

**The Direct and Indirect Costs of Non-Traumatic Dental Emergency Room Visits in British
Columbia**

by

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Abstract

Objective: To assess the direct and indirect costs of non-traumatic dental visits at the Emergency Rooms (ERs) in British Columbia (BC).

Methods: Services from the Canadian Institute for Health Information's National Ambulatory Care Reporting System (NACRS) were acquired; NACRS contains data including diagnosis and procedures coded with the International Classification of Disease representing the conditions of oral cavity, salivary glands and jaws. Direct cost relates to the billing cost of non-traumatic dental patient seen at the ER as billed to the government. Direct costs from Ontario and Alberta were used to estimate the cost for BC. Indirect cost relates to loss of income in terms of time spent at the ER only.

Results: Between years 2012 and 2013, the number of visits for non-traumatic dental conditions at the ERs in Ontario, Alberta and British Columbia were 135,570 (1.16% of the total number of ER visits), 69,247 (1.51% of the total number of ER visits) and 22,786 (1% of the total number of ER visits), respectively. Out of 74, the 29 reporting emergency departments in 2013 in BC showed that the majority of the visits for non-traumatic dental conditions (70%) were made by adults between the ages 20 and 64 years-old; the most common complaints were dental and periapical abscesses and dental caries. The majority (70%) of non-traumatic dental patients in BC were non-urgent. On average the patients spent around 2 hours at the ERs at a cost ranging from \$185.15 to \$245.51 each to British Columbians, up to \$2.99 million per year.

Conclusion: Although not all emergency departments in BC report data on non-traumatic dental visits, the cost to the tax payers is substantial. It was estimated to be between \$185.15 and \$245.51, whether using data from either Alberta or Ontario, respectively; the cost sums up to a total of \$2.25 to \$2.99 million per year for 29 of 74 reporting ERs. Therefore, use of emergency

rooms for non-traumatic dental conditions not only adds an extra burden and contributes to overcrowding, but also makes the health care system costly.

Preface

This study was approved by the University of British Columbia's Office of Behavioral Research Ethics Board (Certificate Number: H14-03235)

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List of Abbreviations

AB	Alberta
BC	British Columbia
CAD	Canadian Armed Forces
CCI	Canadian Classification of Health Intervention
CHMS	Canadian Health Measure Survey
CIHI	Canadian Institute for Health Information
ED	Emergency Department
ER	Emergency Room
IBM	International Business Machine
ICD	International Statistical Classification of Diseases and Health Related Problems
IFHP	Interim Federal Health Program
LICO	Low Income Cut-Off
mLOS	Mean Length of Stay
MSP	Medical Service Plan
NACRS	National Ambulatory Care Reporting System
NIHB	Non-Insured Health Benefits program
NTDV	Non-Traumatic Dental Visits
ON	Ontario
OR	Odds Ratio
SD	Standard Deviation
SPSS	Statistical Package for Social Science

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This thesis is only a beginning of my journey...!

Dedication

I dedicate this thesis to my beloved father

Syed Rasheed Ahmad

And

To the loving mother

Wajida Khatoon

You have successfully made me the person I am becoming

Chapter 1: Introduction

1.1 Access to dental care in Canada

In Canada, the administration and delivery of health care services is the responsibility of each province or territory in the form of fiscal transfers from the federal government under the Canada Health Act. Canada Health Act ensures that health care services are accessible to all insured individuals on the basis of need rather than on the ability to pay. (1) The Health Act describes the insured¹ as a resident of a province (2) and functions on five principles, as follows: (1)

1. The provincial and territorial health plans must be administered and functioned on a nonprofit basis;
2. The provincial and territorial health plans must insure that all the medically necessary services are provided by health professionals within a hospital setting;
3. The provincial and territorial health plans must give equal rights to all insured persons to health coverage;
4. All insured persons must have reasonable access to medically services without financial and other barriers;
5. All insured persons must have health care coverage when they move within or outside Canada.²

¹ Canada Health Act defines a resident as *"a person lawfully entitled to be or to remain in Canada who makes his home and is ordinarily present in the province, but does not include a tourist, a transient or a visitor to the province."* (2)

² There are some limits on coverage for services delivered outside Canada, and may need prior approval for non-emergency services provided outside their jurisdiction.

Although an important component of general health, oral care does not come under the umbrella of the Canada Health Act and remains mostly private for the majority of Canadians. (3) Some oral health care services might be covered by the federal government at the discretion of each province to specific groups of individuals through, for example, the Non-Insured Health Benefits program (NIHB), (4) the Veterans Affairs Canada, (5) the Interim Federal Health Program, (6) and the Canadian Armed Forces services. (7)

Aside from the federal government sponsored services, provincially financed dental programs offered by the government of British Columbia include: (8)

- *Healthy Kids Program*, which assists children from low income families and provide \$1,400 of basic oral care over the two calendar years. (9)
- *Welfare Assistance Dental Benefits*, which aids to some adults with disabilities³. This program offers basic dental coverage of \$1,000 over two calendar years. (12)
- *Dental Services for Low Income Families*, which is available in 29 reduced fee dental clinics in British Columbia, offers reduced fee dental services delivered by dental students at their post-secondary institutions. (8)

With regard to offering publicly financed dental insurance, Canada is behind other developed countries, including Germany, the United Kingdom and Ireland that offer a robust dental coverage. (13) (14) Although the idea of having a national dental insurance plan is not new, the

³ Disability refers to any degree of physical disability, infirmity, malformation or disfigurement that is caused by bodily injury, birth defect or illness. It can include those with diabetes mellitus, epilepsy, brain injury, and so on. (10). A disability must be both severe (e.g., mental or physical) and prolonged (e.g., long term or likely to result in death), and must prevent the individual from being able to work at any job on a regular basis. (11)

following reasons are believed to explain why dental insurance is not under Canada's Health Care System: limited dental human resources, significant decrease in dental caries due to large scale services such as community water fluoridation, and a belief that maintaining oral health is individual's own responsibility, not a social one. (14) Although some public funded dental services are available at both federal and provincial levels, most of them provide limited dental coverage to a small number of individuals.(15) The result is that the majority of Canadians (95%) pay for oral care services privately either out-of-pocket (44%) or by employment-based dental insurance (51%). (16) (17) (18)

Since lack of dental insurance and being of low socioeconomic status are the main restrictors to accessing oral care, (17) (19) disadvantaged and marginalized populations remain at a greater risk for oral diseases, mostly dental caries and periodontal disease (20) (21) (22) (23) Although the majority of these conditions are preventable in nature, their untreated consequences can lead to unnecessary pain, cause systemic complications and have a detrimental impact on quality of life especially for the working poor. It should be noted that one in every ten Canadians lives below the poverty line which is usually the case of minimal wage workers⁴. (24) The situation is even worse in BC where 1 in 7 British Columbians is believed to live below the poverty line, the second highest poverty rate after Nova Scotia. (25) Also, 1 in 5 children in British Columbia are from poor families. (25)

⁴ Poverty can be defined either in absolute terms – inability to obtain the necessities of life, or in relative terms – being worse off than average. (21) The low income cut-off (LICO) represents the annual income at which a family may be in straitened circumstances because it barely covers the basic necessities compared to an average family of similar size. In 2015, the LICO referred to an annual income of \$23,861 for 1 person, of \$29,706 for 2 persons, of \$36,520 for 3 persons, and of \$44,340 for 4 persons. (21) (22)

1.2 The impact of oral diseases

The Canadian Dental Association refers to oral health as *'an important part of overall health [as it] contributes positively to your physical, mental and social well-being and to the enjoyment of life's possibilities, by allowing you to speak, eat and socialize unhindered by pain, discomfort or embarrassment.'*(26) (27) Despite the progress made to improve oral health all over the world, dental caries is still a major oral health concern to the extent that almost 90% of children and nearly 100% of adults are affected globally; it is a 'silent epidemic'. (27) Similarly, 60% of Canadians aged 6 to 19 years-old have on average 2.5 decayed teeth, while 96% adults have a history of dental cavities. (28) (29) Children and their low income families, the working poor and those from middle-income groups are more vulnerable to oral diseases (20) (30) despite receiving some limited dental coverage as per the government-sponsored programs described earlier.

Poor oral health has a profound effect on general health; several oral diseases are related to chronic conditions such as diabetes and cardiovascular complications. (26) (27) In fact, those affected by untreated dental caries and periodontal disease experience negative impacts on systemic and overall health especially during pregnancy, children's growth and development, and at old age despite the poor understanding of how these impacts can actually take place. (30) (31) (28) Nonetheless, the presence of oral pain, limited mastication, difficulty in communicating and socializing greatly impacts people's daily lives. (32)

1.3 Cost of dental care

It is estimated that Canadians spend almost \$14 billion annually on oral care, ranking second after cardiovascular diseases, but exceeding the direct cost of respiratory conditions, cognitive

illnesses, digestive diseases, and cancers. (16) (33) However, this cost comes mostly from private insurances and out-of-pocket expenses since only about 5% of that amount is publicly funded. (16) (34) (35) Moreover, this cost is an underestimation when the indirect cost associated with time lost from school, work and normal activities as well as loss in quality of life are considered. (33) (36) It is believed that annually almost 40% of Canadians lose five hours per school-day and seven hours per working-day due to dental-related problems. (37) In total, approximately 2.26 million school-days and 4.15 million working-days are lost each year in Canada due to dental-related office visits and dental sick days. (33) (37)

Given that regular dental visits are influenced mostly by ability to pay, (38) (39) it should come as no surprise that almost 17% of Canadians do not see a dental professional regularly while 16% avoid getting recommended dental treatment due to cost. (28) Nearly 1/3 of Canadians do not have any dental insurance. (28) The situation of low income families and those without dental insurance is even worse as they are 3 to 4 times more likely to not see a dentist when compared to higher income Canadians. (28) Without proper dental insurance and with limited financial means, those from the lower to middle socio economic bracket may rely on Emergency Rooms - ERs to seek for pain relieve while placing an extra burden on the already over-stretched Canadian health care system. (31) (38) (40)

1.4 Use of emergency rooms for dental treatment

Patients with traumatic dental injuries involving complex damage to the dentoalveolar system and hard tissues with significant head, neck, or facial trauma may be evaluated and treated in a hospital emergency room setting. (41) (42) However, utilizing an ER to address non-traumatic

dental conditions such as toothache or dental abscesses is not only ineffective, but also inappropriate. (20) But vulnerable and disadvantaged populations who can neither afford private dental insurance nor qualify for the public funded dental programs or have disposable income may end up in an ERs in order to try resolving or alleviating the complications of chronic oral diseases. (38) (20) (43) It was reported that 141,365 ERs visits for non-traumatic dental conditions were made between 2004 and 2006 in Ontario alone, far surpassing the number of visits due to diabetes and hypertension (38), two of the most prevalent chronic systemic diseases in Canada (44) (45). The estimates for BC are not fully known. Given the lack of affordability to oral and dental care, toothache and periapical abscess remain the main reasons for ER use at an estimated cost of \$513 per visit on average to taxpayers. (40) (46) But inconsistency seems to exist in estimating or calculating such cost. For example, a report from the Canadian Institute for Health Information estimated that the cost per emergency room visit was \$166 in Canada, (47) while in British Columbia the cost in emergency room can vary between \$260 to \$510. (48)

From all the non-traumatic dental visits (NTDV) to the ERs in Canada, the majority (78%) are believed to be non-urgent in nature. (38) (49) The non-urgent visits may contribute to long waiting times other patients face at an ER which is currently more than four hours on average in Canada, the longest waiting time as within developed countries. (50) This may get even worse if the current flow of non-traumatic dental patients keep increasing with the growth of the population. A study from Ottawa has already reported a 52% increase of dental patients at the ERs from 2004 to 2014. (51) In the U.S., the average number of visits of non-traumatic dental patients to the ERs between 1997 and 2007 has doubled from what was initially predicted given the observed population growth for the same time-period. (52) The use of ERs for dental-related

pain relieve is a growing public health concern as most ERs do not have regular dentists on staff, nor are properly equipped to provide actual dental treatment. (53) The lack of dental professionals in the ERs adds stress to the medical team that is not sufficiently trained to properly diagnose dental diseases. (43) Without proper treatment to address the cause of a dental problem, drug prescription in the form of pain relieve and antibiotic therapy is frequently chosen. Overuse of analgesics contribute to the risk of therapeutic overdose and drug dependency while the over prescription of antibiotics adds to the problem of antimicrobial resistance. (54) (55)

Whether or not pain and antibiotic medication are given, many patients return to the ERs with either the same problem or a more serious, life-threatening consequence of the untreated dental condition. (56) (57) (58) For example, facial cellulitis is a common sequel of untreated dental abscesses, which can lead to dehydration, impaired central nervous system and airway obstruction. (57) Under such life threatening situation, hospital admission is required at a much higher cost, up to CAD \$7,367 per admission.(59) Life threatening dental conditions continue to claim several lives both in United Stated and Canada. (60) (61) (62) (63) (64) Higher cost aside, admitted patients under this circumstance can spend five times longer in the hospital than non-admitted patients. Nearly 90% of the patients wait almost 21.4 hours in the ERs before admission, three times as long as those waiting for an operating room or critical care bed; it adds yet again unnecessary burden to the already overloaded health care system. (65) This is particularly relevant for vulnerable and disadvantaged populations who can neither afford private insurance nor qualify for the public funded dental insurance programs; they are more likely to visit the ERs for non-traumatic dental conditions. (68)

As ERs are constantly under pressure, non-urgent and non-traumatic dental visits contribute to overcrowding, mount up the cost of health care, and increase the wait time for patients with more severe health problems. (66) (67) But the overall cost of ERs visits can be much higher.

Although there have been studies assessing the causes of dental ERs visits (38) (43) and their more direct financial implications, (34) there is a lack of understanding of the full burden of non-traumatic dental ER visits when the direct and indirect costs are considered, particularly in British Columbia.

1.5 Research questions and objective

The main focus of this study is on patients with non-traumatic dental condition visiting the emergency rooms in British Columbia.

The research questions of this study are:

1. What is the direct cost of non-traumatic dental visits in ERs in BC?
2. What are the indirect costs of non-traumatic dental visits in ERs in BC?

The above research questions will be addressed by the following objective: to calculate the direct and indirect costs of non-traumatic dental visits to ERs in British Columbia for the fiscal year April 1st 2012 to March 31st 2014.

Chapter 2: Material and Methods

2.1 Data set

Data from the Canadian Institute for Health Information (CIHI) National Ambulatory Care Reporting System (NACRS) was sought for the fiscal years of April 1st 2012 to March 31st 2014. This time-frame was chosen because the data from some of the 74 emergency departments in BC are available for this time period mostly (Table 1). (69) Given that BC data is limited as presented ahead, the same information from Ontario and Alberta was also sought to allow comparisons and cost-estimates.

Table 1 - BC emergency rooms reporting to CIHI's NACRS each fiscal year.

Fiscal Year	Number of BC ERs Submitting to NACRS (74 in total)
2013-2014	29
2012-2013	20
2011-2012	6
2010-2011	0
2009-2010	2
2008-2009	3

Source: Canadian Institute for Health Information

NACRS contains data for all hospital-based and community-based ambulatory care including day surgery, outpatient clinics and emergency rooms. The main focus of this study was on the available data that contained information on emergency room visits coded with the International Statistical Classification of Diseases and Health Related Problems (ICD-10- CA)⁵ K00 to K14

⁵ The International Classification of Diseases and Related Health Problems, 10th Revision (ICD-10) is an international standard for reporting clinical diagnoses developed by the World Health Organization.

which represents diseases of oral cavity, salivary glands and jaws (full list can be found in Appendix B). (70) This information enabled the identification of: 1) the most frequent complain of non-traumatic dental patients visiting the ERs in BC, Alberta and Ontario, 2) the diagnosis given, and 3) the type of treatment given using the Canadian Classification of Health Intervention (CCI).⁶ (71) Aside from the information associated with ICD-10-CA, NACRS also contains data on age, gender, triage level (categorized into Level I to V consisting of resuscitation, emergent, urgent, less urgent and non-urgent cases, respectively)⁷, visit disposition and length of stay of non-traumatic dental patient seen at an ER (72); some of this information was utilized in this thesis. However, it is important to note that NACRS has different reporting levels: Level 1, Level 2 and Level 3 as per Table 2. Each level contains different content and amount of information, and vary between provinces. (73) For example, contrary to Alberta and Ontario, not all ERs in BC report to NACRS; in 2009 only 2 BC ERs reported while in 2012, 20 reported out of 74 (Table 1). As voluntary reporting only at Level 1 in BC, data are limited to some information including length of stay. It remains optional in BC to report on other level data such as ER discharge and ICD-10-CA for diagnosis treatment. In BC, the pick list (Appendix A) for presenting complaint and ER discharge diagnosis is used.

ICD-10-CA is an enhanced version of ICD-10 developed by CIHI. It is also more adaptable than previous versions, allowing for the addition of codes as new diseases are discovered.

⁶ The Canadian Classification of Health Interventions (CCI) is the new national standard for classifying health care procedures. CCI is the comparable classification system to ICD-10-CA.

⁷ Resuscitation, emergent and urgent are grouped as urgent and less urgent and non-urgent cases as non urgent.

Table 2 - Comparison of data submission levels

Comparison of Data Submission Levels		
Level 1 (ED Only)	Level 2 (ED Only)	Level 3
<ul style="list-style-type: none"> • Wait times data elements 	<ul style="list-style-type: none"> • Wait times data elements 	<ul style="list-style-type: none"> • All data elements
<ul style="list-style-type: none"> • Optional pick-lists for Presenting Complaint and ED Discharge Diagnosis • Optional ICD-10-CA codes for Main Problem • No CACS variables 	<ul style="list-style-type: none"> • Pick-lists for Presenting Complaint and ED Discharge Diagnosis (completion of at least one is mandatory) • Optional ICD-10-CA codes for Main Problem • No CACS variables 	<ul style="list-style-type: none"> • Optional pick-lists for Presenting Complaint and ED Discharge Diagnosis • Mandatory to submit diagnoses and interventions using ICD-10-CA/CCI codes • All CACS variables

As a result, data was collected targeting the following variables that fall under level 1 in BC and level 3 in Ontario and Alberta in order to answer the research questions and address the objective in this study (Table 3):

- Level 1 contains data on age, gender, length of stay, triage level, visit disposition, total number of ERs visits, total number of dental/non-dental ER visits made by each patient in each fiscal year.
- Level 3 includes all the variables from level 1, in addition to main problem, diagnosis given, type of treatment given and cost of each type of treatment/procedure.

As per tables 1 and 3, some of the BC data was not reported. In this case, the overall cost (see ahead) for the non-traumatic dental conditions at ERs in BC was estimated based on data from Alberta and Ontario as they submit the record at level 3 for the same condition/diagnosis. For example, information about the type of diagnosis (e.g., problem) and how each condition was treated was gathered from Alberta and Ontario. Since the diagnostic code is the same across the provinces (ICD-10-CA along with CCI), the treatment given to a particular dental condition in

Alberta and Ontario was used to estimate the information to BC under the same diagnostic code. In other words, it was assumed that a toothache or a dental abscess was treated similarly across different provinces.

Table 3 - Data elements given by CIHI available on each level (level 1 and 3) in Alberta, Ontario and British Columbia

Data Requested	Availability	
	AB ⁸ and ON ⁹ (Level 3 Submissions)	BC (Level 1 Submissions)
Time spent on dental related emergency room visits (i.e. Length of Stay)	Mandatory Data Element	
Age	Mandatory Data Element (age and/or birth year)	
Gender	Mandatory Data Element	
Main problem	Mandatory Data Element (ICD-10 Codes)	Not Available (level 1 <u>optionally</u> submits 'Presenting Complaint', from a pick list)
Triage level: indicates the seriousness of the non-traumatic dental condition at the time of patient's visit to the ER	Mandatory Data Element	
Diagnosis given	Mandatory Data Element (ICD-10 Codes)	Not Available (level 1 <u>optionally</u> submits 'ED Discharge Diagnosis' from a pick list)
Type of treatment given	Procedure/ Intervention Codes are available, Mandatory Data Element (CCI Codes)	Not Available

⁸ AB - Alberta

⁹ ON - Ontario

Data Requested	Availability	
	AB ⁸ and ON ⁹ (Level 3 Submissions)	BC (Level 1 Submissions)
Cost of each type of procedure/treatment	The cost of each individual procedure/treatment is not available. Average cost per visit can be made available	Not Available
Visit disposition (reflects the number of non-traumatic dental patients who are seen and discharged, hospitalized or transferred etc.)	Mandatory Data Element	
Total number of dental visits at the ERs made by each patient in each fiscal year.	Available	

Color coding: **Green** refers to available information; **Yellow** refers to information that ‘may or may not be available’; **Red** refers to information that is not available.

Information including ethnicity, birth place, dental insurance, employment status, MSP billing and payment methods are not available in any of the Provinces’ data.

2.2 Data analysis

All the variables of interest were transferred to Statistical Package for the Social Sciences (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0) using Microsoft Excel spreadsheet. Continuous variables including age, time of ER visit, number of ER visits and time spent were summarized using descriptive statistics (n, mean \pm SD). Categorical variables such as gender, main problem, diagnosis and triage level were summarized using frequencies and percentages to examine the sample characteristics and to identify the patterns of ER visits in the population. The following formula was used to estimate the total cost of non-traumatic dental visit to the ER based on the above variables:

$$\text{Total estimated cost} = \text{Direct Cost} + \text{Indirect Cost}$$

Direct Cost: It relates to the cost of non-traumatic dental patient seen at the ER as billed to the government through the provincial health insurance plans.

Indirect Cost: It relates to the potential loss of income in terms of time spent at the ER, e.g., the monetary value attached to the time lost (from the length of stay¹⁰ in ER only) from work based on a BC minimal wage of \$10.25/hour. The focus on the minimal wage is because the working poor or those at a minimal wage employment are more likely to use ERs for non-traumatic dental-related problems as they are may not have dental insurance and have unpaid work leave. (20) This indirect cost does not cover costs associated with transportation, meals, childcare and so on. Both direct and indirect costs were then added to estimate the overall cost of a non-traumatic dental visit to ERs in British Columbia.

Data are also presented by a number of different variables such as gender, age group, main problem, triage level, mean length of stay at the ER in order to identify the patient and visit characteristics for such types of services. Therefore, other associations and correlations were made given the richness of the data gathered.

¹⁰ Length of stay is the duration in which a patient stays in the ER from the registration till s/he physically leaves the ER.

Chapter 3: Results

The results are presented in the following order:

- Demographic and characteristic features of Emergency Room visits
- Main problem of non-traumatic dental ER visits and their codes
- Type of disposition of non-traumatic dental ER visits
- Time of the non-traumatic dental ER visits
- Triage level of non-traumatic dental emergency room visits
- Mean length of stay
- Costs

3.1 Demographic and characteristic features of emergency room visits

Between fiscal years 2012 and 2013, the number of non-traumatic dental visits to the ER in Ontario, Alberta and British Columbia were reported to be around 1.16%, 1.5% and 1%, respectively (Table 4).

The non-traumatic dental patients were aged between 1 and 113 years-old across all three provinces. The number of NTDVs were almost evenly distributed between males and females; in 2013 in British Columbia the number of male visits were 6% higher as compared to female visits. Individuals between the ages of 6 and 12 years-old comprised the smallest portion of non-traumatic dental patients in the ER in all three provinces, about 4% of the total number of patients.

Table 4 - Percentage of non-traumatic dental visits (NTDV) comparing with overall emergency room visits

<i>PROVINCES</i>	2012		2013	
ONTARIO	All ER visits	NTDV	All ER visits	NTDV
	5,813,134	67,483 (1.16%)	5,857,622	68,087 (1.16%)
ALBERTA	All ER visits	NTDV	All ER visits	NTDV
	2,301,507	33,963 (1.47%)	2,321,894	35,284 (1.51%)
BRITISH COLUMBIA¹¹	All ER visits	NTDV	All ER visits	NTDV
	992,003	10,429 (1.05%)	1,248,403	12,357 (0.98%)

The majority of the ER visits for non-traumatic dental conditions consisted of adults; that is, patients between 20 and 64 years of age accounted for 70% for these visits and were five times more likely to visit the ERs as compared to those below the age of 19 years (Tables 5).

¹¹ In BC, out of 74 only 20 emergency rooms in 2012 and 29 in 2013 reported to CIHI.

Table 5 - Demographic characteristics of non-traumatic dental patients

ONTARIO		
	2012 (N=67483)	2013 (N=68087)
GENDER		
Male	34782 (51.5 %)	34917 (51.3%)
Female	32696 (48.5 %)	33168 (48.7%)
AGE		
1 – 5	4012 (5.9 %)	3756 (5.5%)
6 – 12	2396 (3.6%)	2389 (3.5%)
13 – 19	4020 (6%)	3990 (5.9%)
20 – 34	23026 (34.1%)	23037 (33.8%)
35 – 64	27932 (41.1 %)	28676 (42.1%)
65 >	6096 (9%)	6237 (9.2%)
ALBERTA		
	2012 (N=33963)	2013 (N=35284)
GENDER		
Male	17539 (51.6%)	18511 (52.5%)
Female	16424 (48.4%)	16773 (47.5%)
AGE (YEARS)		
1 – 5	3214 (9.5%)	3194 (9.1%)
6 – 12	1571 (4.6%)	1635 (4.6%)
13 – 19	1976 (5.8%)	2035 (5.8%)
20 – 34	11507 (33.9%)	12282 (34.8%)
35 – 64	13883 (40.9%)	14166 (40.1%)
65 >	1812 (5.3%)	1972 (5.6%)
BRITISH COLUMBIA		
	2012 (N=10429)	2013 (N=12357)
GENDER		
Male	5880 (56.4%)	6909 (55.9%)
Female	4547 (43.6%)	5443 (44.0%)
AGE		
1 – 5	596 (5.7%)	750 (6.1%)
6 – 12	383 (3.7%)	423 (3.4%)
13 – 19	519 (5.0%)	660 (5.3%)
20 – 34	3686 (35.3%)	4436 (35.9%)
35 – 64	4455 (42.7%)	5108 (41.3%)
65 >	790 (7.6%)	980 (7.9%)

3.2 Main problem of non-traumatic dental emergency room visits and their codes

The most common complaints related to the ER visit were dental/periapical abscesses, toothache and dental caries (Table 6).

Table 6 - International classification of diseases (ICD) codes used to diagnose main problem in Ontario, Alberta and British Columbia

Ontario			
ICD 10 CA codes	Description	Percentage	
		2012	2013
K047	Dental / Periapical abscess	33.4%	33.7%
K0887	Toothache	20.5%	20.2%
K029	Dental Caries	4.2%	4.1%
K112	Sialoadenitis	3.1%	3.4%
Z512	Chemotherapy	3.0%	3.5%
Alberta			
K047	Dental / Periapical abscess	36.6%	35.4%
K0887	Toothache	14.6%	14.9%
Z512	Chemotherapy	8.2%	9.8%
K029	Dental Caries	3.9%	3.8%
K120	Recurrent Oral Aphthae	2.8%	2.5%
K112	Sialoadenitis	2.7%	2.8%
British Columbia¹²			
K0887	Toothache	20.6%	18.1%
K047	Dental / Periapical abscess	18.3%	22.7%
K029	Dental Caries	6.8%	8.8%
K089	Teeth / Gums disorder	3.7%	5.4%

¹² 36.2% in 2012 and 29% in 2013 data on main problem were missing.

Merely 10% of the NTDV were coded as having been X-rayed or given pharmacotherapeutic services (e.g. antibiotics, pain killers) (data not shown). However, there is no information available as to whether or not the other discharged patients did receive a prescription for similar pharmacotherapy.

3.3 Type of disposition of non-traumatic dental emergency room visits

The data pertaining to non-traumatic ER dental visits are categorized into four main groups based on the type of disposition of patients were discharged from the ER as follows:

- Group A indicates those patients who were seen at the ER, but left without receiving any treatment; it represents the majority of patients.
 - Group B includes those patients who got admitted to a hospital for any reason; the cost of admission is higher than the first group.
 - Group C comprises of those patients who either died on or after arrival at the ER.
- Group D contains patients who were either transferred to day surgery, to another ER or to a medical clinic.

As groups C and D comprise the lowest amount of patients, the vast majority of Non-Traumatic Dental Visits (NTDV) in all three provinces (98% in total) were comprised of patients who were seen and discharged on the spot as per Group A (Table 7).

Table 7 - Number of emergency room visit for non-traumatic dental conditions by groups and fiscal years in Ontario, Alberta and British Columbia

Groups	Provinces	Fiscal Year	Number of NTDV
<i>A (seen and discharged)</i>	Ontario	2012	66,181
		2013	66,702
	Alberta	2012	33,521
		2013	34,766
	British Columbia	2012	10,268
		2013	12,159
<i>B (admitted)</i>	Ontario	2012	1,198
		2013	1,252
	Alberta	2012	432
		2013	501
	British Columbia	2012	147
		2013	185
<i>C (deaths)</i>	Ontario	2012	3
		2013	5
	Alberta	2012	2
		2013	1
	British Columbia	2012	N/A
		2013	N/A
<i>D (others)</i>	Ontario	2012	101
		2013	128
	Alberta	2012	8
		2013	16
	British Columbia	2012	14
		2013	13

Groups	Provinces	Fiscal Year	Number of NTDV
Total (A+B+C+D)	Ontario	2012	67483
		2013	68087
	Alberta	2012	33963
		2013	35284
	British Columbia	2012	10429
		2013	12357

N/A refers to information not given within the data set.

3.4 Time of non-traumatic dental emergency room visits

The non-traumatic dental visits were assessed based on time of day and day of week. NTDV that occurred between 9AM and 5PM were considered as daytime visits and the remaining time as nighttime visits. The seasons were divided roughly into summer (April through September) and winter (October through March.)

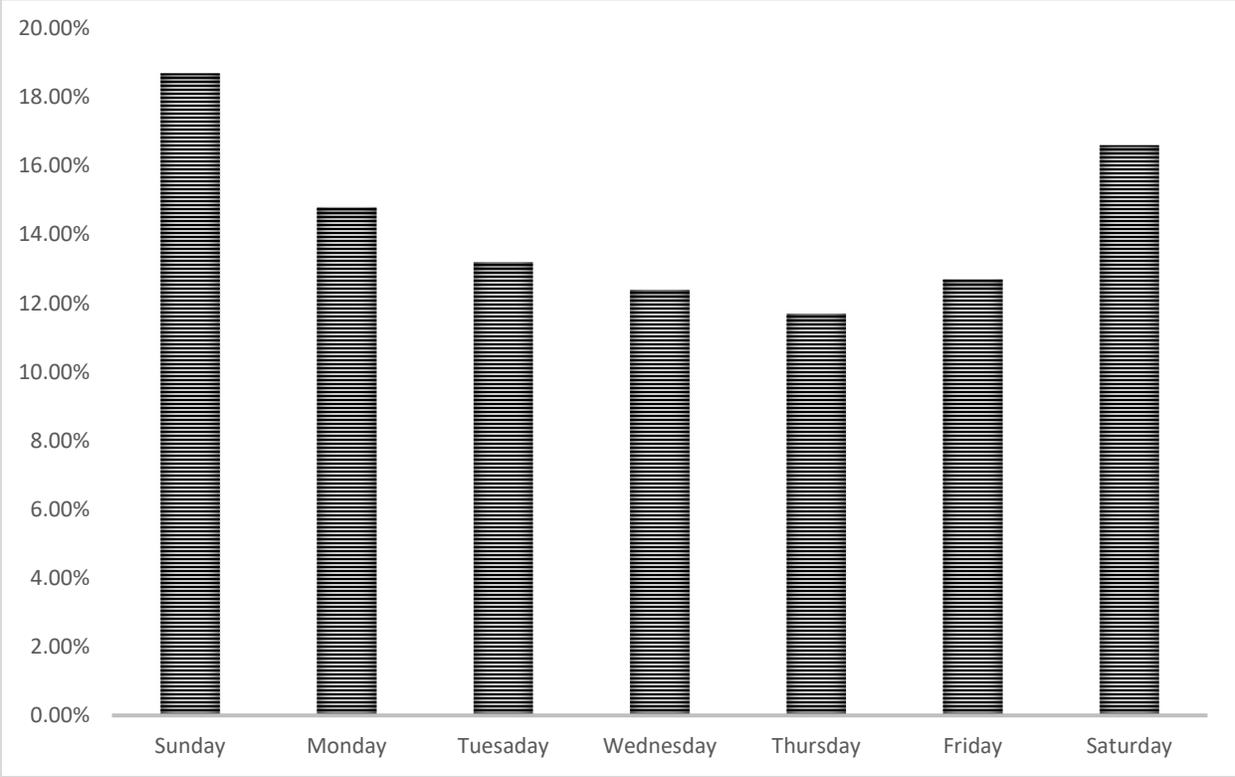
In Ontario and Alberta, the proportion of the non-traumatic dental visits that occurred at nighttime was 9% and 11% higher, respectively, than those that occurred in daytime. In British Columbia, however, the nighttime visits were almost two-fold higher than the daytime visits, and slightly higher than the nighttime visits in Ontario and Alberta (Table 8).

Table 8 - Number of non-traumatic dental visits by time of day (2012 -2013)

Provinces	Non-traumatic dental visits	
	Day Time	Night Time
Ontario	61723 (45.5%)	73803 (54.5%)
Alberta	30606 (44.2%)	38625 (55.8%)
British Columbia	8395 (36.9%)	14380 (63.1%)

When the data for NTDV was observed by day of the week, it was found that patients visited the ERs more on weekends (Figure 1) and at nighttime (Table 8) in BC.

Figure 1 - Percentage of non-traumatic dental visits by day of week in British Columbia



In 2013 the odds of females visiting ERs for non-traumatic dental conditions in daytime was 1.12 (95% CI:1.03-1.19) times higher than males in BC ($P<0.05$) (Table 9). The rate that the age group 1 to 19 years-old would visit the emergency room at nighttime was 1.4 times higher than those older than 65 years-old in BC. The probability that the age group 20 to 64 years-old would visit the emergency room for non-traumatic dental condition at night was 1.5 times higher than the age group 65 and older in BC (Table 9).

Table 9 - Odds of non-traumatic dental visits by age and gender in BC

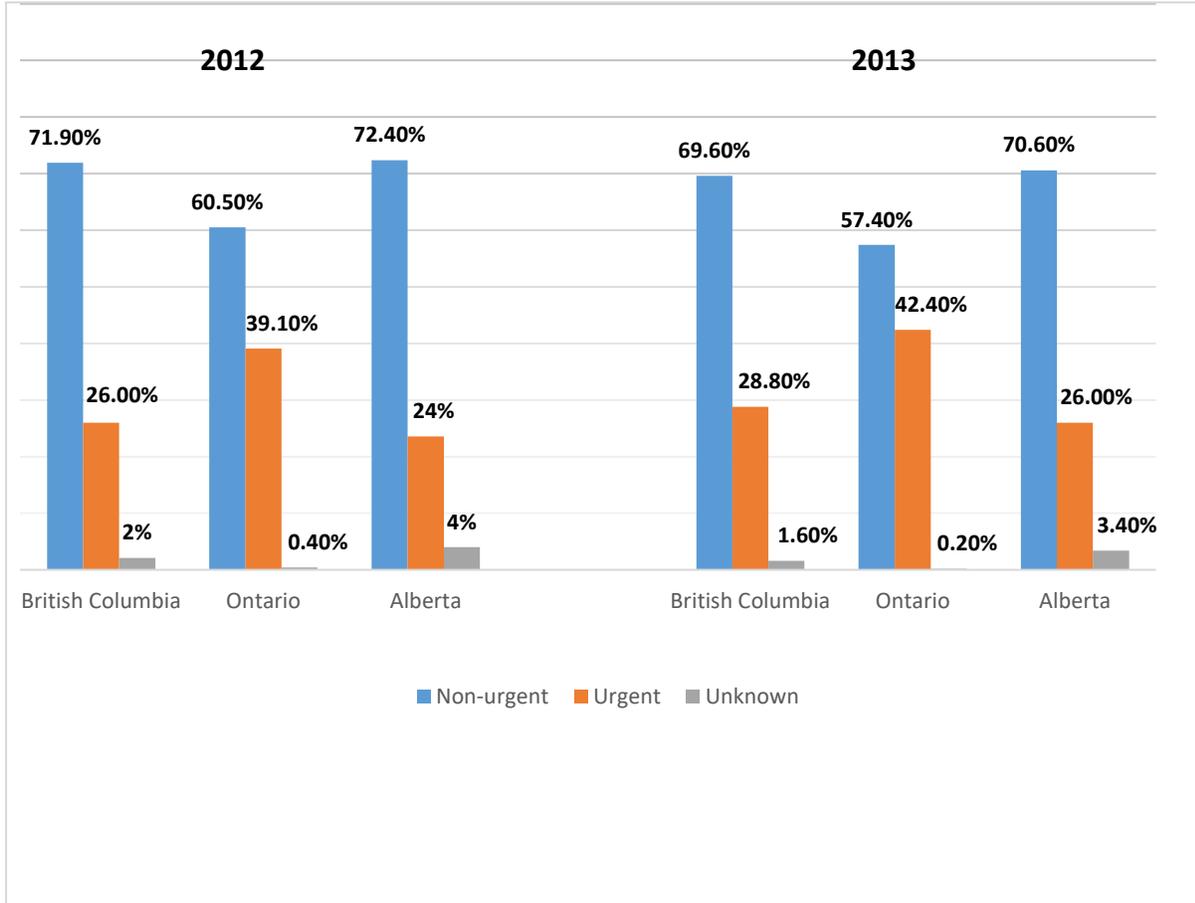
	2012			2013		
	Day	Night	P-value & OR	Day	Night	P-value & OR
Female	1705(37.5%)	2840(62.5%)	OR = 1.07 (95%	2088 (38.4%)	3353(61.6%)	OR = 1.12 (95%
Male	2117 (36%)	3762 (64%)	CI: 0.98-1.16)	2483 (36%)	4422 (64%)	CI:1.03-1.19)
			Not Significant			P<0.05
1-19 yrs-old	538(60.8%)	960(68.4%)	OR = 1.4 (95% CI: 1.2-1.7)	682(60.7%)	1148(68.1%)	OR = 1.4 (95% CI: 1.2-1.6)
65 yrs and older	347(39.2%)	443(31.6%)	P=0.0002	442(39.3%)	538(31.9%)	P=0.0001
20-64 yrs-old	2938(89.4%)	5200(92.1%)	OR= 1.4 (95% CI:1.2-1.6)	3449(88.6%)	6092(91.9%)	OR= 1.5 (95% CI:1.3-1.7)
65 yrs and older	347(10.6%)	443(7.9%)	P<0.0001	442(11.4%)	538(8.1%)	P<0.0001

OR= Odds ratio

3.5 Triage level of non-traumatic dental emergency room visits

It should be noted that the 60-70% of patients with non-traumatic dental conditions were identified as non-urgent in all three provinces (Figure 2).

Figure 2 - Triage level by provinces and fiscal years



3.6 Mean length of stay

The mean length of stay (mLOS) relates to the average of time a patient spends at the emergency room, i.e., from the time of registration to the moment the patient leaves the emergency room.

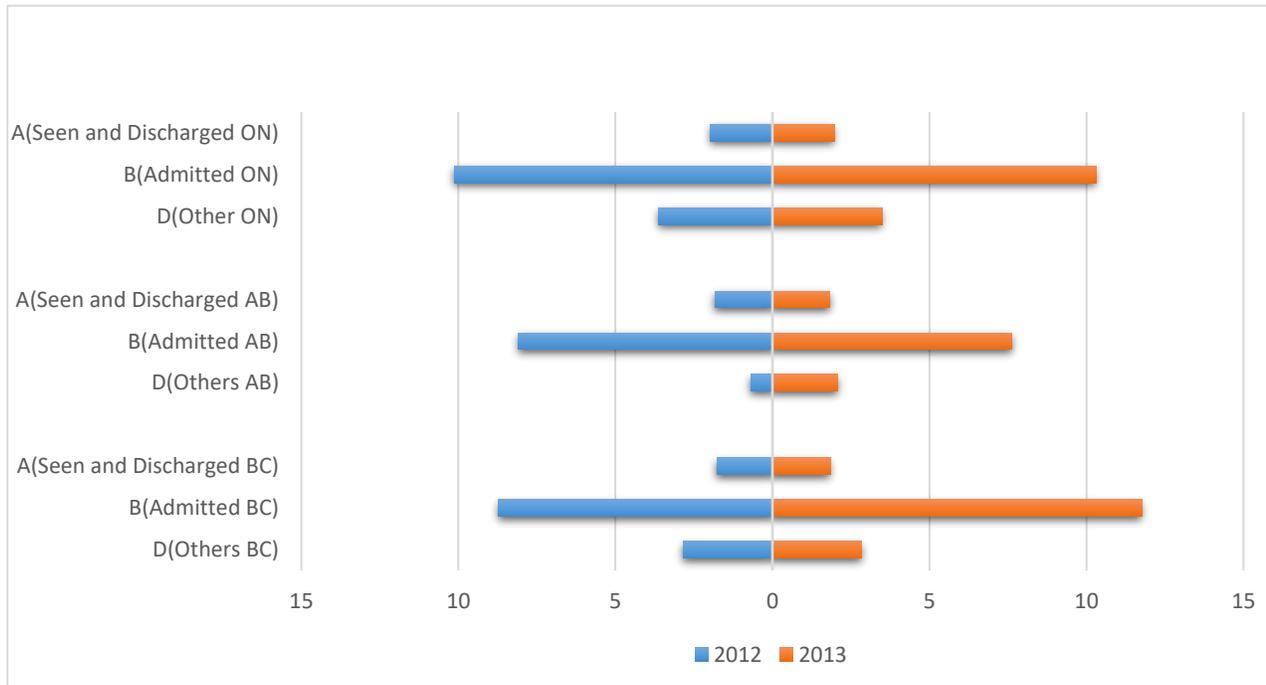
On average in BC, non-traumatic dental patients spent 2 hours at the ER during the daytime but less than 2 hours at nighttime (Table 10). Although in BC there were more non-traumatic dental visits at nighttime than daytime (Table 8), the mean length of stay (mLOS) at nighttime was significantly shorter than daytime (Table 10).

Table 10 - Mean length of stay by time of day in British Columbia

2012-2013	Mean Length of Stay		
	Number of visits	Hours (\pm SD)	P-Value
Day Time	8377	2.11(2.34)	
Night Time	14345	1.84(2.28)	P<0.01

Across the three provinces, patients who were admitted to the hospital waited at the emergency room between 9 to 13 hours—four to six times more than those who were seen and discharged from the ER without any further treatment (Figure 3). It is important to note that mean length of stay shown in figure 3 accounts only for the time taken to make a decision to admit a non-traumatic dental patient from an ER to a hospital only; it does not include the time they spent at the hospital onwards.

Figure 3 - Length of stay in hours by different groups according to province and fiscal year



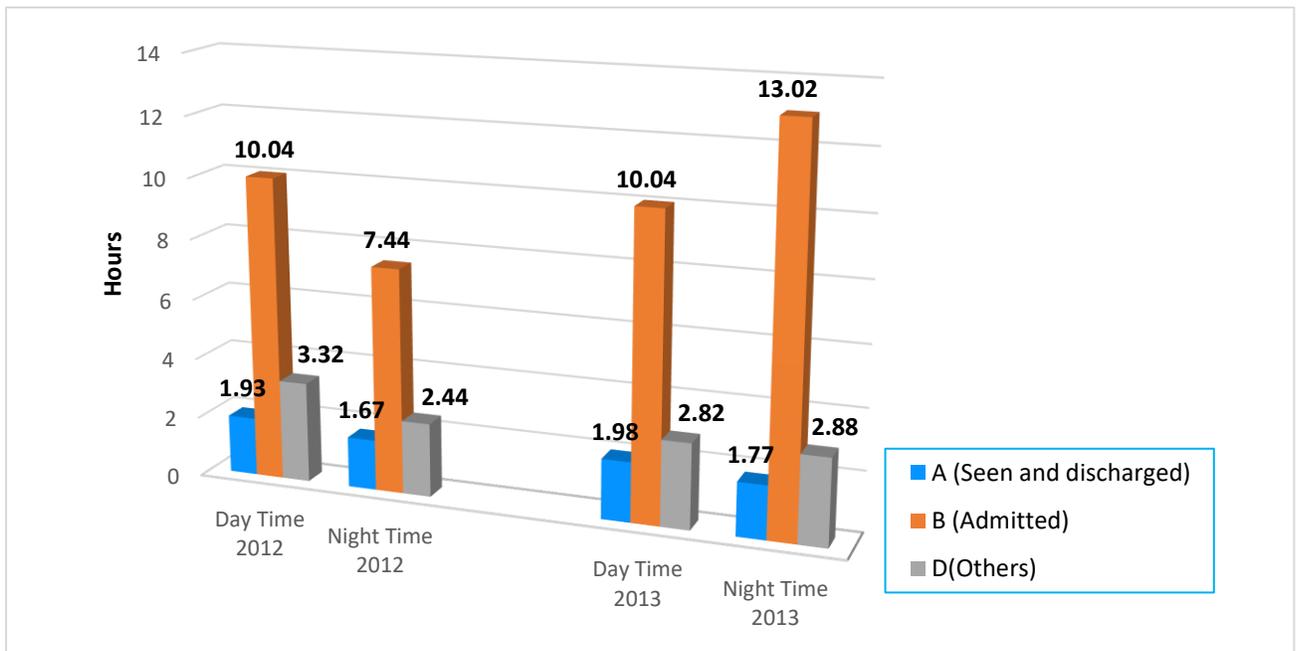
When a t-test was run for group A (with patients who were seen in the ER but discharged) and group B (with patients who were seen in the ER and admitted to the hospital) in two separate years, the mLOS at nighttime versus daytime was found to be statistically significant for both groups in British Columbia (Table 11).

Table 11 - Mean length of stay by time of day for groups A and B in BC

	Group A			Group B		
	Day Time	Night Time	P-Value	Day Time	Night Time	P-Value
	mLOS(\pm SD)	mLOS(\pm SD)		mLOS(\pm SD)	mLOS(\pm SD)	
2012	1.93(1.4)	1.67(1.42)	P<0.01	10.04 (11.21)	7.44(7.12)	P<0.027
2013	1.98(1.61)	1.77(1.62)	P<0.01	10.04 (10.26)	13.02(14.32)	P<0.028

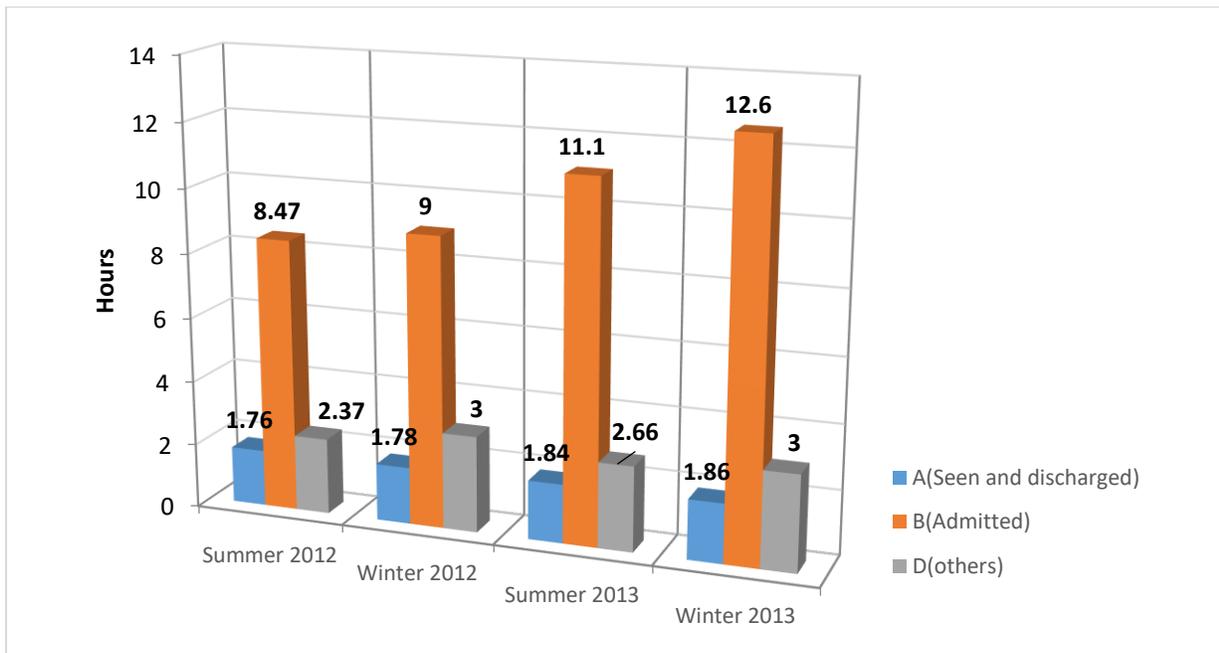
It was also noted that in BC between 2012 and 2013, patient mean length of stay at nighttime for admission (Group B) increased by almost two-fold, however the daytime length of stay remained same (Table 11, Figure 4).

Figure 4 - Length of stay in hours during day and night times in BC by different groups



When compared by seasons (e.g., Summer – April to September; Winter – October to March), the mLOS for admitted patients was greater in winter than in summer and there was a constant increase in mLOS over the two fiscal years (Figure 5).

Figure 5 - Mean length of stay by season in BC by different groups



3.7 Costs

As presented on page 27, the estimated total cost of a NTDV at an emergency room was calculated as *Direct Cost* (e.g., the cost in itself as given by the Canadian Institute for Health Information - this is likely the cost that researchers and administrators usually refer to when presenting similar data) + *Indirect Cost* (e.g., the potential loss of income given the length of stay at the ER). The rationale for using loss of income as an indirect cost was because the

working poor, or those at a minimal wage employment, would be more likely to use ERs for non-traumatic dental-related problems and are less likely to have dental insurance as known in the literature; the BC minimal wage used was \$10.25/hour (as of 2015). Although other potential time losses likely incurred including travel time from work/home/school to the ER and back, transportation costs associated with this travel, meals and childcare, and the loss in quality of life and societal productivity, they were not considered in this analysis. Furthermore, in light of the restricted data available for British Columbia (Table 3), the cost of non-traumatic dental visits at the ERs in this province was calculated based on data from Ontario and Alberta as these two provinces report on Level 3 (Table 3). As such, the cost was estimated for the same condition; that is, it was assumed that a toothache or a dental abscess would be dealt with similarly regardless of the province. With this in mind, in 2013 the estimated cost (direct and indirect) of an ER visit for non-traumatic dental conditions in BC was about \$185.15 when based on data from Ontario, and \$245.51 when based on data from Alberta (Tables 12-14). The variation in cost is due to the different payment schedule in each province while assuming the same treatment/procedure given. For patients admitted to the hospitals from ERs, the cost doubled or quadrupled (\$680.62 to \$933.62, Table 14) since the average length of stay in 2013 was around 13 hours¹³ until an appropriate in-patient bed became available. This cost does not include the actual cost of the hospitalization per se, which is reported to be around \$7,367 per admission.

¹³ Length of stay for group B is the time patients waited in the ER until the decision was made or an appropriate bed became available for admission to the hospital. The amount shown for group B does not include the hospital/admission cost.

Table 12 - Direct cost for BC as estimated based on Ontario and Alberta

Groups	Provinces	Fiscal Years	Mean Direct Cost	±SD
A	Ontario	2012	\$ 157	58.23
		2013	\$ 157	58.56
	Alberta	2012	\$ 211	74.41
		2013	\$ 217	76.43
B	Ontario	2012	\$ 564	178.86
		2013	\$ 560	170.19
	Alberta	2012	\$ 784	246.19
		2013	\$ 813	236.21
C	Ontario	2012	\$ 261	85.11
		2013	\$ 363	108.94
	Alberta	2012	\$ 340	196.46
		2013	\$ 491	N/A ¹⁴
D	Ontario	2012	\$ 170	99.91
		2013	\$ 191	105.77
	Alberta	2012	\$ 204	27.61
		2013	\$ 244	141.88

¹⁴ Only one death occurred in Alberta in the year 2013

Table 13 - Indirect cost based on length of stay in British Columbia by fiscal year

Groups	Fiscal Years	Mean Length of Stay (Hours)	±SD	Mean Indirect Cost	±SD
A	2012	1.77	1.42	\$18.13	14.57
	2013	2.86	1.23	\$18.98	16.63
B	2012	8.74	9.43	\$89.53	96.75
	2013	11.77	12.82	\$120.62	131.43
C	2012	N/A	N/A	N/A	N/A
	2013	N/A	N/A	N/A	N/A
D	2012	2.85	2.71	\$29.17	27.78
	2013	8.11	8.31	\$29.29	12.68

Table 14 - Total cost per non-traumatic dental emergency room visit in BC using Ontario and Alberta data, respectively, by fiscal year

Groups	Provinces	Fiscal Years	Total Cost
A	Ontario	2012	\$ 175.13
		2013	\$ 175.98
	Alberta	2012	\$ 229.13
		2013	\$ 235.98
B	Ontario	2012	\$ 653.53
		2013	\$ 680.62
	Alberta	2012	\$ 873.53
		2013	\$ 933.62
C	Ontario	2012	N/A
		2013	N/A
	Alberta	2012	N/A
		2013	N/A
D	Ontario	2012	\$ 199.17
		2013	\$ 220.29
	Alberta	2012	\$ 233.17
		2013	\$ 273.29

Chapter 4: Discussion

The results are discussed in light of the 2013 British Columbia data mostly because it is the most current and has the larger number of facilities reporting (#29) to the Canadian Institute for Health Information. The main objective of this study was to find out the *cost* of visits by patients with non-traumatic dental conditions to the emergency rooms in British Columbia, and it is discussed first while other important results are discussed thereafter. This thesis uses *cost* as a sum of the direct and indirect costs of the visits as follows: the direct cost relates to the amount billed to the provincial government when a patient was seen at the emergency room, which is usually the cost reported by government and researchers (74); the indirect cost is solely based on the time a non-traumatic dental patient spent at the emergency room. In turn, this indirect cost uses the time spent at the ER to calculate the potential loss of income, as highlighted in other studies, (75) (76) e.g., the monetary value attached to the time lost (from the length of stay in ER only) from work based on a BC minimal wage of \$10.25/hour.

According to the data from 29 of 74 emergency rooms in 2013, nearly 12,357 British Columbians visited ERs for non-traumatic dental conditions, representing almost 1% of overall emergency room visits for that year, as a similar percentage reported elsewhere. (77) Out of these, 12,159 patients (98.5%) were seen and discharged. The main complaints were dental/periapical abscesses, toothaches, and dental caries (Table 6) which is consistent with reports from US and others from Canada. (78) (38) The combined direct and indirect costs of each visit to tax payers in British Columbia was estimated to be between \$185.15 and \$245.51, whether using data from either Ontario or Alberta as a benchmark, respectively. Although such

cost sums up to a total of \$2.25 to \$2.99 million per year, the cost per visit was lower compared to the cost reported by Maund (46) and Cummings, (48) \$513 and \$260-\$510, respectively. Perhaps those studies also accounted for overhead expenses, administrative expenses, and physician compensation which were not part of estimation in this study. Nonetheless, a report from CIHI shows that the cost for each ER visit was \$166 in British Columbia in 2009, (47) which is lower than what was found in this study probably because of inflation and/or the way cost was calculated. Nonetheless, inconsistencies in reporting a cost value abound.

Of interest, 98.5% of the non-traumatic ER dental visits (Table 4) were discharged without treatment to address the issue that lead to the visit in the first place: dental decay combined or not with toothache and abscess. In fact, Cohen and coworkers highlighted that when appropriate dental care is not provided, the costs and patterns of care delivered at the emergency rooms may be repeated and at a higher cost when the same patient returns seeking care for a now worsened unresolved condition. (58) The worsen conditions that now may require admission, which costs substantially more to the tax payers, contributes to possible overcrowding at emergency rooms, and impacts patients' quality of life negatively from sleeping disturbance to inability to work, or even death. (36) In turn, the cost of providing care at the ER to a patient with a complicated oral condition that requires medical attention was found to vary between \$680.62 to \$933.62 (Table 14). However, if a decision is made to admit a patient to the hospital, the cost would jump to \$7,367 per admission. (59) In the case of this study, approximately 1.5% (185 patients, Table 7) of all the non-traumatic emergency room visits in 2013 alone were admitted for the management of their conditions. This makes the total cost of admission of these patients to about \$1.36 million, or \$47,000 per each of the 29 reporting emergency rooms in BC. When 74 emergency

rooms are taken into consideration, the 1.5% of admissions would cost to British Columbians \$3.47 million per year. Although the frequency of non-traumatic dental patients being admitted to hospitals is relatively low compared to all non-traumatic dental emergency room visits, its associated cost is much higher and the resulting hospitalization is among the most life-threatening consequences of failing to prevent or treat oral problems. (56) (57)

This study confirms Quinonez's findings that men, more than women tend to use the ER for non-traumatic dental conditions. (38) In terms of age, patients aged between 20 and 64 years made five times more visits than those between the ages of 1 and 19 years, which may relate to the fact that most publicly funded dental programs target children and adolescents from low-income families rather than adults. (38) In fact, evidence from the U.S. and other jurisdictions validates the fact that the reduction in, or nonexistence of, publicly funded insurance coverage has been associated with increased visits to the ER for dental-related problems by low-income adults. (19) (38) (59) (79) In the majority of provinces in Canada, publicly financed insurance is offered almost entirely to children, individuals on social insurance, and disabled persons. Also, coverage is mostly basic in nature, restricted to dental emergencies. (15) Essentially, in the case of inadequate coverage, non-traumatic dental patients seeking dental care are required to spend more money out of pocket. Evidence has shown that the more a patient has to spend out of pocket, the less likely s/he may be to actually get care; the more likely they are to report negative oral health conditions. (15)

Also parallel to Quinonez results, this study found that most of the non-traumatic dental visits were non-urgent in nature. (59) There is evidence in the literature to support that emergency

rooms serve as a safety net for a substantial number of low income and uninsured dental patients in the hopes to seek regular care. (39) Other reasons that may add to the greater use of emergency rooms for oral health problems include increased dental decay potentially due to lack of fluoridation in community water supply systems, (77) and patients' perception of free access to ER services at hospitals. (36) These non-urgent emergency room visits likely mirror the barriers in access to dental care by the working poor, (20) those who are not eligible to receive publicly financed insurance, and those who do not have employment-based dental insurance. (79) There is also evidence that middle-income groups in Canada are facing accessibility issues parallel to what has been seen in past years by the lowest income earners. (79)

The non-urgent emergency room visits also provide a window into the possible care-seeking patterns of individuals with limited access to dental care. Bedos and coworkers noted that the pathway of welfare recipients to dental care in Quebec involves medical settings given that difficulties in finding dentists who welcome low-income individuals without publicly funded insurance, and/or due to the nature of treatments needed which are not included in most public insurance plans (e.g., root canals). (68) Therefore, it can be assumed that non-traumatic dental patients would avail care in dental settings instead of emergency rooms if financial barriers to care were removed. However, it is imperative to note that removing financial barrier or providing public funded insurance does not guarantee access to dental care or utilization. (59)

Similar to other studies, the highest percentage of non-traumatic dental emergency room visits occurred on weekends (18%) and during the nighttime (63%) in British Columbia (38) (53). The higher number of non-traumatic dental ER visits during nighttime hours should not be entirely

surprising given that the majority of patients on minimal wage may face difficulty leaving their work place during normal working hours; British Columbia has the second highest poverty rate only second to Nova Scotia. (25) This rationale of working hours is also applicable to our findings for age from a statistical analysis where age was significantly associated with the time of non-traumatic dental emergency room visit. Compared to those 65 years and older, patients 20 to 64 years old were 1.5 times more likely to visit ERs during the nighttime, whereas older adults (65 and older) visited the ER more during daytime. This finding suggests that working poor adults with non-traumatic dental conditions might have waited until nighttime or worse, until the weekend, to try managing their dental problems while suffering. Likewise, those between 1-19 years old were 1.4 times more likely to visit the ER at nighttime compared to older adults. Other than nighttime being non-school time, there is much literature to support that a working parents/family member or guardian accompany pediatric patients during their dental visits to ensure that a valid medical history is taken and consent is obtained; these parents or family members work during the daytime. (80) This corroborates the findings of Thompson and colleagues showing that pediatric and adult ER visits for non-traumatic dental conditions do happen at nighttime and peak at times when people are less likely to be working or at school. (15) However, nighttime visits can also be done by patients with a dental emergency and who have a regular dentist, but given the regular dental offices working hours between 9AM and 5PM, have no other choice than an ER. Independently from the day and time that ER visits take place, ER physicians are not adequately trained to manage preventable oral conditions and most treatments typically are restricted to pharmacotherapeutic prescriptions.

In turns of mLOS, ER patients may stay long due to limited bed availability. A known factor that influences bed availability is the number of alternate level of care (ALC) patients¹⁵. In this study, 185 (1.5%, group B) of all the non-traumatic dental patients in BC in 2013 stayed at the emergency rooms around 6 times longer than a non-admitted non-traumatic dental patient; these 185 admissions are an underestimation since only 29 emergency rooms out of 74 reported to CIHI in BC. Nonetheless, group “A” patients who were seen and discharged spent around 2 hours at the ER in British Columbia which contradicts the findings reported by CIHI of around 4.4 hours. (82) This study showed that in 2013 alone almost 24,318 hours were lost at 29 emergency rooms so that 12,159 non-traumatic dental patients could be seen, yet not properly treated. As a matter of fact, an average of 838.5 hours were lost at each of the 29 reporting ER in BC, or roughly a 1 year worth of working hours of an ER physician and supporting staff to provide care that was likely ineffective to address preventable dental conditions. This time could have been utilized to attend to other more serious life threatening conditions.

¹⁵ ALC “provides a first look at patients in acute care hospitals across Canada who no longer need acute services, but are waiting to be discharged to a setting more appropriate to their needs” (81)

Chapter 5: Conclusion and Limitations

5.1 Conclusion

In British Columbia this study is the first of its kind to demonstrate the direct and indirect costs of non-traumatic dental emergency room visits. The vulnerable population that struggles with finances and disparities in oral health is most underserved. Marginalized populations with nowhere to go end up at the ERs, contributing to overcrowding, mounting up the cost of health care system and also suffering from a lower quality of life.

In 2013, about 1% of the British Columbians visiting ERs had done so with the main problem being dental/periapical abscesses and/or toothaches or dental caries. Each non-traumatic dental visit was completed in around 2 hours at a cost between \$185.15 and \$245.51 to the taxpayers. A small fraction of the patients (1.5%) stayed at the ER for 13 hours due to the severity of the oral condition which costed up \$933.62 per patient. It is known that the majority of non-traumatic dental problems were considered to be non-urgent and that no definite interventions were received. Like others, this study has demonstrated that those aged 19 years and under and between 20 to 64 years were 1.4 times more likely to make an emergency room visit at nighttime as compared to those aged 65 years and older.

Besides the costs of accessing dental care by the underserved population the current study has demonstrated a potentially preventable number of emergency room visits and hospital admission, and related primary care for dental problems that are best treated in dental care settings. The cost

of each non-traumatic dental emergency room visits remain high and such visits are arguably preventable.

5.2 Limitations

This study also has limitations. One of the major limitations is that in 2012 and 2013 in BC 20 and 29 emergency rooms of 74 respectively reported data to the Canadian Institute for Health Information. Hence, the data from British Columbia lack important information including the total number of non-traumatic dental visits that occurred at the emergency rooms across the province in 2012 and 2013, the direct cost of each non-traumatic dental visit, and main intervention given. Additionally, since British Columbia does not submit data at level 3, data about the main problem, diagnosis, and cost of return visits were also missing.

There is also lack of sociodemographic data. Due to privacy and confidentiality guidelines set by CIHI, no patient-level information was released. Moreover, the financial and societal loss is probably much higher when the hourly job is related to essential services to society such as construction trade workers, primary industry and manufactory. In addition, the indirect cost did not include any other cost related to meals, child care, transportation and so on. As a result, the overall estimated cost was a gross underestimation. Non-traumatic dental patients who were seen in walk-in clinics were not included in the estimation either. Nonetheless, these details are important for overall costing and policy making.

Furthermore, the estimated cost has a large variation within Canada. For example, a report from Ontario shows an estimated cost of \$513 per each ER visit; it is unknown what factors are considered to account for such estimate. Moreover, the results are not likely to be generalizable to Canada as health insurance plans vary across provinces¹⁶. It might not be generalizable to British Columbia either since only 29 out of 74 emergency rooms reported to CIHI in 2013. Finally, one cannot be certain how precisely the International Classification of Disease codes were used to refer to dental visits, diagnosis, and various dental procedures by health care professionals at the ERs.

5.3 Implications

The main objective of this research was to estimate the overall cost for dealing with preventable dental conditions in the ERs. The overall cost may better inform local health authorities, governing bodies and the Ministry of Health Province of British Columbia about the burden of oral diseases on the public healthcare system. It may also help to expand and improve the dental health care system for non-traumatic dental ER visits. Dental visits normally represent a small fraction of all emergency room visits, but they are associated with avoidable dental conditions and because of inappropriate treatment and inadequate follow-up, repeated ER visits add to the cost. Furthermore, costs for the services provided at an ER are more expensive than services delivered in a dental setting, putting financial pressure on the health care system. For example, assuming that on average each Canadian adult has three cavities on posterior teeth (83) involving

¹⁶ For example, Alberta has only one health authority while BC has five independent health authorities. Ontario, on the other hand, has each hospital belonging to a local health network. (83) (84) (85)

at least one surface, the cost of a conservative dental procedure to treat each of these teeth would be around \$105 per tooth involving one surface using amalgam filling (as per the British Columbia Dental Association 2014 fee guide). Given that in 2013 the total number of non-traumatic dental visits was 12,357 in BC, and assuming that each patient had at least one complaint at the ER visit of one tooth that was aching or with decay (as per table 6), the cost of providing dental treatment to these patients would be around \$1.35 million. This amount is almost half of the amount that was actually spent to see these patients in the ER to whom no definitive treatment was provided. More importantly, this amount would translate to a dental problem actually being addressed properly.

In turn, careful assessment of the cost-effectiveness of alternative policies and approaches are needed to improve access to the oral health care system. For example, expansion of existing publicly funded dental plans may help those disadvantaged dental patients to maintain their oral health. Improved reimbursement rates may also increase dentists' uptake of publicly funded dental patients. Access to oral care can also be improved by developing new and boosting existing professional task forces including dental therapists, like the Minnesota dental therapist program or the Alaska Dental Health Aide Therapists. Thus, policies that aim at expanding the public funds on dental care must include the assessments of costs to persons and to society, and must also be supported by equity considerations.

Lastly, this research provides distinctive information on an important public health concern, and evidence of direct and indirect costing where there had been none before. It supports the idea that in British Columbia there is a need to reallocate public funds for dental services for those who do

not have dental coverage provided by either private or government financed dental insurance programs. Therefore, plans and strategies are required to be set in place to provide appropriate and effective dental care in British Columbia. that provide more complete and less costly care for oral health problems than do hospital ERs. Therefore, further studies are required to better understand the mechanisms behind reducing the use of emergency rooms for dental care that is best delivered in community-based dental settings.

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Appendix A: Emergency room presenting complaint list used in British Columbia

Canadian Emergency Department Information System (CEDIS) Presenting Complaint List (V3.0)					
Effective Date: April 2015					
Cardiovascular (001–050)	#	Environmental (201–250)	#	Genitourinary (301–350) (cont'd)	#
Cardiac arrest (non-traumatic)	001	Frostbite/cold injury	201	Polyuria	309
Cardiac arrest (traumatic)	002	Noxious inhalation	202	Genital trauma	310
Chest pain—cardiac features	003	Electrical injury	203	Mental Health (351–400)	#
Chest pain—non-cardiac features	004	Chemical exposure	204	Depression/suicidal/deliberate self-harm	351
Palpitations/irregular heart beat	005	Hypothermia	205	Anxiety/situational crisis	352
Hypertension	006	Near drowning	206	Hallucinations/delusions	353
General weakness	007	Gastrointestinal (251–300)	#	Insomnia	354
Syncope/pre-syncope	008	Abdominal pain	251	Violent/homicidal behaviour	355
Edema, generalized	009	Anorexia	252	Social problem	356
Leg swelling/edema	010	Constipation	253	Bizarre behaviour	358
Cool pulseless limb	011	Diarrhea	254	Concern for patient's welfare	359
Unilateral reddened hot limb	012	Foreign body in rectum	255	Pediatric disruptive behaviour	360
ENT—Ears (051–100)	#	Groin pain/mass	256	Neurologic (401–450)	#
Earache	051	Nausea and/or vomiting	257	Altered level of consciousness	401
Foreign body, ear	052	Rectal/perineal pain	258	Confusion	402
Loss of hearing	053	Vomiting blood	259	Vertigo	403
Tinnitus	054	Blood per anus/melena	260	Headache	404
Discharge, ear	055	Jaundice	261	Seizure	405
Ear injury	056	Hiccoughs	262	Gait disturbance/ataxia	406
ENT—Mouth, Throat, Neck (101–150)	#	Abdominal mass/distention	263	Head injury	407
Dental/gum problem	101	Anal/rectal trauma	264	Tremor	408
Facial trauma	102	Oral/esophageal foreign body	265	Extremity weakness/symptoms of CVA or TIA	409
Sore throat	103	Feeding difficulties in newborn	266	Sensory loss/paresthesia	410
Neck swelling/pain	104	Neonatal jaundice	267	Floppy child	411
Neck trauma	105	Genitourinary (301–350)	#	OB/GYN (451–500)	#
Difficulty swallowing/dysphagia	106	Flank pain	301	Menstrual problems	451
Facial pain (non-traumatic/non-dental)	107	Hematuria	302	Foreign body, vagina	452
ENT—Nose (151–200)	#	Genital discharge/lesion	303	Vaginal discharge	453
Epistaxis	151	Penile swelling	304	Sexual assault	454
Nasal congestion/hay fever	152	Scrotal pain and/or swelling	305	Vaginal bleed	455
Foreign body, nose	153	Urinary retention	306	Labial swelling	456
URTI complaints	154	UTI complaints	307	Pregnancy issues, <20 weeks	457
Nasal trauma	155	Oliguria	308	Pregnancy issues, >20 weeks	458

CED-DxS

The Canadian Emergency Department
Diagnosis Shortlist

TCDMU

Le thésaurus canadien des diagnostics
en médecine d'urgence

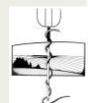
4/2015 v.4.0

CIHI - Canadian Institute for Health Information

CEDIS - The Canadian Emergency Department Information System Committee

ICIS - Institut canadien d'information sur la santé

SIGDUC - le comité des systèmes d'informations de gestion
des départements d'urgence canadiens



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with/avec

Canadian Institute for Health Information - Classifications & Terminologies and Clinical Administrative Databases (CAD) teams

Institut canadien d'information sur la santé - les équipes de classifications & terminologies & des bases de données clinico-administratives (BDCA)

Alberta Children's Hospital: Belanger F, Millar K

BC Children's Hospital: Clarke M, Colbourne M, Houghton D, Hung G, Whitehouse S

Canadian Pediatric Society

Cape Breton Regional Hospital: Currie T

Children's Hospital of Eastern Ontario: Farion K

CH de l'Université de Montréal: Desaulniers P, Boulet M, Charbonneau L, Laurens JP, Jourdenais E

CH de l'Université de Québec-Pavillon CHUL:

Bernier D, Germain V, Guimont C, Nazair P, Turgeon R

Colchester Regional Hospital: Howlett M

Credit Valley Hospital, Mississauga: Humniski AM, Letovsky E, Scampoli N

CSSS Gatineau: Folot MH, Forest G,

Michaud MN, Pham Dinh M, Sibille P

Foothills Medical Centre, Calgary: Wertzler B

Greater Niagara General Hospital: Turineck D

Grey Nuns Comm. Hospital & Health Centre, Edmonton: Kruhlak R

Hamilton Health Sciences: Upadhye S, Rutledge G

Health Sciences Centre, Winnipeg: Sweetland R

Hôpital Maisonneuve Rosemont, Montreal: Mathieu B

Hôpital Sacré Coeur, Montreal: Chauny JM

Hospital for Sick Children, Toronto: Guttman A

Hôtel Dieu de St-Jérôme: Gosselin M

Hôtel-Dieu de Lévis: Poitras J

Hotel-Dieu Grace Hospital, Windsor: Bradford P

Institut cardiologie de Montréal: Vadeboncoeur A

IWK Health Centre, Halifax: Sinclair D, Taylor B

Kingston General Hospital: Blouin D, Dagnone G, Dungey P, Edwards K

Kitchener-Waterloo Health System: Kolleck D

Lake of the Woods District Hospital, Kenora: Moore S

Lakeridge Health Oshawa: Vandersluis R

Markham Stouffville Hospital: Austin D

Mount Sinai Hospital, Toronto: Ovens H

MUHC-Montreal Children's Hospital and the Montreal General Hospital: Nemeth J, Troquet JM

Prince George Regional Hospital: Rowe P

Queen Elizabeth II Health Science Center, Halifax: Magee K, Campbell S, Maxwell D, Murray J, Watson ML

Royal Alexandra Hospital, Edmonton: Dong K, Dong S, Rabin E

MUHC - Royal Victoria Hospital, Montreal: Beique M

SMBD-Jewish General Hospital, Montreal: Dankoff J, Grad W, Stern E, Turner J

Society of Rural Physicians of Canada

St. Michael's Hospital, Toronto: Cass D, Spence J

St. Paul's Hospital, Vancouver: Berringer R

Stanton Territorial Hospital, NWT: Hoechsmann A

Stollery Children's Hospital, Edmonton: Turner T, Dong K

St. John's Health Sciences Centre, NFLD: Morgan D

The Ottawa Hospital: Calder L, Nussbaum C

Thunder Bay Regional Hospital: Visser S

Toronto East General Hospital: Tyberg J

University of Alberta Hospital, Edmonton: Yao R, Dong S

Vancouver General Hospital: McKnight D, Moser M

Victoria General & Royal Jubilee: Wheeler S

Winnipeg Children's Hospital: Warda L

plus

MSSS: Ms. Sylvie Berger, Ms. Denise Trudel, Yves-Alain Hemon

CHU Ste Justine: Dr. Jocelyn Gravel

CED-DxS 2015

Infectious and parasitic diseases	D369	Benign tumor unspecified site	F489	Neurotic disorder	H669	OM - Otitis media	Diseases of the respiratory system		
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B589	Toxoplasmosis	E876	Hypokalemia	Diseases of the eye and adnexa	I64	CVA - Cerebrovascular accident	K089	Teeth / Gums disorder	
B839	Pinworms / Helminthiasis	E877	Fluid overload	H029	Stye / Chalazion / Blepharitis	I674	Hypertensive encephalopathy	K119	Salivary gland disorder
B852	Lice / Pediculosis	E878	Dis electrolyte / Fluid dis	H109	Conjunctivitis	I679	Cerebrovascular disease	K137	Oral mucosa disorder
B86	Scabies	E889	Metabolic disorder	H113	Conjunctival hemorrhage	I710	Dissection of aorta	K149	Tongue disorder
B89	Parasitic disease	Mental and behavioural disorders	H160	Corneal ulcer	I719	Aortic aneurysm	K20	Esophagitis	
Neoplasms	F03	Dementia	H169	Keratitis, unspecified	I728	Aneurysm / Dissection, other artery	K219	GERD - Gastroesoph reflux dis	
C189	Neoplasm of colon	F059	Delirium	H189	Corneal disease	I739	Peripheral vascular disease	K222	Esophageal obstruction
C259	Neoplasm of pancreas	F072	Postconussional syndrome	H209	Iridocyclitis	I749	Arterial embolism / Thrombosis	K223	Perforation of esophagus
C3499	Neoplasm of lung	F100	Mental dis alcohol intoxicat	H210	Hyphema	I779	Arteritis	K229	Esophageal disease, other
C449	Neoplasm of skin	F103	Mental dis alcohol withdrawal	H335	Retinal detachments	I800	Superficial phlebitis legs	K279	Peptic ulcer
C5099	Neoplasm of breast	F119	Mental dis due to opioids	H359	Retinal disorder	I809	DVT - Deep venous thrombosis	K299	Gastroduodenitis
C579	Neoplasm gynecologic	F139	Mental dis due to hypnotics	H409	Glaucoma	I839	Varicose veins of lower extrem	K30	Dyspepsia
C61	Neoplasm of prostate	F149	Mental dis due to cocaine	H431	Vitreous hemorrhage	I850	Esophageal varices with bleed	K319	Stomach / Duodenum disorder
C6299	Neoplasm of testicle	F159	Mental dis due stimulants oth	H439	Vitreous body disorder	I859	Lymphadenitis	K358	Appendicitis, acute
C719	Neoplasm of brain unspecified	F169	Mental dis due hallucinogens	H449	Globe disorder, other	I891	Lymphangitis	K409	Hernia, inguinal
C760	Neoplasm of head, face & neck	F189	Mental dis due to solvents	H46	Optic neuritis	I959	Hypotension	K429	Hernia, umbilical
C762	Neoplasm of abdomen	F199	Mental dis due multip drug use	H532	Diplopia	I99	CVS disorder	K469	Hernia, abdominal other
C763	Neoplasm of pelvis	F209	Schizophrenia	H539	Visual disturbance			K509	Crohn's disease
C767	Neoplasm, other	F239	Psychotic disorder, acute	H571	Ocular pain			K519	Ulcerative colitis
C900	Multiple myeloma	F319	Bipolar affective disorder	H579	Eye and adnexa disorder			K529	Colitis, noninfective
C959	Leukemia	F329	Depression	H609	OE - Otitis externa			K559	Intestinal vascular disorder
C969	Neoplasm hematologic, other	F419	Anxiety disorder	H612	Wax in ear			K561	Intussusception

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K562	Volvulus		Diseases of the MSK system and connective tissue	N12	Tubulo-interstitial nephritis	Q430	Meckel's diverticulum	R99	Other causes mortality	T783	Angioneurotic edema
K566	SBO / LBO - Bowel obstruction	M0099	Arthritis, septic	N139	Obstructive uropathy	Q431	Hirschsprung's disease		Injury, poisoning and other	T784	Allergy
K567	Ileus	M069	Arthritis, rheumatoid	N179	ARF - Acute renal failure	Q899	Congenital malformation	T009	Sup inj multiple	T790	Air embolism
K578	Diverticulitis	M089	Arthritis, juvenile	N189	CRF - Chronic renal failure	Q999	Chromosomal abnormality	T0190	OW multip, uncompl	T791	Fat embolism
K579	Diverticulosis	M1099	Gout	N209	Urinary calculus		Symptoms, signs and abnormal findings	T0191	OW multip + FB / Infection	T793	Post-trauma wound infection
K590	Constipation	M1199	Arthropathy, crystal	N23	RC - Renal colic	R000	Tachycardia	T0290	Fx multip, closed	T794	Traumatic shock
K599	IBS - Functional intestin dis	M1399	Arthritis, unspecified	N289	Renal and ureteral disease	R001	Bradycardia	T0291	Fx multip, open	T814	Post-op / Procedure infection
K600	Anal fissure, acute	M229	Patellar disorder	N341	Nonspecific urethritis	R002	Palpitations	T110	Sup inj upper limb	T850	Complication ventricular shunt
K603	Anal fistula	M239	Internal derangement of knee	N390	UTI - Urinary tract infection	R040	Epistaxis	T111	OW upper limb	T859	Complic prosth / implant / graft
K612	Anorectal abscess	M2509	Hemarthrosis	N399	Urinary system disorder	R042	Hemoptysis	T130	Sup inj lower limb	T869	Graft rejection
K613	Ischiorectal abscess	M2549	Joint effusion	N410	Prostatitis, acute	R05	Cough	T131	OW lower limb	T887	Adverse effect of drug
K623	Rectal prolapse	M2559	Joint pain	N433	Hydrocele	R060	SOB - Dyspnea	T147	Crushing inj unsp	T889	Complic surg / med care
K629	Anal / Rectal disorder	M2599	Joint disorder	N4408	Testicular torsion	R061	Stridor	T150	FB in cornea		
K631	Intestinal perforation	M300	PAN - Polyarteritis nodosa	N4592	Orchitis / Epididymitis	R064	Hyperventilation	T159	FB on external eye		
K639	Intestinal disease, other	M303	Kawasaki - Mucocut lymph nd synd	N478	Phimosis / Paraphimosis	R066	Hiccough	T16	FB in ear		
K649	Hemorrhoids	M329	SLE - Systemic lupus erythematosus	N483	Priapism	R074	CP - Chest pain	T171	FB in nostril		
K650	Peritonitis, acute	M349	Scleroderma - Systemic sclerosis	N489	Penile disorder	R092	Respiratory arrest	T179	FB in respiratory tract		Provisional Codes
K709	Alcoholic liver disease	M353	Polymyalgia rheumatica	N509	Male genital organs disorder	R100	Acute abdomen	T181	FB in esophagus	U0490	SARS suspected
K729	Hepatic failure	M359	Connective tissue disease	N63	Breast lump	R102	Pelvic and perineal pain	T185	FB in anus and rectum		Contact with health services
K739	Hepatitis, chronic	M436	Torticollis	N649	Breast disorder	R104	Abdominal pain / Colic	T189	FB in alimentary tract	Z016	Radiological exam only
K746	Cirrhosis (non-alcoholic) of liver	M45	Ankylosing spondylitis	N739	PID - Pelvic inflammatory dis	R111	Nausea alone	T190	FB in urethra	Z017	Laboratory exam only
K766	Portal hypertension	M4649	Discolitis	N751	Bartholin's abscess	R113	Nausea with vomiting	T192	FB in vulva and vagina	Z027	Issue of medical certificate
K769	Liver disease	M4799	Spondylosis	N760	Vaginitis, acute	R138	Dysphagia	T290	Burns multip regions	Z040	Blood-alcohol / drug test
K8050	Cholelithiasis	M4809	Spinal stenosis	N809	Endometriosis	R17	Jaundice	T301	Burn first degree	Z044	Examination after alleged rape
K8080	Biliary colic / Cholelithiasis	M4899	Spondylopathy	N819	Female genital prolapse	R18	Ascites	T302	Burn second degree	Z046	Legal psychiatric exam
K810	Cholecystitis, acute	M509	Cervical disc disorder	N832	Ovarian cysts	R208	Paresthesias / Numbness	T303	Burn third degree	Z094	Cast check / Fracture follow up
K8308	Cholangitis	M542	Cervicalgia	N8350	Torsion ovary	R21	Rash	T357	Frostbite	Z099	Follow-up exam unsp spec Tx
K839	Biliary tract disorder	M543	Sciatica	N899	Noninflamm vaginal disorder	R229	Swelling, mass and lump	T390	Poisoning salicylates	Z209	Contact communicable disease
K859	Pancreatitis, acute	M545	Back pain	N926	Irregular menstruation	R258	Abn involuntary movements	T399	Poisoning acetaminophen	Z299	Prophylactic measure
K869	Pancreatic disorder	M6269	Muscle strain	N939	VB - Vaginal bleeding	R2688	Gait and mobility abnormality	T401	Poisoning heroin	Z309	Contraceptive management
K909	Intestinal malabsorption	M6299	Muscle disorder, other	N946	Dysmenorrhea	R300	Dysuria	T405	Poisoning cocaine	Z349	Pregnancy, normal
K919	Postprocedural GI disorder	M6599	Synovitis and tenosynovitis		Pregnancy, childbirth and the puerperium	R318	Hematuria	T406	Poisoning narcotics	Z37900	Delivery term multip births
K922	Gastrointestinal hemorrhage	M6659	Spontaneous rupture tendon	U009	Ectopic pregnancy	R33	Retention of urine	T409	Poisoning hallucinogens	Z37910	Delivery term single birth
K929	Gastrointestinal disorder	M702	Olecranon bursitis	U021	Retained fetal products	R36	Urethral discharge	T424	Poisoning benzodiazepines	Z38200	Newborn, single birth
	Dermatologic diseases	M704	Prepatellar bursitis	U034	Spontaneous abortion, incomplete	R398	Urinary system Sx	T439	Poisoning psychotropes	Z38800	Newborn, multip birth
L00	SSSS - Staph scalded skin synd	M706	Trochanteric bursitis	U039	Spontaneous abortion, complete	R400	Altered LOC	T469	Poisoning cardiotropes	Z439	Stoma care
L010	Impetigo	M712	Baker's cyst	U0899	Complic abortion / Ectopic / Molar	R4029	Coma, unspecified	T509	Poisoning other substances	Z459	Adjustment implanted device
L029	Abscess / Furuncle / Carbuncle	M719	Bursitis, unspecified	U15003	Eclampsia in pregnancy	R410	Disorientation	T510	Toxic effect ethanol	Z488	Surgical aftercare evaluation
L0300	Paronychia finger	M722	Plantar fasciitis	U20009	Threatened abortion	R42	Dizziness	T511	Toxic effect methanol	Z5188	Medical care, other
L0301	Paronychia toe	M7269	Necrotizing fasciitis	U21909	Hyperemesis gravidarum	R443	Hallucinations	T518	Toxic effect other alcohols	Z659	Social problem
L039	Cellulitis	M751	Rotator cuff syndrome	U36999	Maternal care for fetal probl	R458	Emotional symptoms / Suicidal ideation	T529	Toxic effect solvent	Z719	Counselling / Medical advice
L050	Pilonidal cyst with abscess	M752	Bicipital tendinitis	U47903	False labour	R509	Fever	T549	Toxic effect corrosive subs	Z760	Issue of repeat prescription
L139	Bullous disorder	M754	Impingement synd shoulder	U60101	Preterm delivery	R51	HA - Headache	T569	Toxic effect metal	Z769	LWBS / AMA with no Dx
L211	Seborrheic infantile dermatitis	M755	Bursitis of shoulder	U75909	Complication of labour and delivery	R53	Weakness / Fatigue	T58	Toxic effect CO		
L22	Diaper rash	M759	Shoulder lesion	U99809	Disease of peri-partum	R55	Syncope / Vasovagal	T599	Toxic effect gases / vapours		
L259	Dermatitis, contact	M765	Patellar tendonitis		Conditions originating in the perinatal period	R5609	Febrile convulsions	T609	Toxic effect pesticide		
L299	Pruritus	M766	Achilles tendonitis	P229	Respir distress of newborn	R5688	Seizures / Convulsions	T629	Toxic effect noxious food		
L309	Dermatitis / Eczema	M779	Tendonitis, unspecified	P369	Bacterial sepsis of newborn	R570	Cardiogenic shock	T639	Toxic effect venom animal		
L409	Psoriasis	M7919	Myalgia	P38	Omphalitis of newborn	R571	Hypovolemic shock	T659	Toxic effect substance		
L42	Pityriasis rosea	M7929	Neuralgia / Neuritis	P599	Neonatal jaundice	R579	Shock	T66	Radiation effects		
L509	Urticaria	M7969	PLU - Pain in limb unsp	P60	DIC of fetus and newborn	R58	Hemorrhage	T670	Heatstroke and sunstroke		
L519	Erythema multiforme	M819	Osteoporosis	P619	Perinatal hematologic dis	R599	Lymphadenopathy	T679	Effect heat and light		
L52	Erythema nodosum	M8429	Fx delayed union	P769	Intestinal obstruct newborn	R600	Localized edema	T68	Hypothermia		
L600	Ingrown nail	M8699	Osteomyelitis	P77	Necrotizing enterocol newborn	R601	Generalized edema	T703	Decompression sickness		
L609	Nail disorder	M889	Paget's disease of bone	P789	Perinatal GI disorder	R630	Anorexia	T709	Barotrauma		
L739	Follicular disorder	M8999	Bone disease, other	P90	Convulsions of newborn	R64	Cachexia / Failure to thrive	T71	Asphyxiation		
L84	Corns and callosities	M940	Costochondritis	P929	Feeding problem of newborn	R69	Diagnosis N/A in list	T749	Maltreatment syndrome / Abuse		
L899	Decubitus (pressure) ulcer	M9499	Cartilage disease	P95	Fetal death	R799	Abn results blood chem	T750	Effects lightning		
L989	Skin disorder		Diseases of the genitourinary system	P969	Perinatal disorders	R938	Abn results imaging	T751	Submersion injury (near drowning)		
		N009	Nephritic syndrome, acute		Congenital and chromosomal abnormalities	R948	Abn results function studies	T754	Electrocution		
		N049	Nephrotic syndrome	Q400	Pyloric stenosis, congenital	R95	SIDS - Sudden infant death synd	T782	Anaphylactic shock / Reaction		
		N10	Pyelonephritis								

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B49	Tinea / Fungal infection	E871	Hyponatremia	G9609	Cerebrospinal fluid leak	I619	Intracerebral hemorrhage	K0769	TMJ - Temporomandib joint dis
B54	Malaria	E875	Hyperkalemia	G969	CNS disorder, other	I620	Subdural hemorrhage nontrauma	K0887	Toothache
B589	Toxoplasmosis	E876	Hypokalemia	Diseases of the eye and adnexa	I64	CVA - Cerebrovascular accident	K089	Teeth / Gums disorder	
B839	Pinworms / Helminthiasis	E877	Fluid overload	H029	Stye / Chalazion / Blepharitis	I674	Hypertensive encephalopathy	K119	Salivary gland disorder
B852	Lice / Pediculosis	E878	Dis electrolyte / Fluid dis	H109	Conjunctivitis	I679	Cerebrovascular disease	K137	Oral mucosa disorder
B86	Scabies	E889	Metabolic disorder	H113	Conjunctival hemorrhage	I710	Dissection of aorta	K149	Tongue disorder
B89	Parasitic disease	Mental and behavioural disorders	H160	Corneal ulcer	I719	Aortic aneurysm	K20	Esophagitis	
Neoplasms	F03	Dementia	H169	Keratitis, unspecified	I728	Aneurysm / Dissection, other artery	K219	GERD - Gastroesoph reflux dis	
C189	Neoplasm of colon	F059	Delirium	H189	Corneal disease	I739	Peripheral vascular disease	K222	Esophageal obstruction
C259	Neoplasm of pancreas	F072	Postconussional syndrome	H209	Iridocyclitis	I749	Arterial embolism / Thrombosis	K223	Perforation of esophagus
C3499	Neoplasm of lung	F100	Mental dis alcohol intoxicat	H210	Hyphema	I779	Arteritis	K229	Esophageal disease, other
C449	Neoplasm of skin	F103	Mental dis alcohol withdrawal	H335	Retinal detachments	I800	Superficial phlebitis legs	K279	Peptic ulcer
C5099	Neoplasm of breast	F119	Mental dis due to opioids	H359	Retinal disorder	I809	DVT - Deep venous thrombosis	K299	Gastroduodenitis
C579	Neoplasm gynecologic	F139	Mental dis due to hypnotics	H409	Glaucoma	I839	Varicose veins of lower extrem	K30	Dyspepsia
C61	Neoplasm of prostate	F149	Mental dis due to cocaine	H431	Vitreous hemorrhage	I850	Esophageal varices with bleed	K319	Stomach / Duodenum disorder
C6299	Neoplasm of testicle	F159	Mental dis due stimulants oth	H439	Vitreous body disorder	I859	Lymphadenitis	K358	Appendicitis, acute
C719	Neoplasm of brain unspecified	F169	Mental dis due hallucinogens	H449	Globe disorder, other	I891	Lymphangitis	K409	Hernia, inguinal
C760	Neoplasm of head, face & neck	F189	Mental dis due to solvents	H46	Optic neuritis	I959	Hypotension	K429	Hernia, umbilical
C762	Neoplasm of abdomen	F199	Mental dis due multip drug use	H532	Diplopia	I99	CVS disorder	K469	Hernia, abdominal other
C763	Neoplasm of pelvis	F209	Schizophrenia	H539	Visual disturbance			K509	Crohn's disease
C767	Neoplasm, other	F239	Psychotic disorder, acute	H571	Ocular pain			K519	Ulcerative colitis
C900	Multiple myeloma	F319	Bipolar affective disorder	H579	Eye and adnexa disorder			K529	Colitis, noninfective
C959	Leukemia	F329	Depression	H609	OE - Otitis externa			K559	Intestinal vascular disorder
C969	Neoplasm hematologic, other	F419	Anxiety disorder	H612	Wax in ear			K561	Intussusception

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K562	Volvulus		Diseases of the MSK system and connective tissue	N12	Tubulo-interstitial nephritis	Q430	Meckel's diverticulum	R99	Other causes mortality	T783	Angioneurotic edema
K566	SBO / LBO - Bowel obstruction	M0099	Arthritis, septic	N139	Obstructive uropathy	Q431	Hirschsprung's disease		Injury, poisoning and other	T784	Allergy
K567	Ileus	M069	Arthritis, rheumatoid	N179	ARF - Acute renal failure	Q899	Congenital malformation	T009	Sup inj multiple	T790	Air embolism
K578	Diverticulitis	M089	Arthritis, juvenile	N189	CRF - Chronic renal failure	Q999	Chromosomal abnormality	T0190	OW multip, uncompl	T791	Fat embolism
K579	Diverticulosis	M1099	Gout	N209	Urinary calculus		Symptoms, signs and abnormal findings	T0191	OW multip + FB / Infection	T793	Post-trauma wound infection
K590	Constipation	M1199	Arthropathy, crystal	N23	RC - Renal colic	R000	Tachycardia	T0290	Fx multip, closed	T794	Traumatic shock
K599	IBS - Functional intestin dis	M1399	Arthritis, unspecified	N289	Renal and ureteral disease	R001	Bradycardia	T0291	Fx multip, open	T814	Post-op / Procedure infection
K600	Anal fissure, acute	M229	Patellar disorder	N341	Nonspecific urethritis	R002	Palpitations	T110	Sup inj upper limb	T850	Complication ventricular shunt
K603	Anal fistula	M239	Internal derangement of knee	N390	UTI - Urinary tract infection	R040	Epistaxis	T111	OW upper limb	T859	Complic prosth / implant / graft
K612	Anorectal abscess	M2509	Hemarthrosis	N399	Urinary system disorder	R042	Hemoptysis	T130	Sup inj lower limb	T869	Graft rejection
K613	Ischiorectal abscess	M2549	Joint effusion	N410	Prostatitis, acute	R05	Cough	T131	OW lower limb	T887	Adverse effect of drug
K623	Rectal prolapse	M2559	Joint pain	N433	Hydrocele	R060	SOB - Dyspnea	T147	Crushing inj unsp	T889	Complic surg / med care
K629	Anal / Rectal disorder	M2599	Joint disorder	N4408	Testicular torsion	R061	Stridor	T150	FB in cornea		
K631	Intestinal perforation	M300	PAN - Polyarteritis nodosa	N4592	Orchitis / Epididymitis	R064	Hyperventilation	T159	FB on external eye		
K639	Intestinal disease, other	M303	Kawasaki - Mucocut lymph nd synd	N478	Phimosis / Paraphimosis	R066	Hiccough	T16	FB in ear		
K649	Hemorrhoids	M329	SLE - Systemic lupus erythematosus	N483	Priapism	R074	CP - Chest pain	T171	FB in nostril		
K650	Peritonitis, acute	M349	Scleroderma - Systemic sclerosis	N489	Penile disorder	R092	Respiratory arrest	T179	FB in respiratory tract		Provisional Codes
K709	Alcoholic liver disease	M353	Polymyalgia rheumatica	N509	Male genital organs disorder	R100	Acute abdomen	T181	FB in esophagus	U0490	SARS suspected
K729	Hepatic failure	M359	Connective tissue disease	N63	Breast lump	R102	Pelvic and perineal pain	T185	FB in anus and rectum		Contact with health services
K739	Hepatitis, chronic	M436	Torticollis	N649	Breast disorder	R104	Abdominal pain / Colic	T189	FB in alimentary tract	Z016	Radiological exam only
K746	Cirrhosis (non-alcoholic) of liver	M45	Ankylosing spondylitis	N739	PID - Pelvic inflammatory dis	R111	Nausea alone	T190	FB in urethra	Z017	Laboratory exam only
K766	Portal hypertension	M4649	Discolitis	N751	Bartholin's abscess	R113	Nausea with vomiting	T192	FB in vulva and vagina	Z027	Issue of medical certificate
K769	Liver disease	M4799	Spondylosis	N760	Vaginitis, acute	R138	Dysphagia	T290	Burns multip regions	Z040	Blood-alcohol / drug test
K8050	Cholelithiasis	M4809	Spinal stenosis	N809	Endometriosis	R17	Jaundice	T301	Burn first degree	Z044	Examination after alleged rape
K8080	Biliary colic / Cholelithiasis	M4899	Spondylopathy	N819	Female genital prolapse	R18	Ascites	T302	Burn second degree	Z046	Legal psychiatric exam
K810	Cholecystitis, acute	M509	Cervical disc disorder	N832	Ovarian cysts	R208	Paresthesias / Numbness	T303	Burn third degree	Z094	Cast check / Fracture follow up
K8308	Cholangitis	M542	Cervicalgia	N8350	Torsion ovary	R21	Rash	T357	Frostbite	Z099	Follow-up exam unsp spec Tx
K839	Biliary tract disorder	M543	Sciatica	N899	Noninflamm vaginal disorder	R229	Swelling, mass and lump	T390	Poisoning salicylates	Z209	Contact communicable disease
K859	Pancreatitis, acute	M545	Back pain	N926	Irregular menstruation	R258	Abn involuntary movements	T399	Poisoning acetaminophen	Z299	Prophylactic measure
K869	Pancreatic disorder	M6269	Muscle strain	N939	VB - Vaginal bleeding	R2688	Gait and mobility abnormality	T401	Poisoning heroin	Z309	Contraceptive management
K909	Intestinal malabsorption	M6299	Muscle disorder, other	N946	Dysmenorrhea	R300	Dysuria	T405	Poisoning cocaine	Z349	Pregnancy, normal
K919	Postprocedural GI disorder	M6599	Synovitis and tenosynovitis		Pregnancy, childbirth and the puerperium	R318	Hematuria	T406	Poisoning narcotics	Z37900	Delivery term multip births
K922	Gastrointestinal hemorrhage	M6659	Spontaneous rupture tendon	U009	Ectopic pregnancy	R33	Retention of urine	T409	Poisoning hallucinogens	Z37910	Delivery term single birth
K929	Gastrointestinal disorder	M702	Olecranon bursitis	U021	Retained fetal products	R36	Urethral discharge	T424	Poisoning benzodiazepines	Z38200	Newborn, single birth
	Dermatologic diseases	M704	Prepatellar bursitis	U034	Spontaneous abortion, incomplete	R398	Urinary system Sx	T439	Poisoning psychotropes	Z38800	Newborn, multip birth
L00	SSSS - Staph scalded skin synd	M706	Trochanteric bursitis	U039	Spontaneous abortion, complete	R400	Altered LOC	T469	Poisoning cardiotropes	Z439	Stoma care
L010	Impetigo	M712	Baker's cyst	U0899	Complic abortion / Ectopic / Molar	R4029	Coma, unspecified	T509	Poisoning other substances	Z459	Adjustment implanted device
L029	Abscess / Furuncle / Carbuncle	M719	Bursitis, unspecified	U15003	Eclampsia in pregnancy	R410	Disorientation	T510	Toxic effect ethanol	Z488	Surgical aftercare evaluation
L0300	Paronychia finger	M722	Plantar fasciitis	U20009	Threatened abortion	R42	Dizziness	T511	Toxic effect methanol	Z5188	Medical care, other
L0301	Paronychia toe	M7269	Necrotizing fasciitis	U21909	Hyperemesis gravidarum	R443	Hallucinations	T518	Toxic effect other alcohols	Z659	Social problem
L039	Cellulitis	M751	Rotator cuff syndrome	U36999	Maternal care for fetal probl	R458	Emotional symptoms / Suicidal ideation	T529	Toxic effect solvent	Z719	Counselling / Medical advice
L050	Pilonidal cyst with abscess	M752	Bicipital tendinitis	U47903	False labour	R509	Fever	T549	Toxic effect corrosive subs	Z760	Issue of repeat prescription
L139	Bullous disorder	M754	Impingement synd shoulder	U60101	Preterm delivery	R51	HA - Headache	T569	Toxic effect metal	Z769	LWBS / AMA with no Dx
L211	Seborrheic infantile dermatitis	M755	Bursitis of shoulder	U75909	Complication of labour and delivery	R53	Weakness / Fatigue	T58	Toxic effect CO		
L22	Diaper rash	M759	Shoulder lesion	U99809	Disease of peri-partum	R55	Syncope / Vasovagal	T599	Toxic effect gases / vapours		
L259	Dermatitis, contact	M765	Patellar tendonitis		Conditions originating in the perinatal period	R5609	Febrile convulsions	T609	Toxic effect pesticide		
L299	Pruritus	M766	Achilles tendonitis	P229	Respir distress of newborn	R5688	Seizures / Convulsions	T629	Toxic effect noxious food		
L309	Dermatitis / Eczema	M779	Tendonitis, unspecified	P369	Bacterial sepsis of newborn	R570	Cardiogenic shock	T639	Toxic effect venom animal		
L409	Psoriasis	M7919	Myalgia	P38	Omphalitis of newborn	R571	Hypovolemic shock	T659	Toxic effect substance		
L42	Pityriasis rosea	M7929	Neuralgia / Neuritis	P599	Neonatal jaundice	R579	Shock	T66	Radiation effects		
L509	Urticaria	M7969	PLU - Pain in limb unsp	P60	DIC of fetus and newborn	R58	Hemorrhage	T670	Heatstroke and sunstroke		
L519	Erythema multiforme	M819	Osteoporosis	P619	Perinatal hematologic dis	R599	Lymphadenopathy	T679	Effect heat and light		
L52	Erythema nodosum	M8429	Fx delayed union	P769	Intestinal obstruct newborn	R600	Localized edema	T68	Hypothermia		
L600	Ingrown nail	M8699	Osteomyelitis	P77	Necrotizing enterocol newborn	R601	Generalized edema	T703	Decompression sickness		
L609	Nail disorder	M889	Paget's disease of bone	P789	Perinatal GI disorder	R630	Anorexia	T709	Barotrauma		
L739	Follicular disorder	M8999	Bone disease, other	P90	Convulsions of newborn	R64	Cachexia / Failure to thrive	T71	Asphyxiation		
L84	Corns and callosities	M940	Costochondritis	P929	Feeding problem of newborn	R69	Diagnosis N/A in list	T749	Maltreatment syndrome / Abuse		
L899	Decubitus (pressure) ulcer	M9499	Cartilage disease	P95	Fetal death	R799	Abn results blood chem	T750	Effects lightning		
L989	Skin disorder		Diseases of the genitourinary system	P969	Perinatal disorders	R938	Abn results imaging	T751	Submersion injury (near drowning)		
		N009	Nephritic syndrome, acute		Congenital and chromosomal abnormalities	R948	Abn results function studies	T754	Electrocution		
		N049	Nephrotic syndrome	Q400	Pyloric stenosis, congenital	R95	SIDS - Sudden infant death synd	T782	Anaphylactic shock / Reaction		
		N10	Pyelonephritis								

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Head and face		Thorax	Shoulder and upper arm	Wrist and hand	Thigh and upper leg				
S002	Sup inj periocular area	S208	Sup inj thorax	S4180	OW shoulder girdle, uncompl	S600	Contusion finger(s), not nail	S709	Sup inj hip / thigh
S009	Sup inj head	S2190	OW thorax, uncompl	S4181	OW shoulder girdle + FB / Infection	S601	Contusion finger(s) + nail	S7180	OW pelvic girdle, uncompl
S0100	OW scalp, uncompl	S2191	OW thorax + FB / Infection	S42090	Fx clavicle, closed	S609	Sup inj wrist / hand	S7181	OW pelvic girdle + FB / Infection
S0101	OW scalp + FB / Infection	S22090	Fx thoracic vert, closed	S42091	Fx clavicle, open	S6100	OW finger, not nail, uncompl	S72190	Fx hip, closed
S0110	OW eyelid, uncompl	S22091	Fx thoracic vert, open	S42190	Fx scapula, closed	S6101	OW finger, not nail + FB / Infection	S72191	Fx hip, open
S0111	OW eyelid + FB / Infection	S22200	Fx sternum, closed	S42191	Fx scapula, open	S6110	OW finger & nail uncompl	S72900	Fx femur, closed
S0130	OW ear, uncompl	S22201	Fx sternum, open	S42290	Fx upper end humerus, closed	S6111	OW finger & nail + FB / Infection	S72901	Fx femur, open
S0131	OW ear + FB / Infection	S22300	Fx rib, closed	S42291	Fx upper end humerus, open	S6190	OW wrist and hand, uncompl	S73090	Disloc hip
S0150	OW lip / mouth, uncompl	S22301	Fx rib, open	S42390	Fx shaft humerus, closed	S6191	OW wrist and hand + FB / Infection	S7319	Sprain / Strain hip
S0151	OW lip / mouth + FB / Infection	S22490	Fx ribs multip, closed	S42391	Fx shaft humerus, open	S62000	Fx scaphoid (hand), closed	S789	Amputation leg
S0190	OW head, uncompl	S22491	Fx ribs multip, open	S42490	Fx lower end humerus, closed	S62001	Fx scaphoid (hand), open		Lower leg
S0191	OW head + FB / Infection	S22500	Flail chest, closed	S42491	Fx lower end humerus, open	S62190	Fx other carpal, closed	S8190	OW lower leg, uncompl
S02100	Fx base skull, closed	S22501	Flail chest, open	S43090	Disloc shoulder joint	S62191	Fx other carpal, open	S8191	OW lower leg + FB / Infection
S02101	Fx base skull, open	S231	Disloc thoracic vert	S43100	Disloc acromioclavicular joint	S62290	Fx first metacarp, closed	S82000	Fx patella, closed
S02200	Fx nasal, closed	S259	Inj blood vessel thorax	S43200	Disloc sternoclavicular joint	S62291	Fx first metacarp, open	S82001	Fx patella, open
S02201	Fx nasal, open	S26800	Contusion heart, no OW	S435	Sprain / Strain AC joint	S62490	Fx multiple other metacarpals, closed	S82400	Fx tibia alone, closed
S02300	Fx orbital floor, closed	S26801	Contusion heart + OW	S4379	Sprain / Strain shoulder	S62491	Fx multiple other metacarpals, open	S82401	Fx tibia alone, open
S02301	Fx orbital floor, open	S27200	Hemopneumothorax, tr no OW	S489	Amputation arm	S62590	Fx thumb, closed	S82890	Fx ankle, closed
S025	Fx tooth	S27201	Hemopneumothorax, tr + OW		Forearm	S62591	Fx thumb, open	S82891	Fx ankle, open
S02600	Fx mandible, closed	S27300	Contusion lung, no OW	S5190	OW forearm, uncomplicated	S62690	Fx other finger, closed	S82900	Fx lower leg, closed
S02601	Fx mandible, open	S27301	Contusion lung + OW	S52000	Fx olecranon, closed	S62691	Fx other finger, open	S82901	Fx lower leg, open
S02900	Fx skull / facial, closed	S27390	Inj lung, no OW	S52001	Fx olecranon, open	S63090	Disloc wrist	S83000	Disloc patella
S02901	Fx skull / facial, open	S27391	Inj lung + OW	S52100	Fx head radius, closed	S63190	Disloc finger	S83190	Disloc knee
S030	Dislocation of jaw	S27900	Inj intrathoracic organ, no OW	S52101	Fx head radius, open	S6359	Sprain / Strain wrist	S836	Sprain / Strain knee
S0498	Inj cranial nerve	S27901	Inj intrathoracic organ + OW	S52500	Fx Colles', closed	S6369	Sprain / Strain finger	S859	Inj blood vessel lower leg
S050	Corneal abrasion / Inj conjunct	S280	Crushed chest	S52501	Fx Colles', open	S6379	Sprain / Strain hand	S8608	Inj Achilles tendon
S059	Injury eye / orbit			S52900	Fx forearm, closed	S6498	Inj nerve wrist / hand	S8698	Inj muscle / tendon low leg
S060	MHI - Concussion		Abdominal, pelvis & back	S52901	Fx forearm, open	S659	Inj blood vessel wrist / hand	S878	Crushing inj leg
S0625	Diffuse brain inj, no OW	S3080	Sup inj low back / pelvis	S530	Disloc radial head	S6698	Inj muscle / tendon hand / wrist	S889	Amputation lower leg
S0626	Diffuse brain inj + OW	S3081	Sup inj abdominal wall	S53190	Disloc elbow	S678	Crushing inj wrist / hand		
S0635	Focal brain inj, no OW	S3085	Sup inj genitals	S5348	Radial head subluxation (nursemaid's)	S681	Amputation finger		Foot and ankle
S0636	Focal brain inj + OW	S31000	OW lower back / pelvis, uncompl	S5349	Sprain / Strain elbow	S689	Amputation wrist / hand	S901	Contusion toe(s), not nail
S064	Epidural hemorrhage	S31001	OW lower back / pelvis + FB / Infection	S579	Crushing inj arm			S902	Contusion toe(s) + nail
S065	SDH - Traumatic subdural hemorrhage	S31190	OW abdominal wall, uncompl	S589	Amputation forearm			S902	Contusion toe(s) + nail
S066	SAH, traumatic	S31191	OW abdominal wall + FB / Infection					S909	Sup inj ankle / foot
S081	Amputation ear	S31500	OW ext genital organs, uncompl					S9130	OW foot, uncompl
S092	Rupture ear drum, traumatic	S31501	OW ext genital organs + FB / Infection					S9131	OW foot + FB / Infection
		S32090	Fx lumbar vert, closed					S92000	Fx calcaneus, closed
		S32091	Fx lumbar vert, open					S92001	Fx calcaneus, open
		S32100	Fx sacrum, closed					S92100	Fx talus, closed
		S32101	Fx sacrum, open					S92101	Fx talus, open
		S32200	Fx coccyx, closed					S92290	Fx other tarsal, closed
		S32201	Fx coccyx, open					S92291	Fx other tarsal, open
		S32400	Fx acetabulum, closed					S92300	Fx metatarsal(s), closed
		S32401	Fx acetabulum, open					S92301	Fx metatarsal(s), open
		S32800	Fx pelvis, closed					S92400	Fx great toe, closed
		S32801	Fx pelvis, open					S92401	Fx great toe, open
		S331	Disloc lumbar vert					S92500	Fx other toe, closed
		S3419	Lesion lumbar spinal cord					S92501	Fx other toe, open
		S3438	Inj cauda equina					S92900	Fx foot, closed
		S359	Inj vascular abd / pelvis					S92901	Fx foot, open
		S36990	Inj intra-abd organ, no OW					S93000	Disloc ankle joint
		S36991	Inj intra-abd organ + OW					S93110	Disloc toe
		S37090	Inj kidney, no OW					S93310	Disloc parts foot
		S37091	Inj kidney + OW					S9349	Sprain / Strain ankle
		S37990	Inj pelvic organ, no OW					S936	Sprain / Strain foot
		S37991	Inj pelvic organ + OW					S978	Crushing inj ankle / foot
		S382	Amputation penis / testicle					S981	Amputation toe
		S3908	Inj muscle / tendon / abd / back / pelvis					S984	Amputation foot

Abbreviation (Eng)	Description
A	acute
abd	abdomen
abn	abnormal
AC	acromioclavicular
AMA	against medical advice
ARDS - Acute resp distr synd	acute respiratory distress syndrome
AV	atrioventricular
chem	chemistry
CNS	central nervous system
CO	carbon monoxide
complic	complication
conjunct	conjunctiva
COPD	chronic obstructive pulmonary disease
CVS	cardiovascular system
DIC	disseminated intravascular coagulation
DIC - dissem intravasc coag	disseminated intravascular coagulation
dis	disease / disorder
disloc	dislocation
DKA	diabetic ketoacidosis
DM	diabetes mellitus
Dx	diagnosis
entercol	enterocolitis
ext	external
extrem	extremities
FB	foreign body
Fx	fracture
GERD - Gastroesoph reflux dis	gastroesophageal reflux disease
GI	gastrointestinal
heme	hematological / hematologic
HIV	human immunodeficiency virus
IBS - Functional intestin dis	irritable bowel syndrome
infarct	infarction
Inj	injury
intestin	intestinal
intox / intoxicat	intoxication
intra-abd	intra-abdominal
isch	ischemic
ITP - Idiop thrombocytopen purpura	idiopathic thrombocytopenic purpura
Kawasaki - Mucocut lymph nd synd	mucocutaneous lymph node syndrome
LBO	large bowel obstruction
LOC	level of consciousness
low	lower
LWBS	left without being seen
med	medical
metacarp	metacarpal
MHI	mild head injury
multip	multiple
N/A	not available
Noninflamm	noninflammatory
obstruct	obstruction

Abbreviation (Eng)	Description
oth	other
OW	open wound (open wound / laceration / puncture)
Post-op	post-operative
PPH - Primary pulm hypertension	primary pulmonary hypertension
probl	problem
prosth	prosthetic
PSVT - Supraventr tachycardia	paroxymal supraventricular tachycardia
pulm	pulmonary
Respir	respiratory
SAH	subarachnoid hemorrhage
SARS	suspected severe acute respiratory syndrome
SBO	small bowel obstruction
SIADH	syndrome of inappropriate antidiuretic hormone secretion
SOB	shortness of breath
SSSS - Staph scalded skin synd	staphylococcal scalded skin syndrome
subs	substance
Sup inj	superficial injury (abrasion / contusion / superficial hematoma)
surg	surgical
synd	syndrome
Sx	symptom(s)
TMJ - Temporomandibr joint dis	temporomandibular joint disorder
tr / trauma	traumatic
tx	treatment
uncompl	uncomplicated
unsp / unspec	unspecified
URTI	upper respiratory tract infection
venom	venomous
vert	vertebrae

Abbréviation (Fr)	Détail
CE	corps étranger
CIVD	coagulation intravasculaire disséminée
Écras	écrasement
épin. lomb.	épineurie lombaire
ext	externe
Fx	fracture
GEU	grossesse extra-utérine
HSA	hémorragie sous-arachnoïdienne
HTA	hypertension artérielle
IVRS	infection des voies respiratoires supérieures
liq céphalo-rachid	liquide céphalorachidien
MPOC	maladie pulmonaire obstructive chronique
Plaie	N'importe quelle plaie, laceration
SNC	système nerveux central
sup	supérieur
superf	superficiel
trauma	traumatisme / traumatique
vert	vertèbre
VIH	virus de l'immunodéficience humaine