1	780 General Symptoms	67.9%	70.6%	1	585 Chronic Renal Failure	\$4,594,925	
2	401 Essential Hypertension	37.6%	42.2%	2	799.1 Respiratory Arrest	\$3,621,770	
3	789 Oth Abdomen/Pelvis Symp	36.8%	38.2%	3	586 Renal Failure Nos	\$2,689,416	
4	7890 Abdominal Pain	33.4%	31.3%	4	296 Affective Psychoses	\$2,591,059	
5	7991 Respiratory Arrest	33.1%	26.4%	5	311 Depressive Disorder Nec	\$1,847,650	
6	786 Resp Sys/Oth Chest Symp	31.7%	35.6%	6	780 General Symptoms	\$1,555,686	
7	486 Pneumonia, Organism Nos	30.3%	31.8%	7	486 Pneumonia, Organism Nos	\$1,313,343	
8	7809 General Symptoms Nec#	30.0%	34.9%	8	250 Diabetes Mellitus	\$1,160,078	
9	682 Other Cellulitis/Abscess	29.9%	31.5%	9	584 Acute Renal Failure	\$1,121,734	
10	311 Depressive Disorder Nec	27.8%	36.6%	10	205 Acute Myeloid Leukemia	\$1,085,757	
Medications					Medications		
ATC	Description	Group	Overall	ATC	Description	Cost (\$CAD)	
1	A02BC02 Pantoprazole	57.8%	60.8%	1	N05AX12 Aripiprazole	\$25,500,000	
2	N02AA59 Codeine, Combinations Excl. Psycholeptics	36.4%	38.1%	2	L04AC03 Anakinra	\$23,600,000	
3	N05CF01 Zopiclone	35.1%	38.9%	3	L04AB02 Infliximab	\$18,400,000	
4	C03CA01 Furosemide	32.0%	39.5%	4	A07EC02 Mesalazine	\$15,800,000	
5	R03AC02 Salbutamol	28.6%	35.2%	5	N04BA02 Levodopa And Decarboxylase Inhibitor	\$13,800,000	
6	H02AB07 Prednisone	27.5%	31.9%	6	L04AB06 Golimumab	\$11,800,000	
7	N03AX12 Gabapentin	25.9%	29.6%	7	M03AX01 Botulinum Toxin	\$11,300,000	
8	B01AC06 Acetylsalicylic Acid	25.8%	31.2%	8	J05AX Other Antivirals	\$7,235,308	
9	C08CA01 Amlodipine	23.0%	27.4%	9	A07EA04 Betamethasone	\$5,702,699	
10	N02AA03 Hydromorphone	22.1%	23.9%	10	L04AA25 Eculizumab	\$5,489,149	

c. Severe mental illness

Prevalence				Cumulative Cost				
Hospital				Hospital				
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)		
1	F209	Schizophrenia, unspecified	19.3%	3.4%	1	F209	Schizophrenia, unspecified	\$56,398,080
2	F29	Unspecified nonorganic psychosis	11.6%	1.9%	2	F259	Schizoaffective disorder, unspecified	\$28,908,026
3	F319	Bipolar affective disorder, unspecified	9.5%	2.0%	3	F252	Schizoaffective disorder, mixed type	\$18,284,614
4	Z511	Chemotherapy session for neoplasm	9.1%	11.9%	4	F200	Paranoid schizophrenia	\$18,109,164
5	F200	Paranoid schizophrenia	8.2%	1.4%	5	Z508	Care involving use of other rehabilitation procedures	\$14,977,055
6	F259	Schizoaffective disorder, unspecified	7.7%	1.3%	6	F29	Unspecified nonorganic psychosis	\$11,614,158
7	F603	Emotionally unstable personality disorder	6.9%	1.9%	7	Z509	Care involving use of rehabilitation procedure, unspecified	\$11,319,882
8	J441	Chronic obstructive pulmonary disease with acute exacerbation, unspecified	6.3%	6.6%	8	F319	Bipolar affective disorder, unspecified	\$10,551,225
9	J690	Pneumonitis due to food and vomit	6.1%	6.1%	9	J440	Chronic obstructive pulmonary disease with acute lower respiratory infection	\$7,243,269
10	F322	Severe depressive episode without psychotic symptoms	5.4%	2.1%	10	F322	Severe depressive episode without psychotic symptoms	\$7,115,371
Emergency Department				Emergency Department				
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)		
1	F209	Schizophrenia, unspecified	24.9%	4.4%	1	Z491	Extracorporeal dialysis	\$28,615,520
2	F29	Unspecified nonorganic psychosis	19.0%	3.9%	2	F209	Schizophrenia, unspecified	\$10,356,710
3	F329	Depressive episode, unspecified	17.0%	5.7%	3	Z016	Radiological examination, not elsewhere classified	\$3,103,616
4	Z512	Other chemotherapy	17.0%	25.9%	4	F200	Paranoid schizophrenia	\$2,839,775
5	R104	Other and unspecified abdominal pain	16.4%	14.6%	5	F203	Undifferentiated schizophrenia	\$2,550,343
6	R074	Chest pain, unspecified	14.5%	13.6%	6	F99	Mental disorder, not otherwise specified	\$2,231,880
7	F419	Anxiety disorder, unspecified	13.0%	4.8%	7	F250	Schizoaffective disorder, manic type	\$2,191,615
8	J189	Pneumonia, unspecified	11.5%	13.5%	8	Z512	Other chemotherapy	\$1,700,777
9	Z5188	Pain management therapy (for) Other specified medical care NEC	11.5%	16.4%	9	F29	Unspecified nonorganic psychosis	\$1,421,736
10	Z480	Attention to surgical dressings and sutures	10.9%	12.7%	10	Z718	Other specified counselling	\$1,391,584
Outpatient Visits				Outpatient visits				
ICD9	Description	Group	Overall	ICD9	Description	Cost (\$CAD)		
1	780	General Symptoms	78.2%	70.6%	1	296	Affective Psychoses	\$17,027,308
2	311	Depressive Disorder Nec	75.5%	36.6%	2	295	Schizophrenic Disorders	\$14,807,970
3	296	Affective Psychoses	70.2%	26.6%	3	311	Depressive Disorder Nec	\$8,767,962
4	300	Neurotic Disorders	58.9%	26.7%	4	295.3	Paranoid Schizophrenia	\$4,541,480
5	295	Schizophrenic Disorders	50.2%	11.0%	5	319	Intellect Disability Nos	\$3,247,455
6	3000	Anxiety States	41.1%	23.0%	6	300	Neurotic Disorders	\$3,061,349
7	789	Oth Abdomen/Pelvis Symp	36.0%	38.2%	7	585	Chronic Renal Failure	\$2,821,118
8	781	Nerv/Musculskel Sys Symp	35.9%	27.7%	8	296	Manic Dis, Singl Episode	\$2,817,440
9	7809	General Symptoms Nec#	35.0%	34.9%	9	295.7	Schizoaffective Type	\$2,533,597
10	298	Oth Nonorganic Psychoses	34.1%	9.8%	10	799.1	Respiratory Arrest	\$2,320,708
Medications				Medications				
ATC	Description	Group	Overall	ATC	Description	Cost (\$CAD)		
1	A02BC02	Pantoprazole	53.0%	60.8%	1	N05AX12	Aripiprazole	\$507,000,000
2	N05CF01	Zopiclone	47.5%	38.9%	2	N04BA02	Levodopa And Decarboxylase Inhibitor	\$56,400,000
3	N05BA06	Lorazepam	43.5%	26.1%	3	M03AX01	Botulinum Toxin	\$7,836,073
4	N05AH04	Quetiapine	41.8%	16.6%	4	N05AX08	Risperidone	\$5,282,268
5	N02AA59	Codeine, Combinations Excl. Psycholeptics	37.1%	38.1%	5	N05AX13	Paliperidone	\$5,076,955
6	R03AC02	Salbutamol	37.0%	35.2%	6	L04AB02	Infliximab	\$4,921,565
7	N03AE01	Clonazepam	34.0%	13.4%	7	J05AX65	Sofosbuvir And Ledipasvir	\$4,082,084
8	N02BE01	Acetaminophen (Paracetamol)	32.3%	31.8%	8	J05AX	Other Antivirals	\$3,367,583
9	N05AH03	Olanzapine	31.5%	9.2%	9	N05AH02	Clozapine	\$3,218,509
10	N03AX12	Gabapentin	30.1%	29.6%	10	N05AH04	Quetiapine	\$2,245,812

d. Advanced CKD

Prevalence				Cumulative Cost		
Hospital				Hospital		
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)
1	J189 Pneumonia, unspecified	11.3%	11.1%	1	I500 Congestive heart failure	\$13,274,363
2	R104 Other and unspecified abdominal pain	8.9%	2.6%	2	E1123 Type 2 diabetes mellitus with established or advanced kidney disease	\$8,257,803
3	E1010 Type 1 diabetes mellitus with ketoacidosis	8.0%	2.9%	3	Z508 Care involving use of other rehabilitation procedures	\$8,117,047
4	N390 Urinary tract infection, site not specified	7.5%	5.5%	4	Z509 Care involving use of rehabilitation procedure, unspecified	\$7,570,236
5	J440 Chronic obstructive pulmonary disease with acute lower respiratory infection	6.7%	7.1%	5	N185 Chronic kidney disease, stage 5	\$7,496,869
6	Z511 Chemotherapy session for neoplasm	6.0%	11.9%	6	Z501 Other physical therapy	\$7,078,631
7	Z540 Convalescence following surgery	5.5%	6.4%	7	I2510 Atherosclerotic heart disease of native coronary artery	\$4,905,683
8	R53 Malaise and fatigue	5.1%	6.5%	8	E1171 Type 2 diabetes mellitus with foot ulcer (angiopathic) (neuropathic) with gangrene	\$4,506,240
9	Z509 Care involving use of rehabilitation procedure, unspecified	4.9%	7.2%	9	E1023 Type 1 diabetes mellitus with established or advanced kidney disease	\$4,182,999
10	Z515 Palliative care	4.9%	7.6%	10	N179 Acute renal failure, unspecified	\$4,035,618
Emergency Department				Emergency Department		
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)
1	Z512 Other chemotherapy	32.9%	25.9%	1	Z491 Extracorporeal dialysis	\$316,928,352
2	Z5188 Pain management therapy (for) Other specified medical care NEC	23.7%	16.4%	2	N189 Chronic kidney disease, unspecified	\$10,704,591
3	R104 Other and unspecified abdominal pain	14.2%	14.6%	3	Z016 Radiological examination, not elsewhere classified	\$6,098,672
4	Z480 Attention to surgical dressings and sutures	14.0%	12.7%	4	Z713 Dietary counselling and surveillance	\$6,069,338
5	I500 Congestive heart failure	13.9%	13.1%	5	Z718 Other specified counselling	\$5,505,908
6	R074 Chest pain, unspecified	13.8%	13.6%	6	Z512 Other chemotherapy	\$5,407,219
7	N179 Acute renal failure, unspecified	12.8%	7.6%	7	Z719 Counselling, unspecified	\$4,437,384
8	J189 Pneumonia, unspecified	11.5%	13.5%	8	Z659 Problem related to unspecified psychosocial circumstances	\$3,415,446
9	A419 Sepsis, unspecified	10.7%	9.2%	9	Z501 Other physical therapy	\$2,510,574
10	N390 Urinary tract infection, site not specified	10.1%	13.6%	10	Z492 Other dialysis	\$2,284,639
Outpatient Visits				Outpatient visits		
ICD9	Description	Group	Overall	ICD9	Description	Cost (\$CAD)
1	585 Chronic Renal Failure	63.4%	28.1%	1	585 Chronic Renal Failure	\$27,004,370
2	780 General Symptoms	61.5%	70.6%	2	586 Renal Failure Nos	\$8,311,061
3	401 Essential Hypertension	50.7%	42.2%	3	799.1 Respiratory Arrest	\$2,345,529
4	586 Renal Failure Nos	50.2%	21.7%	4	584 Acute Renal Failure	\$1,920,884
5	250 Diabetes Mellitus	48.9%	31.5%	5	250 Diabetes Mellitus	\$1,656,668
6	584 Acute Renal Failure	43.0%	21.2%	6	428 Heart Failure	\$1,372,207
7	789 Oth Abdomen/Pelvis Symp	36.3%	38.2%	7	583 Nephritis Nos	\$1,234,963
8	786 Resp Sys/Oth Chest Symp	34.3%	35.6%	8	V42.0 Kidney Transplant Status	\$1,094,979
9	7809 General Symptoms Nec#	32.9%	34.9%	9	428 Chf Nos	\$1,067,557
10	7865 Chest Pain	32.5%	30.9%	10	362 Retinal Disorders Nec	\$927,409
Medications				Medications		
ATC	Description	Group	Overall	ATC	Description	Cost (\$CAD)
1	A02BC02 Pantoprazole	65.9%	60.8%	1	N04BA02 Levodopa And Decarboxylase Inhibitor	\$97,400,000
2	C03CA01 Furosemide	52.1%	39.5%	2	B03XA02 Darbepoetin Alfa	\$14,000,000
3	N02AA59 Codeine, Combinations Excl. Psycholeptics	47.9%	38.1%	3	M03AX01 Botulinum Toxin	\$11,500,000
4	C08CA01 Amlodipine	47.3%	27.4%	4	N05AX12 Aripiprazole	\$11,200,000
5	N05CF01 Zopiclone	37.8%	38.9%	5	L04AB02 Infliximab	\$8,933,228
6	H02AB07 Prednisone	36.6%	31.9%	6	L04AA33 Vedolizumab	\$6,123,952
7	B01AC06 Acetylsalicylic Acid	34.7%	31.2%	7	C10AX13 Evolocumab	\$5,017,250
8	C10AA05 Atorvastatin	30.5%	23.4%	8	H01CB02 Octreotide	\$4,624,935
9	N03AX12 Gabapentin	30.3%	29.6%	9	J05AX Other Antivirals	\$3,050,528
10	R03AC02 Salbutamol	28.7%	35.2%	10	L04AC03 Anakinra	\$2,556,135

e. Biologic therapies for autoimmune conditions

Prevalence					Cumulative Cost			
Hospital					Hospital			
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)		
1	K729	Hepatic failure, unspecified	4.2%	2.9%	1	E840	Cystic fibrosis with pulmonary manifestations	\$3,288,769
2	Z508	Care involving use of other rehabilitation procedures	3.0%	3.6%	2	Z509	Care involving use of rehabilitation procedure, unspecified	\$3,172,037
3	J440	Chronic obstructive pulmonary disease with acute lower respiratory infection	2.4%	7.1%	3	Z515	Palliative care	\$1,974,938
4	Z540	Convalescence following surgery	2.1%	6.4%	4	F322	Severe depressive episode without psychotic symptoms	\$1,949,229
5	F322	Severe depressive episode without psychotic symptoms	2.1%	2.1%	5	C920	Acute myeloblastic leukaemia [AML]	\$1,912,261
6	R64	Cachexia	2.0%	1.7%	6	F500	Anorexia nervosa	\$1,831,738
7	F603	Emotionally unstable personality disorder	1.6%	1.9%	7	F209	Schizophrenia, unspecified	\$1,649,030
8	A419	Sepsis, unspecified	1.4%	3.5%	8	T814	Infection following a procedure, not elsewhere classified	\$1,547,328
9	Z5180	Pain management therapy	1.4%	4.0%	9	K508	Other Crohn disease	\$1,545,993
10	A099	Gastroenteritis and colitis of unspecified origin	1.4%	2.2%	10	Z501	Other physical therapy	\$1,443,908
Emergency Department					Emergency Department			
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)		
1	Z512	Other chemotherapy	30.7%	25.9%	1	Z491	Extracorporeal dialysis	\$13,507,384
2	R104	Other and unspecified abdominal pain	16.5%	14.6%	2	Z016	Radiological examination, not elsewhere classified	\$3,772,041
3	Z5188	Pain management therapy (for) Other specified medical care NEC	11.7%	16.4%	3	Z512	Other chemotherapy	\$3,510,445
4	Z480	Attention to surgical dressings and sutures	9.0%	12.7%	4	Z718	Other specified counselling	\$1,512,729
5	A099	Gastroenteritis and colitis of unspecified origin	8.6%	9.3%	5	Z719	Counselling, unspecified	\$1,467,052
6	R074	Chest pain, unspecified	8.4%	13.6%	6	Z713	Dietary counselling and surveillance	\$1,407,528
7	K566	Other and unspecified intestinal obstruction	7.3%	4.5%	7	Z513	Blood transfusion (without reported diagnosis)	\$1,317,410
8	J189	Pneumonia, unspecified	6.2%	13.5%	8	F99	Mental disorder, not otherwise specified	\$1,096,696
9	N390	Urinary tract infection, site not specified	6.1%	13.6%	9	K509	Crohn disease, unspecified	\$999,895
10	R51	Headache	5.6%	4.9%	10	F509	Eating disorder, unspecified	\$996,911
Outpatient Visits					Outpatient visits			
ICD9	Description	Group	Overall	ICD9	Description	Cost (\$CAD)		
1	780	General Symptoms	49.5%	70.6%	1	311	Depressive Disorder Nec	\$1,545,025
2	789	Oth Abdomen/Pelvis Symp	35.4%	38.2%	2	296	Affective Psychoses	\$1,343,117
3	311	Depressive Disorder Nec	31.3%	36.6%	3	799.1	Respiratory Arrest	\$1,023,613
4	7890	Abdominal Pain	30.5%	31.3%	4	585	Chronic Renal Failure	\$984,263
5	3000	Anxiety States	24.1%	23.0%	5	555	Regional Enteritis	\$957,484
6	300	Neurotic Disorders	21.7%	26.7%	6	307.1	Anorexia Nervosa	\$683,255
7	682	Other Cellulitis/Abscess	21.2%	31.5%	7	586	Renal Failure Nos	\$677,273
8	786	Resp Sys/Oth Chest Symp	20.8%	35.6%	8	300	Neurotic Disorders	\$659,697
9	7809	General Symptoms Nec#	20.1%	34.9%	9	295	Schizophrenic Disorders	\$565,437
10	7865	Chest Pain	19.1%	30.9%	10	556	Idiopathic Proctocolitis	\$506,957
Medications					Medications			
ATC	Description	Group	Overall	ATC	Description	Cost (\$CAD)		
1	A02BC02	Pantoprazole	41.1%	60.8%	1	L04AB02	Infliximab	\$215,000,000
2	H02AB07	Prednisone	40.7%	31.9%	2	L04AC03	Anakinra	\$73,700,000
3	N02AA59	Codeine, Combinations Excl. Psycholeptics	34.9%	38.1%	3	L04AB06	Golimumab	\$56,500,000
4	N05CF01	Zopiclone	26.8%	38.9%	4	L04AC05	Ustekinumab	\$28,600,000
5	R03AC02	Salbutamol	25.7%	35.2%	5	L04AC07	Tocilizumab	\$26,100,000
6	N05BA06	Lorazepam	24.9%	26.1%	6	M03AX01	Botulinum Toxin	\$23,600,000
7	B03BB01	Folic Acid	18.4%	11.7%	7	A07EC02	Mesalazine	\$22,200,000
8	N03AX12	Gabapentin	16.6%	29.6%	8	L04AB04	Adalimumab	\$22,100,000
9	N02AA03	Hydromorphone	16.4%	23.9%	9	N05AX12	Aripiprazole	\$14,500,000
10	N06AB10	Escitalopram	11.7%	11.6%	10	L04AA25	Eculizumab	\$9,463,452

f. Dementia and awaiting community placement

Prevalence				Cumulative Cost		
Hospital				Hospital		
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)
1	Z511 Chemotherapy session for neoplasm	30.3%	11.9%	1	Z508 Care involving use of other rehabilitation procedures	\$47,646,244
2	Z509 Care involving use of rehabilitation procedure, unspecified	18.9%	7.2%	2	Z501 Other physical therapy	\$27,458,308
3	Z515 Palliative care	16.3%	7.6%	3	Z509 Care involving use of rehabilitation procedure, unspecified	\$21,209,826
4	J189 Pneumonia, unspecified	12.6%	11.1%	4	I500 Congestive heart failure	\$11,465,127
5	R53 Malaise and fatigue	11.2%	6.5%	5	F03 Unspecified dementia	\$11,288,498
6	Z501 Other physical therapy	8.6%	2.8%	6	N390 Urinary tract infection, site not specified	\$7,486,910
7	J441 Chronic obstructive pulmonary disease with acute exacerbation, unspecified	7.7%	6.6%	7	J440 Chronic obstructive pulmonary disease with acute lower respiratory infection	\$7,111,769
8	J440 Chronic obstructive pulmonary disease with acute lower respiratory infection	7.3%	7.1%	8	S72100 Intertrochanteric fracture, closed	\$7,081,283
9	Z540 Convalescence following surgery	7.1%	6.4%	9	Z540 Convalescence following surgery	\$6,816,404
10	J690 Pneumonitis due to food and vomit	6.7%	6.1%	10	Z515 Palliative care	\$6,426,738
Emergency Department				Emergency Department		
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)
1	N390 Urinary tract infection, site not specified	21.5%	13.6%	1	Z491 Extracorporeal dialysis	\$25,712,116
2	R53 Malaise and fatigue	16.6%	11.2%	2	Z016 Radiological examination, not elsewhere classified	\$2,745,071
3	Z512 Other chemotherapy	14.9%	25.9%	3	Z512 Other chemotherapy	\$1,638,151
4	J189 Pneumonia, unspecified	14.3%	13.5%	4	Z511 Chemotherapy session for neoplasm	\$1,427,929
5	I500 Congestive heart failure	13.8%	13.1%	5	Z513 Blood transfusion (without reported diagnosis)	\$1,103,985
6	Z5188 Pain management therapy (for) Other specified medical care NEC	9.9%	16.4%	6	Z501 Other physical therapy	\$1,014,914
7	J441 Chronic obstructive pulmonary disease with acute exacerbation, unspecified	8.6%	8.1%	7	Z508 Care involving use of other rehabilitation procedures	\$1,000,266
8	R074 Chest pain, unspecified	8.5%	13.6%	8	Z719 Counselling, unspecified	\$967,657
9	Z480 Attention to surgical dressings and sutures	8.5%	12.7%	9	Z718 Other specified counselling	\$954,868
10	R104 Other and unspecified abdominal pain	8.3%	14.6%	10	N390 Urinary tract infection, site not specified	\$669,535
Outpatient Visits				Outpatient visits		
ICD9	Description	Group	Overall	ICD9	Description	Cost (\$CAD)
1	780 General Symptoms	83.8%	70.6%	1	585 Chronic Renal Failure	\$2,609,295
2	401 Essential Hypertension	59.6%	42.2%	2	290 Senile/Presenile Psychos	\$2,117,677
3	290 Senile/Presenile Psychos	46.4%	16.5%	3	780 General Symptoms	\$1,753,334
4	7809 General Symptoms Nec#	43.1%	34.9%	4	311 Depressive Disorder Nec	\$1,537,814
5	715 Osteoarthritis Et Al	39.5%	25.4%	5	486 Pneumonia, Organism Nos	\$1,307,107
6	789 Oth Abdomen/Pelvis Symp	39.0%	38.2%	6	428 Heart Failure	\$1,084,331
7	486 Pneumonia, Organism Nos	37.1%	31.8%	7	820 Fracture Neck Of Femur	\$1,032,382
8	311 Depressive Disorder Nec	36.8%	36.6%	8	296 Affective Psychoses	\$982,323
9	786 Resp Sys/Oth Chest Symp	36.0%	35.6%	9	496 Chr Airway Obstruct Nec	\$910,928
10	781 Nerv/Musculskel Sys Symp	35.3%	27.7%	10	436 Cva	\$892,487
Medications				Medications		
ATC	Description	Group	Overall	ATC	Description	Cost (\$CAD)
1	N02BE01 Acetaminophen (Paracetamol)	61.5%	31.8%	1	N04BA02 Levodopa And Decarboxylase Inhibitor	\$67,900,000
2	A02BC02 Pantoprazole	60.0%	60.8%	2	M03AX01 Botulinum Toxin	\$4,268,102
3	C03CA01 Furosemide	45.1%	39.5%	3	B03XA02 Darbeoetin Alfa	\$1,821,175
4	B01AC06 Acetylsalicylic Acid	44.3%	31.2%	4	L04AB02 Infliximab	\$1,657,004
5	A06AB06 Senna Glycosides	41.3%	23.2%	5	H01CB02 Octreotide	\$1,629,640
6	N05CF01 Zopiclone	36.2%	38.9%	6	L04AA25 Eculizumab	\$1,584,239
7	C08CA01 Amlodipine	34.9%	27.4%	7	A07EC02 Mesalazine	\$1,097,033
8	A12AA04 Calcium Carbonate	33.8%	18.6%	8	L04AC03 Anakinra	\$1,026,716
9	H03AA01 Levothyroxine Sodium	33.7%	21.8%	9	S01LA04 Ranibizumab	\$940,163
10	R03AC02 Salbutamol	32.3%	35.2%	10	V03AC03 Deferasirox	\$841,775

g. Treatment for cancers

Prevalence Hospital				Cumulative Cost Hospital		
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)
1	Z5180 Pain management therapy	6.6%	4.0%	1	C920 Acute myeloblastic leukaemia [AML]	\$3,196,981
2	Z511 Chemotherapy session for neoplasm	6.5%	11.9%	2	Z508 Care involving use of other rehabilitation procedures	\$2,882,097
3	C900 Multiple myeloma	5.5%	1.4%	3	Z509 Care involving use of rehabilitation procedure, unspecified	\$2,663,403
4	Z540 Convalescence following surgery	4.8%	6.4%	4	Z515 Palliative care	\$2,226,350
5	Z509 Care involving use of rehabilitation procedure, unspecified	4.8%	7.2%	5	Z501 Other physical therapy	\$2,122,318
6	J440 Chronic obstructive pulmonary disease with acute lower respiratory infection	4.7%	7.1%	6	T8279 Infection and inflammatory reaction due to other and unspecified cardiac and vascular devices, implants and grafts	\$1,623,128
7	Z508 Care involving use of other rehabilitation procedures	4.3%	3.6%	7	C833 Diffuse large B-cell lymphoma	\$1,553,937
8	Z515 Palliative care	3.5%	7.6%	8	K8300 Primary sclerosing cholangitis	\$1,496,380
9	K729 Hepatic failure, unspecified	3.5%	2.9%	9	A419 Sepsis, unspecified	\$1,408,678
10	I4890 Atrial fibrillation and flutter	3.4%	1.7%	10	Z511 Chemotherapy session for neoplasm	\$1,377,478
Emergency Department				Emergency Department		
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)
1	Z512 Other chemotherapy	27.9%	25.9%	1	Z491 Extracorporeal dialysis	\$10,508,011
2	Z5188 Pain management therapy (for) Other specified medical care NEC	13.9%	16.4%	2	Z016 Radiological examination, not elsewhere classified	\$2,114,988
3	Z480 Attention to surgical dressings and sutures	10.5%	12.7%	3	Z511 Chemotherapy session for neoplasm	\$1,276,505
4	J189 Pneumonia, unspecified	10.2%	13.5%	4	Z512 Other chemotherapy	\$1,035,119
5	Z513 Blood transfusion (without reported diagnosis)	9.7%	5.5%	5	Z513 Blood transfusion (without reported diagnosis)	\$849,213
6	N390 Urinary tract infection, site not specified	9.6%	13.6%	6	Z719 Counselling, unspecified	\$691,731
7	R104 Other and unspecified abdominal pain	9.4%	14.6%	7	Z501 Other physical therapy	\$578,109
8	R074 Chest pain, unspecified	9.0%	13.6%	8	Z713 Dietary counselling and surveillance	\$522,452
9	T814 Infection following a procedure, not elsewhere classified	8.5%	6.3%	9	Z718 Other specified counselling	\$512,706
10	A419 Sepsis, unspecified	6.7%	9.2%	10	N189 Chronic kidney disease, unspecified	\$423,655
Outpatient Visits				Outpatient visits		
ICD9	Description	Group	Overall	ICD9	Description	Cost (\$CAD)
1	780 General Symptoms	64.9%	70.6%	1	585 Chronic Renal Failure	\$911,251
2	789 Oth Abdomen/Pelvis Symp	36.3%	38.2%	2	296 Affective Psychoses	\$814,907
3	786 Resp Sys/Oth Chest Symp	32.2%	35.6%	3	799.1 Respiratory Arrest	\$597,098
4	7890 Abdominal Pain	30.6%	31.3%	4	311 Depressive Disorder Nec	\$579,000
5	311 Depressive Disorder Nec	27.8%	36.6%	5	586 Renal Failure Nos	\$378,626
6	7809 General Symptoms Nec#	27.2%	34.9%	6	205 Myeloid Leukemia	\$271,394
7	7991 Respiratory Arrest	26.3%	26.4%	7	486 Pneumonia, Organism Nos	\$263,109
8	486 Pneumonia, Organism Nos	25.1%	31.8%	8	V42.6 Lung Transplant Status	\$260,475
9	401 Essential Hypertension	24.4%	42.2%	9	780 General Symptoms	\$260,064
10	7865 Chest Pain	22.6%	30.9%	10	V42.7 Liver Transplant Status	\$242,907
Medications				Medications		
ATC	Description	Group	Overall	ATC	Description	Cost (\$CAD)
1	A02BC02 Pantoprazole	56.1%	60.8%	1	N04BA02 Levodopa And Decarboxylase Inhibitor	\$104,000,000
2	N05CF01 Zopiclone	36.9%	38.9%	2	L04AC03 Anakinra	\$21,900,000
3	H02AB07 Prednisone	34.9%	31.9%	3	M03AX01 Botulinum Toxin	\$16,800,000
4	N02AA59 Codeine, Combinations Excl. Psycholeptics	34.3%	38.1%	4	N05AX12 Aripiprazole	\$10,800,000
5	R03AC02 Salbutamol	26.6%	35.2%	5	L04AB02 Infliximab	\$9,715,284
6	N02AA03 Hydromorphone	26.2%	23.9%	6	A07EC02 Mesalazine	\$5,697,383
7	N05BA06 Lorazepam	24.5%	26.1%	7	H01CB02 Octreotide	\$5,083,833
8	N03AX12 Gabapentin	22.5%	29.6%	8	L04AA25 Eculizumab	\$4,293,898
9	H03AA01 Levothyroxine Sodium	21.8%	21.8%	9	A07EA04 Betamethasone	\$3,108,496
10	C03CA01 Furosemide	19.6%	39.5%	10	L04AB06 Golimumab	\$3,023,900

h. Chronic obstructive pulmonary disease or other respiratory conditions

Prevalence					Cumulative Cost				
Hospital					Hospital				
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)			
1	J690 Pneumonitis due to food and vomit	10.7%	6.1%	1	J441 Chronic obstructive pulmonary disease with acute exacerbation, unspecified	\$5,405,352			
2	J441 Chronic obstructive pulmonary disease with acute exacerbation, unspecified	10.3%	6.6%	2	Z508 Care involving use of other rehabilitation procedures	\$3,925,871			
3	Z511 Chemotherapy session for neoplasm	8.8%	11.9%	3	J440 Chronic obstructive pulmonary disease with acute lower respiratory infection	\$3,600,125			
4	J440 Chronic obstructive pulmonary disease with acute lower respiratory infection	7.4%	7.1%	4	Z515 Palliative care	\$3,010,535			
5	Z5180 Pain management therapy	7.1%	4.0%	5	I500 Congestive heart failure	\$2,732,218			
6	K729 Hepatic failure, unspecified	7.0%	2.9%	6	Z501 Other physical therapy	\$2,731,785			
7	R53 Malaise and fatigue	6.8%	6.5%	7	Z509 Care involving use of rehabilitation procedure, unspecified	\$2,540,375			
8	Z508 Care involving use of other rehabilitation procedures	6.7%	3.6%	8	T814 Infection following a procedure, not elsewhere classified	\$2,212,146			
9	Z509 Care involving use of rehabilitation procedure, unspecified	6.3%	7.2%	9	J690 Pneumonitis due to food and vomit	\$2,146,886			
10	Z540 Convalescence following surgery	6.2%	6.4%	10	N390 Urinary tract infection, site not specified	\$1,610,275			
Emergency Department					Emergency Department				
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)			
1	Z512 Other chemotherapy	31.4%	25.9%	1	Z491 Extracorporeal dialysis	\$14,085,804			
2	Z5188 Pain management therapy (for) Other specified medical care NEC	19.3%	16.4%	2	Z016 Radiological examination, not elsewhere classified	\$2,867,329			
3	R104 Other and unspecified abdominal pain	17.8%	14.6%	3	Z511 Chemotherapy session for neoplasm	\$1,364,567			
4	J189 Pneumonia, unspecified	14.7%	13.5%	4	Z512 Other chemotherapy	\$1,324,545			
5	Z480 Attention to surgical dressings and sutures	14.5%	12.7%	5	Z513 Blood transfusion (without reported diagnosis)	\$1,054,902			
6	J441 Chronic obstructive pulmonary disease with acute exacerbation, unspecified	13.6%	8.1%	6	Z719 Counselling, unspecified	\$1,032,457			
7	N390 Urinary tract infection, site not specified	12.7%	13.6%	7	Z501 Other physical therapy	\$703,215			
8	R074 Chest pain, unspecified	12.5%	13.6%	8	Z509 Care involving use of rehabilitation procedure, unspecified	\$626,088			
9	J449 Chronic obstructive pulmonary disease, unspecified	12.1%	5.9%	9	G700 Myasthenia gravis	\$588,210			
10	R060 Dyspnoea	11.9%	9.2%	10	Z718 Other specified counselling	\$587,362			
Outpatient Visits					Outpatient visits				
ICD9	Description	Group	Overall	ICD9	Description	Cost (\$CAD)			
1	780 General Symptoms	71.4%	70.6%	1	585 Chronic Renal Failure	\$1,332,342			
2	789 Oth Abdomen/Pelvis Symp	45.1%	38.2%	2	799.1 Respiratory Arrest	\$1,125,108			
3	7809 General Symptoms Nec#	41.4%	34.9%	3	496 Chr Airway Obstruct Nec	\$914,129			
4	786 Resp Sys/Oth Chest Symp	40.0%	35.6%	4	V42.6 Lung Transplant Status	\$775,970			
5	7991 Respiratory Arrest	37.0%	26.4%	5	486 Pneumonia, Organism Nos	\$627,912			
6	7890 Abdominal Pain	36.7%	31.3%	6	311 Depressive Disorder Nec	\$556,554			
7	486 Pneumonia, Organism Nos	36.5%	31.8%	7	V42.7 Liver Transplant Status	\$501,319			
8	311 Depressive Disorder Nec	35.1%	36.6%	8	296 Affective Psychoses	\$495,013			
9	401 Essential Hypertension	33.1%	42.2%	9	780 General Symptoms	\$472,364			
10	7865 Chest Pain	31.3%	30.9%	10	586 Renal Failure Nos	\$385,244			
Medications					Medications				
ATC	Description	Group	Overall	ATC	Description	Cost (\$CAD)			
1	A02BC02 Pantoprazole	68.6%	60.8%	1	N04BA02 Levodopa And Decarboxylase Inhibitor	\$56,700,000			
2	N05CF01 Zopiclone	47.5%	38.9%	2	N05AX12 Aripiprazole	\$10,100,000			
3	R03AC02 Salbutamol	40.5%	35.2%	3	C10AX13 Evolocumab	\$7,777,531			
4	N02AA59 Codeine, Combinations Excl. Psycholeptics	40.1%	38.1%	4	H01CB02 Octreotide	\$5,821,567			
5	H02AB07 Prednisone	39.7%	31.9%	5	L04AB02 Infliximab	\$3,694,101			
6	C03CA01 Furosemide	36.5%	39.5%	6	M03AX01 Botulinum Toxin	\$3,527,186			
7	N02AA03 Hydromorphone	34.5%	23.9%	7	J05AX Other Antivirals	\$3,099,108			
8	N03AX12 Gabapentin	31.7%	29.6%	8	J01XB01 Colistin	\$2,374,200			
9	N05BA06 Lorazepam	31.1%	26.1%	9	J05AX65 Sofosbuvir And Ledipasvir	\$2,038,776			
10	N02BE01 Acetaminophen (Paracetamol)	23.6%	31.8%	10	A07EC02 Mesalazine	\$2,035,452			

i. Unstable housing situations and/or substance abuse disorders

Prevalence					Cumulative Cost			
Hospital					Hospital			
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)		
1	F103 Mental and behavioural disorders due to use of alcohol: Withdrawal state	24.0%	1.9%	1	F103 Mental and behavioural disorders due to use of alcohol: Withdrawal state	\$3,987,026		
2	N185 Chronic kidney disease, stage 5	13.7%	3.9%	2	B24 Unspecified human immunodeficiency virus [HIV] disease	\$2,324,247		
3	J440 Chronic obstructive pulmonary disease with acute lower respiratory infection	12.9%	7.1%	3	L0311 Cellulitis of lower limb	\$1,947,656		
4	F603 Emotionally unstable personality disorder	10.6%	1.9%	4	K703 Alcoholic cirrhosis of liver	\$1,623,924		
5	R53 Malaise and fatigue	7.1%	6.5%	5	F102 Mental and behavioural disorders due to use of alcohol: Dependence syndrome	\$1,563,488		
6	K859 Acute pancreatitis, unspecified	7.0%	1.3%	6	K704 Alcoholic hepatic failure	\$1,448,134		
7	K566 Other and unspecified intestinal obstruction	6.8%	3.2%	7	J440 Chronic obstructive pulmonary disease with acute lower respiratory infection	\$1,397,402		
8	I214 Acute subendocardial myocardial infarction	6.3%	1.0%	8	E1010 Type 1 diabetes mellitus with ketoacidosis	\$1,323,525		
9	Z540 Convalescence following surgery	6.3%	6.4%	9	F259 Schizoaffective disorder, unspecified	\$1,276,602		
10	A419 Sepsis, unspecified	5.9%	3.5%	10	A419 Sepsis, unspecified	\$1,259,427		
Emergency Department					Emergency Department			
ICD10	Description	Group	Overall	ICD10	Description	Cost (\$CAD)		
1	R104 Other and unspecified abdominal pain	45.9%	14.6%	1	Z491 Extracorporeal dialysis	\$1,804,426		
2	F100 Mental and behavioural disorders due to use of alcohol: Acute intoxication	40.3%	3.5%	2	F100 Mental and behavioural disorders due to use of alcohol: Acute intoxication	\$1,295,799		
3	F101 Mental and behavioural disorders due to use of alcohol: Harmful use	36.3%	3.1%	3	Z512 Other chemotherapy	\$893,468		
4	R074 Chest pain, unspecified	33.2%	13.6%	4	F103 Mental and behavioural disorders due to use of alcohol: Withdrawal state	\$776,830		
5	Z512 Other chemotherapy	30.3%	25.9%	5	Z016 Radiological examination, not elsewhere classified	\$741,880		
6	F103 Mental and behavioural disorders due to use of alcohol: Withdrawal state	29.4%	2.3%	6	R104 Other and unspecified abdominal pain	\$639,560		
7	J189 Pneumonia, unspecified	26.6%	13.5%	7	F102 Mental and behavioural disorders due to use of alcohol: Dependence syndrome	\$590,007		
8	L0311 Cellulitis of lower limb	22.4%	8.7%	8	F101 Mental and behavioural disorders due to use of alcohol: Harmful use	\$555,751		
9	M7961 Pain in lower limb	22.4%	5.0%	9	Z509 Care involving use of rehabilitation procedure, unspecified	\$468,105		
10	Z760 Issue of repeat prescription	22.1%	4.5%	10	Z659 Problem related to unspecified psychosocial circumstances	\$429,836		
Outpatient Visits					Outpatient visits			
ICD9	Description	Group	Overall	ICD9	Description	Cost (\$CAD)		
1	780 General Symptoms	88.2%	70.6%	1	296 Affective Psychoses	\$1,239,510		
2	311 Depressive Disorder Nec	71.5%	36.6%	2	303 Alcohol Dependence Syndr	\$1,118,169		
3	296 Affective Psychoses	65.9%	26.6%	3	311 Depressive Disorder Nec	\$926,139		
4	303 Alcohol Dependence Syndr	63.7%	9.2%	4	980 Alcohol Toxicity	\$909,813		
5	300 Neurotic Disorders	62.4%	26.7%	5	304 Drug Dependence	\$701,474		
6	304 Drug Dependence	60.0%	9.4%	6	295 Schizophrenic Disorders	\$682,278		
7	789 Oth Abdomen/Pelvis Symp	59.3%	38.2%	7	486 Pneumonia, Organism Nos	\$535,036		
8	682 Other Cellulitis/Abscess	55.3%	31.5%	8	799.1 Respiratory Arrest	\$482,397		
9	3000 Anxiety States	54.4%	23.0%	9	300 Neurotic Disorders	\$442,098		
10	7890 Abdominal Pain	53.0%	31.3%	10	780 General Symptoms	\$403,452		
Medications					Medications			
ATC	Description	Group	Overall	ATC	Description	Cost (\$CAD)		
1	A02BC02 Pantoprazole	75.0%	60.8%	1	N05AX12 Aripiprazole	\$9,232,460		
2	N02AA59 Codeine, Combinations Excl. Psycholeptics	64.9%	38.1%	2	L04AB02 Infliximab	\$1,311,290		
3	N05BA06 Lorazepam	58.4%	26.1%	3	J05AP55 Sofosbuvir And Velpatasvir	\$655,958		
4	N03AX12 Gabapentin	53.0%	29.6%	4	N02AA03 Hydromorphone	\$646,832		
5	R03AC02 Salbutamol	46.6%	35.2%	5	M03AX01 Botulinum Toxin	\$510,835		
6	N05CF01 Zopiclone	44.9%	38.9%	6	N03AX12 Gabapentin	\$478,309		
7	N02BE01 Acetaminophen (Paracetamol)	44.7%	31.8%	7	A02BC02 Pantoprazole	\$467,204		
8	N05AH04 Quetiapine	42.3%	16.6%	8	J05AX Other Antivirals	\$459,081		
9	N06AX05 Trazodone	37.4%	15.7%	9	J05AX65 Sofosbuvir And Ledipasvir	\$423,532		
10	N03AE01 Clonazepam	33.6%	13.4%	10	N02AA01 Morphine	\$420,584		

Appendix References

1. Statistics Canada. 2016 Census of Population. Available at: <https://www12.statcan.gc.ca/census-recensement/2016/index-eng.cfm>. Accessed December 10, 2021
2. Hemmelgarn BR, Clement F, Manns BJ, et al. Overview of the Alberta kidney disease network. *BMC Nephrol.* 2009;10(1):1-7.