

British Columbia Ministry of Health Services and the General Practice Services Committee

Evaluation of the Full Service Family Practice Incentive Program and the Practice Support Program

**Final Report: Evaluation of the Chronic Obstructive
Pulmonary Disease (COPD) Payment Incentives:
Fiscal 09/10**

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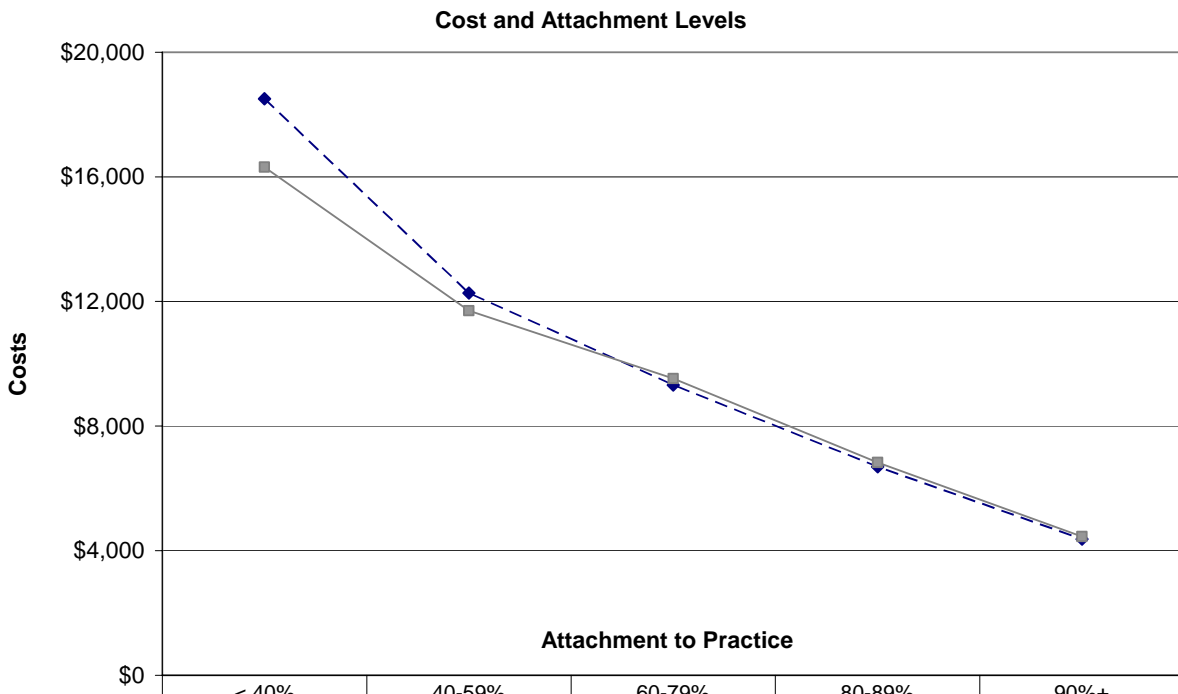


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HIGHLIGHTS OF FINDINGS

- COPD incentive was introduced in September 2009.
- Usual screens used for analysis.
- Analysis based on selected patients, i.e., 55,050 patients who did not receive incentive based care and 17,915 who did.
- Costs consistently increased with age for both groups.
- Costs were slightly lower for females who did not receive incentive based care and fairly even for those who did.



	< 40%	40-59%	60-79%	80-89%	90%+
—◆— Incentive - Yes	\$18,508	\$12,271	\$9,318	\$6,692	\$4,371
—■— Incentive - No	\$16,315	\$11,706	\$9,522	\$6,834	\$4,452

Types of Costs for RUBs 3 to 5 for Selected Patients	Incentive Based Care		Difference
	No	Yes	
Raw Costs	\$7,626	\$6,990	\$636
Costs Adjusted for Age, Sex and RUB	\$7,679	\$6,858	\$821
Costs Adjusted for Age, Sex, RUB and Attachment Level	\$7,587	\$7,150	\$437
Costs Adjusted for Age, Sex, RUB, Attachment Level and Number of Registries	\$7,558	\$7,261	\$297

- Total cost avoidance for adjustments for age, sex, RUB and attachment level for COPD for fiscal 09/10 = \$6,616,706.
- Total cost avoidance for adjustments for age, sex RUB, attachment level and number of registries for COPD for fiscal 09/10 = \$4,116,955.

	Adjust for Age, Sex, RUB and Attachment Level	Adjust for Age, Sex, RUB, Attachment Level
On Registry, Incentives Included	17,915	17,915
Total Cost Per Person With Incentives	7,150	7,261
Total Cost Per Person With Incentives Excluding Incentive Amount (\$125)	7,025	7,136
Total Cost Per Person Without Incentives	7,587	7,558
Savings/Cost Per Person With Incentives Excluding Incentive Amount	562	422
Total Dollar Savings/Cost Using Standardized Rates Excluding Incentives	10,060,921	7,561,170
Cost of Incentives	-3,444,215	-3,444,215
Total Dollar Savings/Cost	6,616,706	4,116,955

- Cost avoidance would be greater for raw data and data only adjusted for age, sex and RUB. For example, for age, sex and RUB adjustment the net cost avoidance would be \$13,503,375.¹

¹ Calculation: Cost of incentive based care \$6,858, minus cost of incentive (125) = \$6,733. Cost for people who did not receive incentive based care \$7,679 minus cost for people who did (\$6,733) = \$946. Number of patients who received incentive based care (17,915) times \$946 = \$16,947,590 minus the cost of the incentives (\$3,444,215) = \$13,503,375.

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1. INTRODUCTION

The General Practice Services Committee (GPSC) has contracted with Hollander Analytical Services Ltd. to conduct an evaluation of incentive payments instituted under the Full Service Family Practice Incentive Program (FSFPIP). As part of the project to evaluate the FSFPIP, a range of analyses have been conducted on administrative health data.

This report presents data on a new incentive for Chronic Obstructive Pulmonary Disease (COPD) introduced in September 2009. There are two COPD incentives. A planning incentive for \$125 and a follow-up incentive of \$15 which can be billed up to four times per year.

It should be noted that in this report we focus on people with somewhat higher care needs. Thus, the analyses in this report typically focus on people with a RUB level of 3 or higher. To ensure that our analysis is based on active patients, who need at least a modest amount of service, we have limited the patients in the analysis to those who have had at least five services in a given year and who are RUB 3-5. Prior analyses have indicated that relatively few patients who received incentive based care had fewer than five GP services in a year. We have shaded the areas which represent what we have selected for our analyses in the following tables. Table 1 indicates the population included in our analysis in the shaded areas. As can be seen, this includes patients who receive regular care and were at the intermediate to high end of the care continuum.

Many readers of this report will have been trained in a health related discipline and will be familiar with concepts from the field of epidemiology such as age and sex standardization. Epidemiology deals with the correlates of disease in a population and most of the analysis focuses on populations. For example, one would age and sex standardize mortality rates across provinces to the population distribution of Canada as a whole to obtain, for example, Standardized Mortality Rates (SMRs).

However, many social science disciplines also adjust data to control for confounds based on differential age and sex distributions (and distributions in other key variables). Thus, epidemiological standardization is actually a sub-set of a broader concept of “Adjustment” which “encompasses both standardization and other procedures from removing the effects of factors that distort or *confound* comparison.”² In our analysis we adjust for differences in age, sex, RUB and attachment level distributions in relation to costs and utilization. However, the mathematics of standardizing for these variables is the same as for standardizing in epidemiology. The difference is that our outcome variables are not related to SMRs, or incidence or prevalence rates of a disease in a population, rather they are related to cost and utilization patterns for an experimental group and a comparison group. In this report we have used what is referred to as indirect standardization, the same approach used by the Ministry.

² Schoenbach, V.J. & Rosamond, W.D. (2000). *Understanding the Fundamentals of Epidemiology: An Evolving Text*. Chapel Hill, North Carolina: University of North Carolina at Chapel Hill, p. 131.

Table 1: Patients with COPD April 2009 to March 2010, By Services

	Number of Patients	Number of Patients Resource Utilization Band			
		2 or Lower	3	4	5
All	96,352	5,583	46,801	23,970	19,998
GP Services					
03 or Lower	7,632	2,865	4,276	362	129
04	3,814	609	2,763	340	102
05	4,493	544	3,333	489	127
06	4,702	369	3,469	674	190
07	4,950	272	3,564	859	255
08	4,966	245	3,514	940	267
09	4,806	142	3,239	1,092	333
10 or More	60,989	537	22,643	19,214	18,595

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.

2. METHODS

In this analysis we excluded:

- People who died in the year.
- People with hospital costs greater than \$100,000.
- People with billings for more than 25 payees.
- People with less than five GP services in the year.
- People who were in a long term care facility at the end of the 2008/09 fiscal year.
- People who were not on the COPD registry.

Thus, the total number of patients in the subsequent tables are somewhat lower than those noted in Table 1.

3. COST ANALYSIS

Tables 2 and 3 present data for COPD patients. The first table presents the number of patients in each cell for a number of variables such as age, gender and attachment to practice. The first line in the tables presents data for all patients, and for patients by RUB. Table 3 indicates that overall, average annual costs for females with COPD tended to be lower than for males, for females who did not receive incentive based care. The costs were fairly similar for females who received incentives based care. Costs seemed to increase with age whether or not incentive based care was provided. With regard to attachment to practice, for COPD patients, the inverse relationship between the level of attachment and costs also seemed to hold.

Table 2: Indicators for COPD Patients April 2009 to March 2010 Counts and Averages

	COPD Incentive							
	No				Yes			
	Number of Patients				Number of Patients			
	All	Resource Utilization Band			All	Resource Utilization Band		
3		4	5	3		4	5	
All	55,050	28,820	15,257	10,973	17,915	8,671	5,616	3,628
Client Age Group								
45 - 59	8,601	4,959	2,224	1,418	2,431	1,269	757	405
60 - 69	14,935	8,713	3,809	2,413	4,675	2,484	1,403	788
70 - 79	16,915	8,790	4,727	3,398	6,122	2,968	1,913	1,241
80 and over	14,599	6,358	4,497	3,744	4,687	1,950	1,543	1,194
Gender								
Females	27,746	14,925	7,726	5,095	8,605	4,269	2,709	1,627
Males	27,304	13,895	7,531	5,878	9,310	4,402	2,907	2,001
Attachment to Practice								
1. Less than 40%	2,086	670	585	831	377	87	125	165
2. 40% - 59%	8,523	3,501	2,462	2,560	1,948	632	659	657
3. 60% - 79%	12,624	5,604	3,794	3,226	3,695	1,364	1,318	1,013
4. 80% - 89%	10,150	5,396	2,874	1,880	3,411	1,648	1,068	695
5. 90% or More	21,667	13,649	5,542	2,476	8,484	4,940	2,446	1,098

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.

Table 3: Costs for COPD Patients April 2009 to March 2010

Averages	COPD Incentive							
	No				Yes			
	Total Costs				Total Costs			
	All	Resource Utilization Band			All	Resource Utilization Band		
3		4	5	3		4	5	
All	7,626	3,134	7,339	19,824	6,990	3,248	6,578	16,572
Client Age Group								
45 - 59	6,417	2,531	6,624	19,685	5,935	2,484	6,709	15,301
60 - 69	6,701	2,779	7,016	20,365	6,143	2,863	5,852	16,999
70 - 79	7,901	3,475	7,350	20,118	7,150	3,572	6,488	16,729
80 and over	8,967	3,621	7,956	19,261	8,173	3,742	7,284	16,557
Gender								
Females	7,500	3,213	7,502	20,053	6,915	3,324	6,871	16,409
Males	7,755	3,050	7,172	19,626	7,059	3,174	6,304	16,704
Attachment to Practice								
1. Less than 40%	16,315	4,367	11,669	29,218	18,508	4,348	11,139	31,556
2. 40% - 59%	11,706	3,882	9,681	24,353	12,271	4,265	8,730	23,524
3. 60% - 79%	9,522	3,585	8,616	20,904	9,318	3,947	8,144	18,078
4. 80% - 89%	6,834	3,083	6,881	17,530	6,692	3,297	6,558	14,951
5. 90% or More	4,452	2,718	5,205	12,323	4,371	2,889	4,929	9,795

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.

Tables 4 to 6 present cost breakdowns by RUB for COPD patients. As can be seen, for RUB 3, the main costs were typically MSP related costs (costs for GPs, Specialists and diagnostic services). For RUBs 4 and 5 the main costs were for hospital care. For RUB 3 overall costs were somewhat higher for people who received incentive based care in fiscal 2009/10. However, for RUBs 4 and 5, costs were typically lower for patients who received incentives based care. This is primarily due to the avoidance of hospital costs for RUBs 4 and 5 patients who received incentives based care.

Table 4: Average Annual Cost Summaries by Year for All Patients with COPD: RUB 3

Averages		COPD Incentive		
		No		Yes
		Year		Year
		200809	200910	200910
Average	GP Amount	546	533	760
	GP Specialist and Diag Fac Amounts	1,222	1,216	1,379
	Pharmacy Costs	1,099	1,072	1,185
	Hospital Costs	944	847	683
	Total Costs	3,264	3,134	3,248

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.

Table 5: Average Annual Cost Summaries by Year for All Patients with COPD: RUB 4

Averages		COPD Incentive		
		No		Yes
		Year		Year
		200809	200910	200910
Average	GP Amount	863	860	1,059
	GP Specialist and Diag Fac Amounts	2,169	2,198	2,217
	Pharmacy Costs	1,701	1,611	1,708
	Hospital Costs	3,599	3,530	2,653
	Total Costs	7,469	7,339	6,578

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.

Table 6: Average Annual Cost Summaries by Year for All Patients with COPD: RUB 5

Averages		COPD Incentive		
		No		Yes
		Year		Year
		200809	200910	200910
Average	GP Amount	1,340	1,380	1,586
	GP Specialist and Diag Fac Amounts	3,846	3,969	3,820
	Pharmacy Costs	2,281	2,190	2,146
	Hospital Costs	13,740	13,665	10,606
	Total Costs	19,866	19,824	16,572

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.

4. COSTS ADJUSTED FOR DIFFERENCES IN DISTRIBUTIONS FOR GENDER, AGE, RUB AND/OR ATTACHMENT LEVEL

So far in this report we have found that it appears that patients who receive incentives based care cost less than patients who do not. While this is an important finding it could be a *spurious* finding, that is, the difference in costs could be accounted for by other factors that are also known to impact costs, such as age. For example, if the patients who receive incentive based care are young and, therefore, cost less (in general costs are lower for younger people as was shown earlier in this report), and patients who do not receive incentives based care are older, and cost more, then the finding that patients who receive incentives based care cost less could be an artifact of the different age distributions between the two groups. Thus, in this section we adjust for the potential impact that other factors could have on the findings.

Tables 7 and 8 present average annual cost data adjusted for differences in age and sex distributions. As can be seen, the adjusted costs are similar to the raw, or unadjusted, costs. For example, Table 7 shows a total cost of \$3,141 and \$3,222 for RUB 3 diabetes patients who did not, and did, receive incentives based care. The unadjusted costs were \$3,134 and \$3,248 (see Table 4). Overall, the finding was that costs were higher for RUB 3 patients who received incentives based care. For RUBs 4 and 5 the costs, adjusted for differences in age and sex distributions, were lower for patients who received incentives based care.

Table 8 shows results for adjustments for gender, age and RUB distributions. When all three RUB levels are combined, there is a consistent, lower cost for patients who received incentives based care. However, the patients also have higher, average attachment levels. This could account for the observed differences. Thus, it is important to adjust for differences in attachment levels between the two groups.

Tables 9 to 11 shed light on this issue. Table 9 presents age and sex adjusted costs by attachment level and RUB. Table 10 presents costs, adjusted for differences in gender, age and

RUB distributions, within attachment level. Table 11 presents data adjusted for gender, age, RUB and attachment level. These tables indicate a lower adjusted cost for COPD patients who received incentives based care.

Finally, we conducted a new analysis for this report where we looked at the net economic benefit of providing incentive based care. As can be seen in Table 12, there was considerable cost avoidance for COPD patients.

Our recent analyses have indicated that the number of registries on which a client is identified can also have an impact on costs for some types of conditions. Thus, adjusting for the number of registries (based on registries for CDM and Complex Care conditions), as well as RUB, age, sex, and attachment level, may be useful. Thus, Tables 13 and 14 present the same data as for Tables 11 and 12 except that the number of registries has been added to the adjustment process.

Table 7: Rates Adjusted for Gender and Age Groups within RUB for COPD Patients: Fiscal 09/10

	Resource Utilization Band					
	3		4		5	
	COPD Incentive		COPD Incentive		COPD Incentive	
	No	Yes	No	Yes	No	Yes
GP Amount	534	755	859	1,062	1,379	1,586
Specialist Amount	315	252	721	582	1,703	1,369
Diag Fac Amount	369	362	619	574	889	860
GP Specialist and Diag Fac Amounts	1,218	1,369	2,199	2,217	3,972	3,815
Hospital Costs	849	674	3,526	2,665	13,667	10,585
Pharmacy Costs	1,073	1,179	1,610	1,716	2,184	2,165
Total Cost	3,141	3,222	7,336	6,597	19,823	16,564
Attachment to Practice	83	87	78	82	71	76

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.

Table 8: Rates Adjusted for RUB, Gender, and Age Groups for COPD Patients: Fiscal 09/10

	COPD Incentive	
	No	Yes
GP Amount	796	1,009
Specialist Amount	709	570
Diag Fac Amount	545	522
GP Specialist and Diag Fac Amounts	2,050	2,101
Hospital Costs	4,180	3,227
Pharmacy Costs	1,449	1,530
Total Cost	7,679	6,858
Attachment to Practice	79	83

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.

Table 9: Rates Adjusted for Gender and Age Groups and Attachment within RUB for COPD Patients: Fiscal 09/10

Average Total Costs				Resource Utilization Band		
				3	4	5
COPD Incentive	Attachment to Practice					
No Incentive	1. Less than 60%			3,973	10,066	25,579
	2. 60% - 79%			3,588	8,603	20,909
	3. 80% - 89%			3,089	6,879	17,532
	4. 90% or More			2,721	5,204	12,326
Incentive	1. Less than 60%			4,160	9,138	24,845
	2. 60% - 79%			3,949	8,160	18,198
	3. 80% - 89%			3,262	6,594	14,943
	4. 90% or More			2,876	4,933	9,799

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.

Table 10: Rates Adjusted for Gender and Age Groups and RUB within Attachment for COPD Patients: Fiscal 09/10

Average Total Costs			COPD Incentive	
			No Incentive	Incentive
Attachment to Practice				
1. Less than 60%			12,816	12,372
2. 60% - 79%			9,658	8,970
3. 80% - 89%			6,933	6,448
4. 90% or More			4,517	4,241

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.

Table 11: Rates Adjusted for RUB, Attachment, Gender, and Age Groups for COPD Patients: Fiscal 09/10

	COPD Incentive	
	No Incentive	Incentive
GP Amount	792	1,026
Specialist Amount	703	587
Diag Fac Amount	544	523
GP Specialist and Diag Fac Amounts	2,038	2,136
Hospital Costs	4,098	3,481
Pharmacy Costs	1,451	1,533
Average Total Cost	7,587	7,150

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.

Table 12: Summary of COPD Incentive Costs: Fiscal 09/10

Patients on Registry or with Incentives	104,239
Total on Registry	96,352
On Registry, Incentive, Included	17,915
Total Cost Per Person With Incentives	7,150
Total Cost Per Person With Incentives Excluding Main Incentive Amount (\$125)	7,025
Total Cost Per Person Without Incentives	7,587
Savings/Cost Per Person With Incentives Excluding Incentive Amount	562
Total Dollar Savings/Cost Using Standardized Rates Excluding Incentives	10,060,921
Cost of Incentives	-3,444,215
Total Dollar Savings/Cost	6,616,706

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.

Table 13: Rates Adjusted for COPD Patients by RUB, Attachment, Gender, and Age Group and Number of Registries: Fiscal 09/10

	COPD Incentive	
	No Incentive	Incentive
GP Amount	789	1,035
Specialist Amount	701	594
Diag Fac Amount	542	529
GP Specialist and Diag Fac Amounts	2,033	2,158
Hospital Costs	4,082	3,551
Pharmacy Costs	1,443	1,552
Average Total Cost	7,558	7,261

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.

Table 14: Summary of COPD Incentive Costs Based on Actual Amounts Adjusted Rates Including the Number of Registries: Fiscal 09/10

Patients on Registry or with Incentives	104,239
Total on Registry	96,352
On Registry, Incentives Included	17,915
Total Cost Per Person With Incentives	7,261
Total Cost Per Person With Incentives Excluding Incentive Amount (\$125)	7,136
Total Cost Per Person Without Incentives	7,558
Savings/Cost Per Person With Incentives Excluding Incentive Amount	422
Total Dollar Savings/Cost Using Standardized Rates Excluding Incentives	7,561,170
Cost of Incentives	-3,444,215
Total Dollar Savings/Cost	4,116,955

Source: British Columbia Ministry of Health Services, Primary Care Data Repository, Fiscal 2009/10.