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Tasks 4 and 5 Report on the Outcomes of the Original COHEs' Later Cohorts

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Report on the Outcomes of the Original COHEs' Later Cohorts

Introduction

This report provides updated information on outcomes for the Centers of Occupational Health and Education (COHEs).¹ Earlier UW evaluation reports provided information on outcomes for the Renton and Spokane pilot COHEs (2003-2005 biennium Task 3 and 2005-2007 biennium Task 4), examined selected key questions pertaining to the operation and performance of the COHEs (2005-2007 biennium Task 5), and assessed outcomes over a longer period of time for the original COHE cohorts (current biennium, Task 3). Our initial analysis examined COHE outcomes for evaluation year two. This analysis evaluates outcomes using new COHE cohorts representing injured workers treated more recently during evaluation years three and four. The report examines three outcomes: (1) time loss days, (2) time loss payments, and (3) medical costs.

This analysis departs from the previous analysis in two ways. First, it presents information for the two COHE sites combined. The Department of Labor and Industries (DLI) requested the UW research team combine the two COHE sites for purposes of analysis, reflecting the DLI view that the two pilot sites are part of a single system intervention. Second, as discussed below, we used a new, more conservative, statistical technique to perform the analysis. As a result of this, and due to the COHE's maturation process, the data as reported here should not be used to compare outcomes against our reports from the original COHE cohorts. In keeping with the desire to provide information that is readily interpretable to a broad audience, we have kept technical information to a minimum and have simplified the presentation of the findings.

¹ Note the analysis for the Spokane COHE is based upon the three counties that formed the COHE's original target area.

Methods

In creating the database used for this analysis, we followed the same general procedures and used the same data source as used for previous COHE analyses. The construction of the database required several sequential steps. First, we defined relevant evaluation years (outcome years and baseline year) for the analysis (Table 1). As shown in the table, Spokane's outcome years are a year later than Renton's, reflecting its later start date.

Table 1. Outcome Years for COHE Analysis

Outcome Year	Renton	Spokane
Baseline Year (Year 0)	July 2001 – June 2002	July 2002 – June 2003
Year 3	July 2004 – June 2005	July 2005 – June 2006
Year 4	July 2005 – June 2006	July 2006 – June 2007

Second, we constructed cohorts of cases for the analysis. Following the same general procedures as before, we included in the comparison-group all cases treated by health care providers (physicians, chiropractors, physician assistants, and nurse practitioners) in the COHE target area who were not participating in the COHE. COHE cases consisted of all injured workers whose first provider was a COHE provider. Claims filed and accepted (rejected claims were excluded) during the outcome years were eligible for inclusion in the analysis.

We applied one additional inclusion criterion to the data. The statistical technique we used for the analysis examines change over time in outcomes for the COHE and control groups. To obtain reliable estimates of the change in outcomes, (e.g., time loss days), it was (1) desirable to have as long a follow-up period as possible and (2) necessary for the baseline and outcome periods to have the same follow-up time. We defined the follow-up time as two years. Since we extracted the administrative data in July 2008, we could

not include cases representing claims filed after June 2006. Thus, it was necessary to exclude cases for year 4 for Spokane (see Table 1). Excluding these cases did not affect the analysis to any significant degree, since a large number of cases remained available for analysis and since data for the two pilot sites were combined. A breakdown of these cases by year is shown in Table 2.

Table 2. Cases Eligible for Inclusion in Evaluation Cohorts

Evaluation Year	<u>Renton</u>		<u>Spokane</u>	
	COHE	Comparison Group	COHE	Comparison Group
Baseline Year	7,913	15,958	7,681	3,326
Year 3	8,834	15,140	8,328	3,093
Year 4	9,955	15,009	--	--
Total	26,702	46,107	16,009	6,419

We obtained administrative data from the DLI databases representing time loss measures, cost measures and other worker- and provider-related variables that were included in the analysis as control variables. The extract captured data through June 2008. The outcome variables analyzed include the following:

- time loss days per claim
- time loss payments per claim
- medical costs per claim.

Our prior analyses included discrete outcome measures in the form of “compensable/non-compensable claim” and “on/off time loss at 12 months.” We excluded these discrete measures from the current analysis because the type of statistical model used for the analysis is best suited for examination of continuous measures such as time loss days and

costs. Consistent with our prior analyses, we included in our statistical models the following covariates (control variables): injured worker age, sex and type of injury; provider specialty; and industry and firm size.

The statistical technique we used for this analysis is generally referred to as a difference-in-difference (DID) approach. The DID method is being used more widely for evaluation research when longitudinal data (baseline and follow-up data) are available. In brief, DID analyses compare changes in outcome measures over time in an intervention group relative to a control group. In effect, this analysis controls for (unmeasured) external factors that might cause a change in the outcome measure. The DID model does not, however, address the more complicated problem of selection bias. Our prior analysis analyzed cross-sectional data for the outcome period, but controlled for baseline (provider) differences in medical and time loss costs. That (prior) approach made it possible to control for some selection effects (COHE providers are different from comparison-group providers). The advantage of the DID approach is that it offers a greater ability to control for external factors, such as changes in the unemployment rate, that may affect outcomes. But the DID approach also produces more conservative estimates than analyses of cross-sectional (outcome) data. Given the change in the model used for the analysis and the change in the follow-up periods analyzed, readers should not compare the results presented in this report with those presented in previous evaluation reports.

Results

With regard to background and demographic characteristics, the COHE and comparison group exhibited small to modest differences (see Table A, appendix). Because of the large number of cases analyzed, these differences achieved statistical significance despite their modest magnitude. The more important differences (see Table A, appendix) were as follows:

- A greater percentage of COHE cases were treated by primary care providers, occupational medicine physicians or hospital ER's as compared to comparison-group cases.
- A greater percentage of comparison-group cases were treated by surgeons or "other providers" as compared to COHE cases.
- A higher percentage of comparison-group cases were employed by small firms (< 25 FTE employees) as compared to COHE cases.
- The average provider baseline-year costs (medical and time loss combined) were higher for comparison-group cases than COHE cases.

Information representing unadjusted (DID analysis not yet applied) values for the three outcome measures described earlier is presented in Table 3. As shown, there are large differences in each of the three outcome measures. During the outcome years, injured workers treated through the COHEs had, on average, 13 fewer time loss days, and substantially lower costs. But these differences cannot be completely attributed to the COHEs because the COHE and comparison groups differed in terms of mix of injuries, type of provider and other factors. The two groups also differed in terms of providers (cases of COHE providers had fewer time loss days and lower costs in the baseline year).

Table 3. Descriptive Information on Outcome Measures for Years 3 and 4 Combined (N = 60,359)

Measure	COHE (n = 27,117)	Comparison Group (n = 33,242)	Unadjusted Difference
Time loss days per claim (all claims)	20.6	33.9	13.3
Time loss payments per claim (all claims)	\$1,127	\$2,022	\$895
Medical costs per claim	\$2,467	\$3,238	\$771

Note: All differences are statistically significant (p< .01).

To get a better understanding of the differences in outcomes associated with the COHE requires statistical analysis to adjust for factors such as age, sex, type of injury, provider type, and changes in (unmeasured) external factors. We performed the DID analysis to adjust for these factors and present the results in Table 4. The statistical analysis altered the unadjusted outcome measures to a substantial degree. Though the figures shown in Table 4 seem precise, like all such figures, they are the product of statistical estimation and thus reflect some uncertainty. To assist readers in interpreting the estimates, we have included in Table 4 confidence intervals for each difference in outcomes. A 95% confidence interval shows the interval within which the true value of an estimate would be expected to fall. For example, the estimated difference in time loss days between the COHE and comparison group shown in Table 4 is - 4.1 days, with a confidence interval ranging from - 6.9 days to - 1.3 days. Though the “best” estimate is - 4.1 days, the true value may be as great as - 6.9 days or as little as - 1.3 days. In other words, the estimates shown in Table 4 are necessarily somewhat imprecise.

The adjusted differences shown in Table 4 for the outcome measures, though smaller than the unadjusted differences shown in Table 3, are quantitatively important and statistically significant. COHE injured workers, on average, experienced 4 fewer disability (time loss) days than comparison-group injured workers. Both medical costs and time loss payments per claim were less for COHE injured workers than for comparison-group injured workers. Adding the reductions in medical costs and time loss payments would translate into a combined cost saving per claim of approximately \$600.

Table 4. Adjusted Outcomes for Years 3 and 4 Combined (N = 95,237)

Measure	Adjusted Differences in Outcomes	95% Confidence Interval	P-Value *
Time loss days per claim (all claims)	- 4.1	- 6.9 to -1.3	.004
Time loss payments per claim (all claims)	- \$347	- \$543 to - \$160	< .001
Medical costs per claim	- \$245	- \$426 to - \$61	< .001

* The p-value indicates statistical significance. Each of the differences shown in Table 4 is statistically significant.

To gain further insight into the effects of the COHEs on the delivery of workers' compensation health care, we repeated the analyses presented in Table 4 but limited the analysis to compensable (time loss) claims. Of the 95,237 claims analyzed for this report, 21,956 (23%) were compensable (time loss) claims. The results are shown in Table 5. Limiting the analysis to compensable claims increased the magnitude of the estimated differences substantially. For example, the adjusted difference in time loss days increased from - 4.1 days to - 16.9 days. Similarly, the difference in time loss payments increased from - 347 to - \$1,311. Though the difference in medical costs also increased, the estimate did not achieve statistical significance.

Table 5. Adjusted Outcomes for Years 3 and 4 Combined (compensable claims only, N = 21,956)

Measure	Adjusted Differences in Outcomes	95% Confidence Interval	P-Value
Time loss days per claim (all claims)	- 16.9	- 27.9 to -5.9	.003
Time loss payments per claim (all claims)	- \$1,311	- \$2,065 to - \$556	.001
Medical costs per claim	- \$562	- \$1,267 to - \$141	.12

* The p-value indicates statistical significance. The differences shown in Table 5 for time loss days and payments are statistically significant.

Conclusion

This report provides updated information on COHE outcomes for injured workers treated during a two-year period (one year period for Spokane) July 2004 to June 2006. We purposely used a conservative approach for the analysis, examining changes over time in time loss days and costs. Like our prior analyses, we found the COHE intervention was associated with favorable outcomes. COHE injured workers, on average, had 4 fewer time loss days than comparison-group injured workers and had substantially reduced medical and time loss costs. The combined cost savings per claim over the two-year follow-up period associated with the COHE were on the order of \$600. When we limited the analysis to compensable (time loss) cases, the estimated reduction in time loss days increased from 4 days to 16 days, with a corresponding decrease in time loss payments and, to a lesser extent, medical costs.

Two major points emerge from this analysis. First, the “preventive effect” of the COHE intervention on worker time loss appears to have been sustained, as measured by decreased time loss days experienced by injured workers treated through the COHEs. Second, unlike previous analyses, our current analysis of injured workers treated more recently through the COHEs showed a large reduction in time loss days for compensable (time loss) cases. This could reflect a “maturation effect.” The COHEs have directed considerable attention to quality improvement in recent years, and the finding reported here may reflect an improved ability of the COHEs to prevent continued time loss among compensable (time loss) cases.

Appendix

Table A. Characteristics of COHE Group and Comparison Group

Characteristic	COHE	Comparison Group
Average injured worker age	35.5	37.1
% Male	74.2	69.9
Type of injury		
% Back sprain	12.8	14.8
% Carpal tunnel syndrome	0.9	2.0
% Fractures	4.3	3.6
% Other sprains	22.3	22.2
% Other injuries	59.8	57.3
Provider specialty		
% Primary care physicians	39.7	29.4
% Chiropractors	2.0	8.1
% Occupational medicine physicians	11.6	7.5
% Surgeons	1.3	5.1
% ER	39.1	29.1
% Other providers	6.4	20.7
Industry		
% Manufacturing	15.0	11.7
% Agriculture/Forestry	3.4	3.1
% Transportation	6.6	6.5
% Service	24.9	27.6
% Wholesale/retail	27.4	24.8
% Construction	17.1	18.5
% Financial services/public administration	4.0	6.3
% Unknown	1.5	1.6
Firm size		
% < 25 FTE employees	28.0	33.1
% 26 – 50 FTE employees	14.4	13.9
% 51 – 100 FTE employees	16.9	15.2
% 101 – 250 FTE employees	20.8	17.8
% > 250 FTE employees	19.9	20.1
Average provider baseline costs (medical and time loss costs combined)	\$4,356	\$6,526

Note: All differences shown in the table are statistically significant ($p < .05$).