



**Life Cycle of CIHI's Briefing Report: "Seniors' Experiences
with Chronic Disease Prevention and Management in
Primary Health Care across Canada"**

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Executive Summary

The scope of the project was to highlight the areas of improvement in management of chronic condition outcomes in elderly patients, so that appropriate policies could be implemented to overcome any gaps between the patients and the healthcare providers.

Chronic conditions are the conditions which require the management of the disease for a longer period of time. Most of the time elderly people suffer from multiple chronic conditions that may require the primary care physician to make a tailored, self management program approach according to the needs of the patients. According to our findings from the project analysis, we gathered that the primary care physician does not typically provide enough guidance to the patients on managing their own health conditions in order to improve their health outcomes. Also, almost half of the elderly patients neither receive a medication review nor are explained the side effects of the prescribed medication adequately.

The AIR team members under the supervision of project lead Brenda Palmer, developed the Analysis in Brief (AiB) using the “Canadian Survey of Experiences with Primary Health Care, 2008 (CSE-PHC)” survey data set. The project was divided into three phases; Phase one required every member of the team to perform an environmental scan, phase two comprised of literature review and presentations. The rough draft of the AiB was developed based on the rationale provided by the each member of the team and was based on the Evidence Based Literature (EBL). In the third phase each author was required to perform an analysis for the AiB. The authors used SAS tool for performing the analysis. For calculating the Confidence Limits and p-value the authors used boot strapping techniques and they used Excel for generating the figures. After the selection of the outputs to be incorporated in the AiB, the author checked for

the reported percentages to qualify for reporting based on the sample size and the coefficient of variance as recommended by Statistics Canada in the micro user data guide.

In the latter half of his job term, he was assigned to come up with ten potential topics for AiB in winter 2011. For this purpose, the author mapped all the 105 primary healthcare indicators against the indicators developed by World Health Organization (WHO), Agency for Healthcare Research and Quality (AHRQ), National Clearing House, and Health at Glance 2009 etc. The author then listed the top ten indicators with the highest matching. He also provided the rationale for each suggested topic based on a thorough literature review along with the details of the survey data and the methodology used.

The results from this project would also give an insight to the healthcare research community regarding the prevailing economic burden of the chronic conditions and the risk of medication error among the seniors with the multiple chronic conditions (co-morbidities), its prevention and adequate health risk guidance. The outcome of this project would greatly improve the management of chronic conditions in elderly patients in Canada, by advising the policy makers, researchers and other stakeholders to take concrete steps in this direction and make appropriate health policies based upon the findings in the report.

This analysis was conducted using survey data provided by “Canadian Survey of Experiences with Primary Health Care, 2008 (CSE-PHC)” however, during the analysis, the team felt that it would have helped if more details on variables were covered in the survey. Sometimes, the data could not be readily mapped to another data set due to different coding systems among different provinces across Canada. Development of common standards for capturing the data at a primary level would enable better data quality and easier mapping.

Another recommendation suggested that our project survey data was a very clean data set without any missing values and data mining tool such as Waikato Environment for Knowledge Analysis (WEKA) for reporting the future trends in chronic condition could be used. Using the data mining for prediction of the trend would not only reflect the present scenario but will also reflect the future health outcomes. It would also indicate if proper policies were not made at the right time, what the future trend might be and how it could affect us in terms of chronic disease outcomes, health budget etc. in times to come.

1. Introduction

The author was employed by Canadian Institute for Health Information (CIHI) to conduct a Literature review, an Environmental scan, SAS data analysis, Fact checking and to participate in preparation of report.

The aim of this project was to identify the chronic conditions outcome in elderly patients (i.e. age 65 and onwards).

For the purpose of this project the potential work was divided into 3 parts

1. Prevalence and Impact of Chronic Conditions
2. Self-management and Collaborative Care Engagement in the Treatment of Chronic Conditions
3. Medication Management among seniors with Chronic Conditions.

This work was done by the author during his practicum period from 4th January 2010 to 27th August 2010. The health informatics part involved converting raw medical data into information and how this information and knowledge could be used by the stakeholders for making the right decision at right time. The result of this project would influence the policy makers, researchers and other stakeholders to take specific steps to make appropriate health policies in accordance with the findings in the report. In this way the author believes they can improve the healthcare system and healthcare outcome.

This project was lead by Project Lead Brenda Palmer and the working members of the project were 1) Chantal Couris (Senior Methodologist), 2) Andre Wajda (Methodologist), 3) Michael Turner (Senior Analyst), 4) Li Dong (Analyst) and 5) Gautam Bassan (Practicum Student).

1.1. Background

Chronic conditions comprise of conditions and diseases which persist for a longer period of time and require self management as well. Chronic health conditions, a general term that includes both chronic diseases and impairments, have been as a group, the leading public health concern since the 1920s. [1]. According to Health Council of Canada almost 40% of the Canadians have one of the seven chronic conditions (arthritis, cancer, chronic obstructive pulmonary disease (COPD), diabetes, heart disease, high blood pressure (HBP) and mood disorder) [2]. The management of chronic conditions is totally different as compared to the acute conditions. In acute conditions patients are completely dependent upon the physician for the treatment and they themselves are mostly passive participants. On the other hand, patients with chronic conditions require long term management on an ongoing basis so it does not include dealing with the physicians all the time. Therefore, the patients with chronic conditions have to self manage their condition to a large extent with general guidance and follow up by the physician. However, the problem may not be so simple in routine clinical practice. Some patients have serious illness coupled with other co-morbidities, so the management may be complex involving multiple disciplines to cope up with the diseases in a more appropriate and effective way.

Cure is better than treatment. According to a report by Health Council of Canada “We fund failure (caring for people after they get sick) rather than success (preventing avoidable illness)” [5]. The high prevalence of chronic conditions not only is related to risk factor and the quality of life, but also is a big burden on the health resources in terms of use of healthcare services [3] and this seemed to be true as out of \$141 billion health care expenditure (year 2005) \$40 billion was spent on hospital spending and the majority of this share of \$40 billion went towards the cure of patients with chronic conditions [5].

Canada lags far behind in dealing with the management of care for chronic patients as compared to United States. According to a study in United States 70% of the patients get reminders to follow up with their primary care physicians whereas in Canada only 38% were contacted by their physician regarding the ongoing process [5]. According to World Health Organization (WHO) the chronic diseases are the leading cause for deaths globally. They contribute to roughly 46% of the total deaths worldwide [6]. By adapting some preventive measures such as, eating at least five portions of vegetables or fruits daily, involving in some daily physical activity, cutting the amount of salt and switching to unsaturated fats, stop smoking and maintain a normal body weight index (BMI) could result in better health management [6].

The goal of our project is to improve the management of chronic conditions in elderly patients in Canada, by reducing the gaps between patients, primary care physicians and other stakeholders. This project would highlight the gaps between the existing practice in primary care for the prevention and management of the chronic conditions. Our target is to present the reported facts from the survey data “Canadian Survey of Experiences with Primary Health Care (CSE-PHC)” to the policy makers enabling them to take appropriate steps to improve the health outcomes.

2. Brief introduction of the organization

Canadian Institute for Health Information (CIHI) is a non for profit organization. According to CIHI website the CIHI collects the data under health spending, population health, health services and health human resource. The mandate is to analyze the data and made it publically available [8]. It also maintains and develops the health performance indicators that could be used as a reference in comparing the health system performance and quality of care [8].

2.1. Program Area:

The author was employed by the Research and Analysis Wing under the program specialty of Primary Health Care Information (PHCI). The objectives, vision, mission and strategic goals of the program area were discussed during the retreat function held at Stony Brook Hospital Toronto and are listed below:

Vision: Healthier population through better primary health care information;

Mission: Increase the availability and effective use of relevant primary health care data and information across Canada;

Strategic Goals: Data and Information Standards;

Data Source Development;

Information for Measurement, Understanding and Use (Analysis Indicators and Reports **author's team**).

Responsibilities (0.8 Full Time Employees FTE):

The job responsibilities included the following:

Conducting a literature review, an Environmental scan, performing analytical work, Communication plan development and implementation or contacting the health organizations across Canada to gain some knowledge or information from their work, Fact checking, mostly using Statistical Analysis Software (SAS).

2.2. Details of the Project:

“Seniors’ Experiences with Chronic Disease Prevention and Management in Primary Health Care across Canada “

The scope of the project was to prepare an AiB report regarding the experience, impact, prevalence, management, medication and prevention of the chronic conditions in elderly patient (65 years or older) population. This project mainly involved performing literature review, environmental scan and SAS analysis. The purpose of the project was to make the findings publically available and to capture the attention of the policy makers in this area.

The project was divided into three steps:

2.2.1.Environmental Scan:

In this phase the project lead, senior analyst and the author performed independent environmental scan for organizations similar to CIHI and their research question. The purpose of this scan was to ensure that there is no duplication of work already done by another agency. First they listed organizations such as Health Council of Canada (HCC), Canadian Institute for health Research (CIHR), Long term care Ontario, Stats Canada and Public Health Agency of Canada (PHAC) and then researched the published reports from different data sources. The scan criteria searched for key words “seniors, chronic conditions, prevention, self management, adverse effect, medication error, medication reconciliation”. If a report or journal contained even a single key word, the information had to be recorded in a Reference Manager. The training for the reference manager was provided within CIHI.

Organizations	Reports/AiBs	Year
Health Council of Canada (HCC) Chronic Conditions	Helping Patients Help Themselves: Are Canadians with Chronic Conditions Getting the Support They Need to Manage Their Health? http://www.healthcouncilcanada.ca/docs/rpts/2010/AR1_HCC_Jan2010.pdf	Jan-10
HCC Chronic Conditions	Safer health Care for "Sicker" Canadians: International Comparisons of Health Care Quality and Safety... http://healthcouncilcanada.ca/bulletinone.pdf	Nov-09
HCC Chronic Conditions	Beyond the Basics "The Importance of Patient-Provider Interactions in Chronic Illness Care" http://www.healthcouncilcanada.ca/docs/rpts/2010/HCC_CHCM_FINAL%20ENGLISH.pdf	Apr-10
HCC Chronic Conditions	Canadians' Experiences with Chronic Illness Care in 2007 "Why Health Care Renewal Matters: Learning from Canadians with Chronic Health Conditions", December 2007 http://healthcouncilcanada.ca/docs/rpts/2007/outcomes2/Outcomes2ExperiencesFINAL.pdf	Dec-07
HCC Chronic Conditions	Population Patterns of Chronic Health Conditions in Canada "Why Health Care Renewal Matters: Learning from Canadians with Chronic Health Conditions" http://healthcouncilcanada.ca/docs/rpts/2007/outcomes2/Outcomes2PopulationPatternsFINAL.pdf	Dec-07
HCC Chronic Conditions	Why Health Care Renewal Matters: "Learning from Canadians with Chronic Health Conditions Chronic Health Conditions" December 2007 http://healthcouncilcanada.ca/docs/rpts/2007/outcomes2/Outcomes2FINAL.pdf	Dec-07
HCC Chronic Conditions	Why Health Care Renewal Matters: Lessons from Diabetes march 2007 http://www.healthcouncilcanada.ca/docs/rpts/2007/HCC_DiabetesRep.pdf	Mar-07

Snap shot-1; for the environmental scan [see appendix (1)].

2.2.2.Literature Review:

The next phase required thorough literature review of the collected as well as the new reports and journals. The strategy for the literature review included looking for the similarities between the reports and making notes of topic overlaps. Secondly, a note had to be made regarding the topics that in their opinion had the potential to be an independent section in our AiB. For this purpose,

the most important aspect to be considered was that the topic should not be very common. They also tried exploring issues that were not covered by any other organization before. A detailed note of the survey used and the methodology used by each organization also had to be listed.

After about 3 weeks, they all provided their findings based on the Evidence Based Literature (EBL). It information was very vast and they had to find out a way to present that information in a meaningful and appropriate manner. They decided to capture and present this information in an Excel sheet. On an average, each person came up with five or six potential research questions to be explored. Common potential questions were shortlisted by the entire team until they finally came down to four potential research questions. It was decided that AIR would analyze all the four questions and treat them as an independent section for our AiB. The shortlisted potential questions were:

- a) What is the Prevalence and Impact of Chronic Conditions?
- b) Do Rural Adults Have Poorer Access to -PHC than Urban Adults?
- c) Are patients receiving education and coordinated care for the prevention and management of chronic disease in primary health care? Do they receive the information they need to self manage?
- d) Is Prescription Medication Use Among Seniors Being Effectively Managed?

	Literature Review Results				
	Search Scope				
	Method / Sample				
	Topic / Analytical Question	Purpose of Analysis / Rationale	Target Audience / Stakeholders	Data Source/Tools	Number / Reference
4					
5					
6					
7					
8	<ul style="list-style-type: none"> • Overall, is there a difference in the number of chronic illnesses between rural Canadian seniors and urban Canadian Seniors? • Is there a significant difference in PHC access between the two groups e.g. do rural Canadians have poorer access to primary health care services than urban Canadians? Is there a difference across provinces? • Is there a significant difference between rural Canadian seniors (55 years and older) and urban Canadian seniors related to access to primary health care services? • Is there a socioeconomic difference between rural Canadian seniors and urban Canadian Seniors related to access to PHC for chronic conditions care e.g. are 	<p>This topic is important because chronic conditions surpass acute illnesses and injuries as the leading cause of ill-health, disability and death. Chronic conditions are forecasted to consist of nearly eight in ten of the total burden of disease worldwide according to the number of years of healthy life missed because of illness, disability and premature death (WHO, 2000).</p> <p>The prevalence of chronic diseases is rising, in part due to the aging population and increasing prevalence of risk factors such as a poor diet and lack of exercise. This increase can potentially have a major impact on the health care system, such as increased usage of primary health care services and increased emergency department usage. Populations that may be at</p>	<ul style="list-style-type: none"> • Health System Managers • Health care planners • Health Policy and Decision Makers • Health Care Leaders • Professional Regulatory Authorities • Clinicians / PHC Providers • Researchers • Population health organizations • Chronic disease collaborative • Health quality councils • Regional Health Authorities • Non Government Organizations • Health Administrations • Service delivery organizations • Health service (Research) • Government Agencies • General Public 	<ul style="list-style-type: none"> • PubMed • OVID • MEDLINE • Leading Organizations • Leading Associations 	In Reference Manager Database

Snap shot of an Excel sheet that we developed for the presentation to the senior management [see appendix 2 & 3]:

After they provided the potential topics for exploration, AIR team members were assigned to do more in depth research for each topic independently and provide a rationale based on the literature review [see appendix (3)]. There were few guidelines to be adhered to mainly, whatever rationale they provide should purely be based on research and each statement should be provided with (EBL). No assumptions should be made and also that, AIR should keep track of the data sources they explored and all reference should be maintained in a Reference Manager.

Each member of the AIR wrote an independent rationale with the four sections that were shortlisted. The senior analyst was assigned to compile all the three research rationales and write a rough draft for the AiB. As senior analyst wrote the draft, the author was assigned to make a list of the variable from the Canadian Survey of Experiences with Primary Health Care, 2008 (CSE-PHC) that were related to their shortlisted research topics.

Every Thursday members of AIR met for their weekly meetings. The usual pattern of the meetings was that the author was responsible for conducting the analysis and based on his outputs and analysis, the project lead, senior analyst and the author provided an opinion as to specific elements that could be incorporated in the AiB. All the members of AIR freely exchanged ideas and expressed opinions however; the final decision was made by the project lead. By the end of the meeting the team had a clear picture of issues that were to be incorporated and issues that were to be eliminated.

During this time, the author was responsible for maintaining a folder with the latest outputs and the codes on the common drive. This folder was used for taking note from the analysis; specifically what the inclusion, exclusion and the cohort was? This approach was adapted, so that an independent methodologist from Ottawa could have an access to his outputs and could clearly see what criteria was selected for a particular analysis. Then the methodologist would run his own analysis and provide his feedback on it. This enabled two independent runs for the same analysis. This confirmed the analysis of the project. Once the same outputs were achieved, the author would present his work in the meeting. The senior analyst was responsible for updating the rough draft based on the new analysis and got it reviewed and finalized by the project lead. This routine continued for a couple of months.

As they did their first run of an analysis, based on the outputs and trends the team immediately realized that it was too much of work and if they wouldn't change their strategy, this would lead to scope creep and eventually they would not be able to deliver the final deliverable on due date. They found a solution and concluded that their approach had to be narrowed down i.e. the cohort had to be well defined. The project lead discussed the problem with the senior methodologist and within next two meetings they clearly defined their cohort for the each section (Box-1). This helped refine the focus and streamlined our efforts. The cohort made the work very efficient and systematic. During our weekly meetings, it was decided since the first section was related to the prevalence and impact of chronic conditions, therefore the team would combine all the eleven chronic conditions into one variable and the cohort would be seniors (with or without) any chronic condition. In this way, AIR could compare the ratios of seniors in Canada with one, two, three or more chronic conditions with seniors with same criteria. For the remaining sections the cohort would be all seniors with at least one of the eleven chronic conditions.

Box-1:

COHORT

Cohort: Section one “Prevalence and Impact of Chronic Conditions” our cohort was all adults age 18 years or over. Section second, third and fourth cohort was seniors aged 65 years or over with at least one of the eleven chronic condition eleven chronic conditions selected were arthritis, asthma, chronic pain, emphysema or chronic obstructive pulmonary disease (COPD), cancer, depression, a mood disorder other than depression, diabetes, heart disease, stroke, and high blood pressure.

2.2.3. Analysis:

a) Primary Analysis: The author performed the analysis again based on the new specified cohort. He was given full responsibility for the analysis and, once he performed the analysis, it was also run independently by senior methodologist. Once the author performed first run of preliminary analysis, based on his outputs, the senior methodologist developed the second version of rough draft. After that, the author introduced and combined different variables but within the same specified cohort. The author did this for almost all of the variables under the sections; Health status, Primary health care type, Health care use, Health care utilization, Experiences with primary health care providers, Access to health care, Emergency room use, Prescription medication use, Chronic conditions, Patient activation, Demographics [9]. In this way, the team completed the preliminary analysis.

b) Secondary Analysis: The AIR selected the outputs of their interest, which showed some trend or differences between elderly and younger. On the selected analysis the author ran a secondary analysis, for example seniors who reported that their healthcare physician did not take part in developing the treatment plan. This was further researched and fine tuned by comparing them with non seniors, looking for the provincial trends, comparing by gender, education level, income, rural/urban etc. For each analysis, the author performed the secondary analysis based on the preliminary analysis. Not all of the secondary analyses were incorporated into AiB because when splitting down, the respondents in each category became lesser and lesser. For example the author first narrowed down the respondents to seniors (65) years or older, then further narrowed them down to seniors with at least one of the eleven chronic condition. This was further narrowed down to seniors with above said criteria and, who did not have a regular place to go or physician by provinces etc. Successive elimination to include respondents with the increasing

variables left very few respondents in each category which made the analysis unacceptable according to Statistics Canada criteria. That being one example of one analysis the author performed and checked for all the secondary analysis. To be consistent with the CIHI method of doing the analysis, the author was told to use the boot strapping techniques for calculating the Confidence Limit (C.I.) and the p-value. Since, the author was not familiar with the boot strapping technique, the project lead decided to provide author a sample codes to learn from and offered him training from the methodologist in Ottawa. The author performed the statistical testing for all the reported percentages or rates in their AiB. They followed Stats Canada micro user guide, that was not to report any percentage that had sample size less than 30 or coefficient of variation greater than 33.3%, and in the case that it was reported, it should be flagged as “F” that was unacceptable [10]. Any reported percentage with sample size more than 30 but coefficient of variance more than 16.6% and less than 33.3% was flagged as “E” interprets with caution [10]; all the calculations for coefficient of variance were done using boot strapping techniques too. If the reported percentage was neither “F” nor “E”, than it could be reported as it was, without any flag. While checking for “F’s” and “E’s” the team realized that they could not do much of the secondary analysis for the section “Access to Primary Care” so the team decided to delete this section and very little was incorporated from that section to the text in the AiB. Therefore in the final version AIR had three sections; first “Prevalence and Impact of Chronic Conditions”, second; “Self-management and Collaborative Care Engagement in the Treatment of Chronic Conditions” third; “Medication Management among seniors with Chronic Conditions”.

Based on the preliminary and secondary analysis, the senior analyst and the author prepared the bar graphs on an excel sheet. Senior analyst prepared almost 80% of the graphs whereas the

author did approximately 20%. Senior analyst also kept updating the rough draft and maintained the folder after each weekly meeting.

As the project neared the closure or deliverable phase, the whole team started compiling their work. The senior analyst gathered the references used in writing the draft. For this purpose, he maintained a fact checking folder containing the references used and he also highlighted all phrases to maintain visibility. The author also prepared a fact checking binder containing outputs under each reported percentage. The inclusion or exclusion criteria used in the analysis was mentioned beneath the output. Finally, the team presented its work to the senior management by the end of June for feedback and comments. The suggested changes were incorporated in the report and an explanation was provided for those suggestions that could not be included in the study. The feedbacks and suggestions loop was maintained for over a month until the project was finally completed to be released by the end of October as per the initial date provided by the director.

Poster and Conferences: As the “project 1” was almost completed, the AIR were assigned the job of creating posters and slides from their AiB. The project lead and the senior analyst were deeply involved in developing a story line throughout the project and ended up developing a poster based on the findings. The author was assigned to create power point slides for the conferences. He presented his initial power points with 28 slides and was asked to use the CIHI template for which the training was provided (what should be the opening slide, slide for the displaying the key messages, slide for the content and photograph, graph, etc). The final review was done by the project lead and then the team had two sets of slides, one for the conferences for physicians and policy makers and the other for the higher management and researchers.

By the mid of July most of the work for the AiB was completed, so the director called the author and split his work into two different project. He spent half his time working for the old project lead and the rest with the new recruited project lead (Ali Mosses MacKeag). With regards to the prior project, the author worked on the fact checking binder, incorporating new comments and conducting any new analysis as required by the senior management, and also prepared potential research question for the January AiB. For the second project, the author was required to look for the provider data surveys for international and domestic comparison.

3. Project 1st and 2nd; Middle of July:

The author still had about a month to go and he divided his time equally between the two projects. A new project under the old project lead was given the name International Comparisons. Under that the author was assigned in a team by the project lead with a senior methodologist. He was assigned to map the Primary Health Care Indicators with indicators already developed by World Health Organization (WHO), Agency for Healthcare Research and Quality (AHRQ), National Clearing House, and Health at Glance etc. Initially he mapped all the 105 indicators with the entire seven international indicators and presented his work to the team members [See appendix 4]. The mapping criteria was to map at the definition level where the denominator is the same but the numerator could be somewhat similar, for example Health human Resources (HHR) in one country might consider homeopathy and massage therapists in (HHR), but in another county they might not be considered. It was too much of information and during a meeting it was decided to narrow the scope of the work. The core focus of the team should be preventive care, as their program area was primary care and, mostly the primary healthcare providers were responsible for delivering the preventive knowledge and health risk

factors guidance [11]. So, the author selected the most matched ten (10) preventive indicators and presented that in a team meeting [See Appendix 5].

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1		PAN-CANADIAN PRIMARY HEALTH CARE INDICATORS [1]	OECD Selecting Indicators for the Quality of Health Promotion, Prevention and Primary Care at the Health Systems Level in OECD Countries[2], page 15-17	OECD- HEALTH CARE QUALITY INDICATORS PROJECT INITIAL INDICATORS REPORT -22 [3] page 15-17			WHO HEALTH INDICATORS 2010 [4]		HEALTH AT GLANCE 2009 OECD INDICATORS		NATIONAL QUALITY MEASURES CLEARINGHOUSE [6][http://www.qualitymeasures.ahrq.gov/browse/measureindex.aspx]		TOWARDS NATIONAL INDICATORS FOR SAFETY AND QUALITY IN HEALTH CARE -AUSTRALIA [7]				
2		(13)-Indicator number; % of PHC clients/patients, 12 years and over, who were screened by their PHC provider for the following common health risks over the past 12 months: Tobacco use; Unhealthy eating habits; Problem drug use; Physical inactivity; Overweight status; Problem alcohol drinking; Unintentional injuries (home risk factors); Unsafe sexual practices; and Unmanaged psychosocial stress	(5)Gonorrhoea/Chlamydia (Page-20); (3) Smoking rate (page-18); (1) Obesity (Page-17); (2) Physical Activity (Page -18)			(127) Alcohol consumption among adults aged >= 15 years (Page-15); (74) Children < 5years who are overweight % (Page-35)			Smoking among 15 years olds, 2005-06; page 45; Drunkness among 15 years old; pare -45; Percentage of adults population amoking daily, page 53; Alcohol consumption, population aged 15 years or over, page 55; Obesity rates among adults, page 57;		Depression: the percentage of patients with a new diagnosis of depression, recorded between the preceding 1 April to 31 March, who have had an assessment of severity at the outset of treatment using an assessment tool validated for use in primary care. http://www.qualitymeasures.ahrq.gov/summary/summary.aspx?ss=1&doc_id=14528						
		(41)-Indicator number; % of PHC							Influenza				Indica				

Snap Shot of the 10 mapped preventive indicators:

Next step was to provide a literature based rationale as to why the selected ten indicators could be potential research questions for the next AiB. The same process had to be followed over again, performing environmental scan, literature review, keeping track of the data sources and adding all the references to the reference manager [See Appendix 6].

For the parallel project a new project lead and a new manager were assigned. The scope of the project was still to be determined, but a broad outline and direction of the scope was known .Our

program area was focused on doing the more international comparison for quality of care, health care spending, wasted resources, primary care etc. Therefore the author was assigned to look for the available survey data sources from the provider's perspective. He started his research by looking at the available data sources within CIHI first and then targeted universities, research organizations, OECD, Commonwealth etc. and presented his work [See Appendix 7]. Four columns were prepared to present the data: column1- Type of survey, column2- Scope of the survey, column3-Who conducted the survey and column4- web link to the site from where he retrieved the information. After reviewing his work the decision was made to consider the healthcare data set OECD as CIHI hold the healthcare segment of that data set. Following that the author was assigned to review the code book, consider the covered definition of the variables and to make a list of the variables; according to access to health care, management of the chronic conditions, prevention and management, emergency use, human health resources, healthcare usage etc. This was his last assignment of the project

4. Health Informatics Relevance:

The project dealt with the healthcare data. The purpose and the aim of the project were to drive the knowledge from the raw data so that the extracted knowledge could be used to influence the policy makers / decision makers to take appropriate steps and make relevant policies to improve health outcomes in senior patients with chronic conditions. The outcome of the project would also give an insight to the healthcare researcher community about the prevailing economic burden of the chronic conditions, prevention and health risk guidance and the risk of medication error among the seniors with the multiple chronic conditions (co-morbidities). AIR emphasized heavily on side effect and medication errors in seniors with co-morbidities with a view to

involving the health informatics community, such as communities working in development of content standards and the Electronic Medical Record (EMR), association of pharmacist etc. so that they could make unified policies related to the capturing of the medical data at the primary level with the set standards that prevailed throughout Canada.

5. Discussion of Problem:

In the author's opinion, there is a lot of information already published about the impact and prevalence of the chronic conditions in Canada. University of British Columbia has also been involved to a great extent in prevention and management of chronic conditions [12, 13, 14, and 15]. Government has also taken an initiative in British Columbia by setting up the prevention camps, educating and encouraging the community and patients to get involved [16].

In the author's opinion, the medication error among seniors is one field that needs to be explored much further because this is far more complicated than it appears. The standardization of medical data may be a great help to the pharmacists in delivering the right dose of the medication and getting alerts for the adverse drug reactions, but dealing with co-morbidities still needs to be tackled. We are working hard to have a standardized data collection throughout Canada [17]. Once this is implemented fully and we have a centralized repository for capturing all the medical data of all the residents, we could then use Case Based Reasoning or Rule based Reasoning or Hybrid Model to retrieve all the medical information of the patient. This will not only be helpful in prescribing the medication, but would also take into consideration the patients with multiple diseases, allergies, age factor, co-morbidities etc. while prescribing the medication.

During the project while analyzing the data, the team felt that they could have done better if they had few more variables or questions during the survey. They had to make best use of what was

available; they tried mapping the data to Canadian Community Health Survey (CCHS), but were not able to get the required information. The team even tried to combine few different provincial survey datasets, but the problem of different coding systems among different provinces across the Canada was a major hindrance to that. One of PHCI project areas is “Content Standards Development” and the team is working towards establishing a common standard for capturing the data and defining the data to be captured for diagnoses, procedures and billing. Once this is fully accepted throughout Canada, this would certainly lead to better data quality and better AiB’s as well.

6. Conclusion:

This report would identify the areas needing improvement in terms of management and prevention of chronic conditions, monitoring of the medication and coping with the co-morbidities for elderly patients with chronic conditions. This report would also highlight the impact and prevalence of chronic conditions in Canada.

The priority of the project is not targeted towards the elderly patients with the chronic conditions rather the policy and decision makers. The secondary audiences to this report would be medical organizations such as Canadian association of physicians, seniors associations in Canada, longitudinal care associations etc. and the tertiary audiences includes researchers, who may be interested in this research but are not potentially influential in decision making.

7. Recommendation:

The branch the author worked for, was the “Research and Analysis Wing” and under program area “Primary Health Care Information”. The program area has a strategic goal of publishing at

least three AiB's in each project area. With so much competition from different organizations similar to CIHI, such as Health Council of Canada, Stats Canada etc., we require a clear vision and topics decided in advance.

In author's opinion PHCI should hire a practicum student or a full time employee just to work on research for selecting the topics. This could be done by running two projects simultaneously, while the analysis is being conducted and the draft is being prepared, the practicum students/employees could be assigned to work on selecting the topics to base their research on. They should be told to present their work by the end of each month with at least one presentation and should come up with a positive recommendation. If the director, manager or the higher management feels that his recommendation could potentially influence the stake holders than it could be a potential topic. In the mean time they could also provide him the feed back to work in depth in a particular area they feel, could be of more interest. By the end of three or four months PHCI could have at least three topics to consider. This would not only save them time but, they would also have a clear picture as to what they want to present as their final goal. This recommendation was aimed at the project management aspect.

As from the analysis point of view: The team used a clean data set with 11582 respondents, there were no missing values to be imputed. For the purpose of analyzing the data, the team limited itself to three categories; 1) Yes, 2) No and 3) Non responses. There were other category choices such as ' not stated, refusal, not applicable and valid skips', however, they decided to exclude valid skips from the analysis and grouped not stated, refusal and not applicable under one category called Non Responses. Therefore, AIR did the analysis based on the three sub categories for each variable, which was a very good approach with easy to interpret results. In author's opinion, data mining techniques such as using the data mining tool WEKA for

predicting the future trend could have been utilized. The reason being that there were variables in the code books that only applied to the respondents with at least one of the eleven chronic conditions and by using those variables as the factors for predicting the trend, we could have predicted the trend and provided a more impactful AiB. Also would have enabled us to create four sections 1) Impact and Incidence, 2) Prevention and Management, 3) Medication and adverse effect and 4) Possible category could be 'Future trends if no appropriate steps are taken' "results from the WEKA". This would certainly provide a more thorough and a scientific AiB.

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9. Appendix A

[1] Envior_Scan (1), “Snap shot-1; for the environmental scan”

[2] Envior Scan_Ques [2]

[3] Analytical Work Sheet (2)

[4] Indicator Final (4)

[5] Selective 10 Only

[6] References for Rationale 10 indicators

[7] Provider survey List

[8] SAS Codes

[10] The above mentioned appendices can be produced on request. Due to confidentiality and privacy issues I would alter the headings or the codes, but the logic would remain the same.

10. Appendix B

This report has been written by Gautam Bassan and has not received any previous academic credit at this or any other institute.

Date

Gautam Bassan

10th September 2010