



BREATHING EASIER AT CLEVELAND CLINIC

AVOIDING MAJOR PRODUCTIVITY DISRUPTIONS THROUGH ASTHMA CARE MANAGEMENT

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THE ISSUE

Many employers implement care management (CM) programs as a way to help improve employees' health and reduce the use of costly types of medical care. For health conditions that can be remedied fairly quickly, CM may also result in better near-term worker productivity – particularly, the avoidance of major productivity disruptions in the form of disability leaves.

EVIDENCE

To examine the issue of CM and productivity, IBI used CM and disability data from Cleveland Clinic to assess whether participation in an asthma CM program may help employees avoid disability leaves from work. As with all voluntary programs, it is possible that employees who choose to participate in CM may be more highly motivated workers. This poses a challenge to the interpretation of any beneficial outcomes. Therefore we also examined disability outcomes among employees with disease that respond more gradually to treatment (diabetes and hypertension) – with the expectation that employees with these diseases would realize fewer productivity improvements even when well-managed. We find that:

- The disability incidence rate among employees with asthma, diabetes or hypertension was more than twice as high as what would be expected for the overall population of employees; annually one in four employees in the study had a disability leave in any given year, compared to an industry average of about one in eight.
- Asthma CM participants had a lower likelihood of disability use than comparable non-participants. These findings suggest that asthma CM can reduce productivity losses over a relatively short period of time. However, the benefits may accrue primarily to the most seriously ill employees – in this case, those with previous disability leaves.
- For Cleveland Clinic, the estimated number of disability claims among all asthma sufferers would have been 13% higher if it did not offer CM. Assuming typical STD claim outcomes, for every 100 employees with asthma, CM saved the company about 131 lost workdays (half an FTE) and about \$12,500 in wage replacement payments (which equates to about \$400 per asthma CM participant). The savings are likely greater when further considering the value of opportunity costs such as overtime and overstaffing.

- Employees in diabetes CM had better disability outcomes than comparable non-participants. However, the results were weaker than what was observed for asthma CM and not statistically significant. We did not observe any difference in disability outcomes for hypertension CM. These findings suggest that the observed outcomes for asthma are not likely due to CM participants' higher motivations to stay on the job through bouts of illness. On the other hand, it may take longer than one year for employees with well-managed diabetes and hypertension to realize appreciable productivity improvements.

Solution:

In addition to helping employers control health care costs, asthma CM can help employees avoid costly productivity disruptions – and repeated episodes in particular. As such, the findings point to the potential cost savings of coordinating the management of health care and disability benefits. The results of this study are likely conservative. They do not take into account any reductions in health-related incidental absences or presenteeism, nor do they consider that CM may help shorten the duration of disability leaves once they occur. On the other hand, appreciable productivity improvements for employees with well-managed diabetes and hypertension likely take longer than one year to be realized.

Background

As employers continue to wrestle with the high costs of healthcare, many are offering care management (CM) programs to their employees with conditions such as obesity, heart disease, migraine, diabetes, hypertension and asthma. While CM in general has several known benefits for improving patient health and reducing some health care costs,¹ it may also provide additional benefits if better health results in fewer absences from work and therefore better productivity. CM could be particularly beneficial for productivity if it helps employees avoid major productivity disruptions in the form of disability leaves.

To examine the issue of CM and productivity, IBI used CM and disability data from one of its member organizations to assess whether participation in an asthma CM program had a measurable impact on employees' disability leaves. We focused on asthma because it is a condition for which improved quality of care can have a very rapid impact on health and functioning. Generally, we expect that asthma sufferers who participate in CM will have fewer major productivity disruptions – in the form of disability leaves of absence from work – than their peers who do not participate in CM.

One challenge in assessing a link between CM and health and productivity outcomes is that in most workplaces, employees typically choose for themselves whether or not to participate in CM, and participants may be more motivated than others to improve their health. They also may be more motivated to stay on the job even when they experience bouts of illness. This motivational factor – rather than the effectiveness of the program itself – may help explain why CM participants might see greater improvements in their productivity than comparable non-participants.

That said, if motivation strongly explains CM participants' greater productivity improvements, it should apply across different types of diseases – even those that take a relatively long time to work their damage on the body, which in turn takes a relatively long period of treatment to repair. We therefore also looked at whether participation in CM management for diabetes and hypertension – for which high quality medical treatment tends to improve health gradually – results in productivity improvements similar to what is observed for asthma. If CM participants with these diseases show productivity improvements in less time than we would expect to see serious improvements in their health and functioning (in this case, one year), then we would strongly suspect that much of the productivity benefit of CM is due to employee motivation to stay on the job through their illnesses, rather than to the effectiveness of the program.

Data

IBI worked with [Cleveland Clinic](#) to obtain data on its employees with asthma, diabetes, or hypertension, their participation in relevant CM programs, and their use of the company's disability leave benefits. Cleveland Clinic has about 40,000 employees and is self-insured for medical, pharmacy and disability benefits. The data consisted of:

1. A de-identified list of persons employed from 2010-2012 who were known from medical/pharmacy claims or lab results to have one of the three medical conditions.
2. A de-identified record each employee's asthma, diabetes, or hypertension CM start dates (if any) from 2010-2012.
3. A de-identified list of all approved and used disability leave claims from 2010 and 2012.

¹ For some examples, see: Dall, T. M., Askarinam, W. R., Zhang, Y., Yang, W., Arday, D. R., & Gantt, C. J. (2010). "Outcomes and lessons learned from evaluating TRICARE's disease management programs." *The American Journal of Managed Care*, 16(6), 438; Goetzel, R. Z., Ozminkowski, R. J., Villagra, V. G., & Duffy, J. (2005). "Return on investment in disease management: a review." *Health Care Financing Review*, 26(4).

THE CM PROGRAM

Cleveland Clinic offered telephonic CM for asthma, diabetes and hypertension to all employees identified with each condition. Participants were provided with a health insurance premium reduction and an additional reduction for meeting targeted CM goals (for example, reducing blood glucose levels or high blood pressure). The CM programs consisted of occasional telephone contacts from CM specialists, who reminded employees of their condition, reviewed their medications and treatment adherence with them, helped them coordinate appointments with caregivers, and offered general lifestyle coaching appropriate to management of their condition. The frequency of contact was determined using a “high touch/high contact” model based on the employee’s risk level. Higher risk employees received more frequent contacts (as often as weekly, as determined by the CM specialist), whereas lower risk employees received fewer contacts (in some cases only annually). Previous analyses conducted within the company showed that the CM treatment protocol resulted in better quality outcomes (such as greater medication adherence and improved lab results).

MAJOR PRODUCTIVITY DISRUPTIONS: DISABILITY ABSENCES

Cleveland Clinic provides 60% wage replacements to all employees with a qualifying medical condition that results in a short-term disability leave.² For each CM participant, we appended a record indicating whether or not they had any disability claim (for any condition) within one year after their entry into CM (which we refer to as the “observation period”). Disability durations were not provided. In order to assess any predisposition towards disability – for example, disability leave takers may be less healthy generally than other employees with similar medical conditions – we also appended their disability claiming behavior for the year prior to their entry into CM (which we refer to as the “baseline period”). In practice, using 12-month baseline and observation disability histories requires that only employees entering CM in 2011 are examined as the CM treatment group. Those entering CM in 2010 and 2012 are excluded. As a control group, we appended CM non-participants’ disability claims in 2012 as their “observation” experiences, and their claims in 2011 as their “baseline” experiences.³

SAMPLE SUMMARY

We received data on 1,970 unique individuals with information appropriate to the study.⁴ As shown in the table below, hypertension is the most prevalent condition among the employees in the study, followed by diabetes and asthma.

For our study, CM participants are defined as those employees who received the health insurance premium reduction for enrolling in the program. The dataset did not include information on whether specific goals were met. Employees with hypertension had the lowest rates of participation in CM, while participation rates were highest among employees with asthma. The difference in participation rates could be related to diabetes and hypertension typically producing fewer (or less frequent) acute symptoms than asthma. While this might limit the number of employees who are motivated beyond the incentive to participate, it is unclear whether this indicates potential differences in motivation bias among participants with different conditions.

² The disability benefits plan was designed with a one-week elimination period and a 26-week maximum benefit duration.

³ Our analyses showed no statistically significant differences between the CM groups’ baseline disability claims, and the control groups’ disability claims in 2011. This suggests that for all three of the conditions, using the control groups’ 2011 disability experience is a reasonable proxy for the treatment groups’ disability experiences in the 365 days prior to entry into CM.

⁴ Employees with more than one condition were included in the study. However, to avoid confounding effects, we excluded employees who participated in more than one CM program.

Summary of control and treatment groups by condition

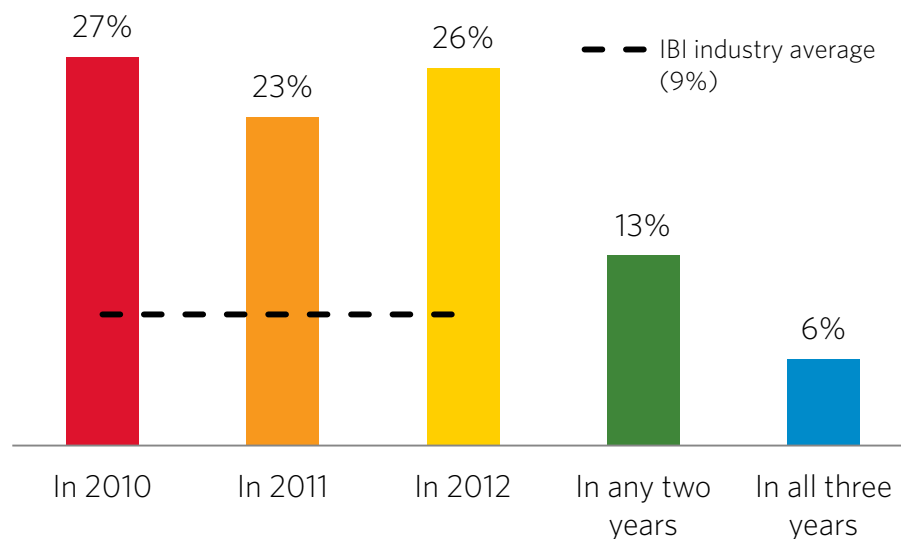
Condition		With condition	No CM participation (Control group)	CM participation in 2011 (treatment group)
Asthma	<i>n</i>	297	205	92
	%	100%	69%	31%
Diabetes	<i>n</i>	661	532	129
	%	100%	80%	20%
Hypertension	<i>n</i>	1,553	1,396	157
	%	100%	90%	10%

Results

DISABILITY CLAIMS RATES

Figure 1 shows that, overall, in any given year about one in four employees in the study had a major productivity disruption in the form a disability claim (for any reason). As expected of a population of employees with serious medical conditions, these disability incidence rates are high in comparison with the company's overall incidence rate (about one in eleven employees) and to the short-term disability (STD) claims rate reported in IBI's 2012 disability benchmarking database for employers in the hospitals industry (SIC 806) – also about one in eleven.⁵ About 28% of disability claimants in the study had a claim in two out of the three years observed (13% of all employees in the study), while 13% had a disability claim in all three years (6% of all employees in the study).

Figure 1: % of employees with at least one disability incident



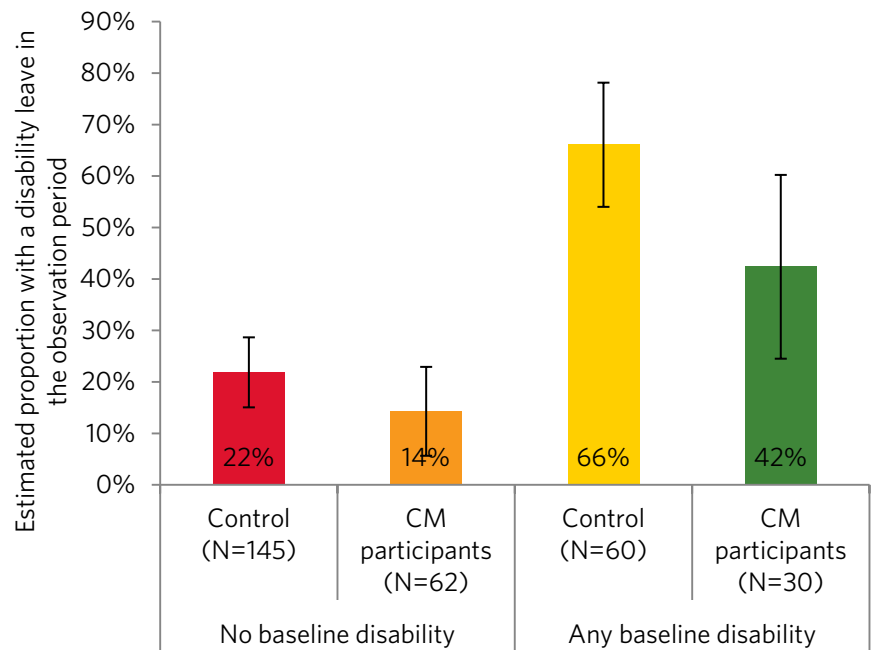
⁵ < <http://ibiweb.org/tools/benchmarking> >

CAN ASTHMA CARE MANAGEMENT HELP CONTROL DISABILITY ABSENCES?

Overall, our model predicts that about 20% of employees in asthma care management had a disability leave in the observation period, compared to about 34% of comparable non-participants.⁶ This difference is statistically significant and is consistent with a successful CM program.

It should be noted, however, that the improvements may be concentrated among the most seriously ill employees – in this case, those who had a disability leave in the baseline period. As seen in Figure 2, among employees with a baseline disability leave, 42% of asthma CM participants are estimated to have a subsequent disability leave, compared to 66% of those in the asthma control group. This represents a significant reduction in the odds of a disability leave. Among employees with no baseline disability leaves, the difference between CM and control group disability outcomes – while still favoring the CM group – are not statistically significant.⁷

Figure 2: Overall, asthma CM participants are less likely than asthma control group employees to have a disability in the observation period.



Note: Brackets indicate the 95% confidence interval around the estimates.

These findings suggest that asthma CM can reduce productivity losses over a relatively short period, but that the benefit accrues primarily to the most seriously ill employees. If Cleveland Clinic had not offered asthma CM – and all employees with and without a previous disability had respective disability rates of 66% and 22% in 2012

⁶ These results are obtained through multivariate logistic regression analysis, controlling for both age and sex. References to statistical significance refer to coefficients of CM participants’ change in the natural log of the odds of having a disability leave in the observation period, relative to not having a leave. The confidence intervals shown in the figures provide a visual approximation of statistical significance; generally, brackets with a range that overlaps the height of the adjacent column indicate that the estimated proportions are not statistically significant.

⁷ It is important to keep in mind that the observed difference of 8 percentage points (from 22% to 14%) may be clinically meaningful, nonetheless. Power tests indicated that statistical significance could have been observed with 90% probability in a study with 233 CM participants who had no previous disability leaves.

- the estimated number of disability claims among all asthma sufferers would have been 13% higher in the observation period. Put another way, our model estimates that without CM, for every 100 employees with asthma, Cleveland Clinic would have experienced four more claims than it managed at the current levels of CM participation (i.e., instead of 31 claims per 100 asthma sufferers, it would have had 35 claims). If each claim incurred the industry average number of lost workdays and wage replacement costs,⁸ for every 100 employees with asthma, CM saved Cleveland Clinic about 131 lost workdays (half an FTE) and about \$12,500 in wage replacement payments (which equates to about \$400 per asthma CM participant).

The savings are even greater when considering the opportunity costs that absences impose on companies- such as overtime and overstaffing. Research by Professor Sean Nicholson of Cornell University and Professor Mark Pauly of the University of Pennsylvania suggests that productivity losses for a day of absence are higher than the cost of wages to the extent that the absent worker performs time-sensitive tasks as part of a team and cannot be easily replaced by an equally productive substitute.⁹ By applying the Nicholson-Pauly method of calculating opportunity costs, IBI estimates that each lost workday in a hospital costs an additional 44% of the absent worker's wages, on top of any wage replacement payments.

ARE CARE MANAGEMENT PARTICIPANTS MORE MOTIVATED WORKERS?

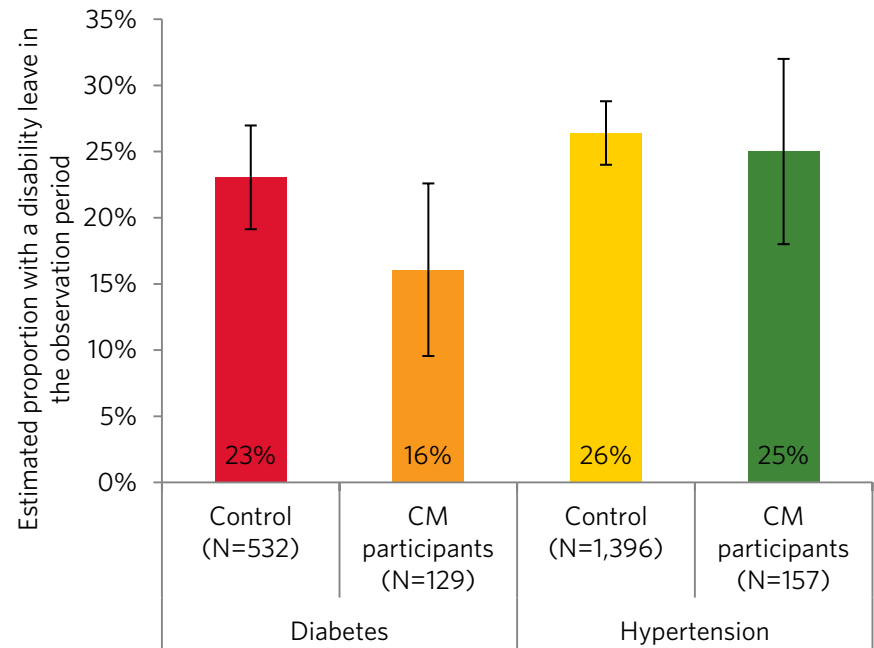
Importantly, we cannot say the same about employees in diabetes or hypertension CM programs. While the results slightly favored CM for both conditions (shown in Figure 3), statistically speaking, participation in CM did not alter the likelihood of a disability leave for employees with these diseases over the course of one year.¹⁰ This casts doubt on the extent to which motivational factors can explain asthma CM participants' improved productivity outcomes. As mentioned above, both diabetes and hypertension take a relatively long time to work their damage on the body. We would not expect this damage to be repaired over the course of a year of high quality treatment, and so would not expect an immediate impact on productivity outcomes unless CM participants were more motivated than non-participants to stay on the job.

⁸ IBI's benchmarking database indicated that for the hospitals industry, each closed STD claim in a plan with a one week elimination period and a 6 month maximum benefit duration incurs an average of 33 lost work days and \$3,144 in wage replacement payments.

⁹ Nicholson, S., Pauly, M.V., Polsky, D., Sharda, C., Szrek, H. and Berger, M.L. "Measuring the effects of work loss on productivity with team production." *Health Economics*. 2006;15(2):111-123.

¹⁰ For the diabetes group the difference was significant at the .10 level rather than the conventional .05 level. The observed outcome may thus be clinically meaningful, if not statistically significant. Power tests indicated that statistical significance could have been observed with 90% probability in a study with 324 diabetes CM participants. We did not observe statistical significance at conventional levels when employees were split into groups based on their baseline disability experiences.

Figure 3: While participants in diabetes and hypertension CM generally had better disability outcomes than the control groups, the differences were not statistically significant.



Note: Brackets indicate the 95% confidence interval around the estimates.

It bears repeating that the groups of employees with diabetes and hypertension are larger than the group of employees with asthma, and large samples tend to magnify the statistical significance of even small differences. *This underscores that appreciable productivity improvement for employees with well-managed diabetes and hypertension likely takes longer than one year to be realized.*

Commentary

Managing major disability disruptions through disability management is by no means a new concept for employers. However, while the number of companies that provide CM benefits is growing, their impact on ill employees' productivity still may be underappreciated. The results of this study suggest that in addition to controlling medical care costs, asthma CM can help employees avoid costly productivity disruptions – and repeated episodes in particular. As such, the findings point to the potential costs savings of coordinating the management of health care and disability benefits.

While diabetes and hypertension CM had no significant impact on disability leaves within a one-year period, it would be premature to concede that managing these conditions holds benefits only or primarily for medical costs. It may take longer than one year to realize advantages for productivity. Lifestyle management programs that help minimize the prevalence of diabetes and hypertension over the longer term may afford greater productivity advantages.¹¹

¹¹ See for example, Mattke, S., Liu, H., Caloyeras, J., et al. (2013), "Do Workplace Wellness Programs Save Employers Money?" Santa Monica, CA: RAND.
<http://www.rand.org/pubs/research_briefs/RB9744/index1.html>

At the same time, the findings presented here are likely conservative estimates. They do not take into account any reductions in health-related incidental absences or presenteeism, nor do they consider that CM participation may help shorten the duration of disability leaves once they occur. IBI intends to address issues such as these in future studies. While the full benefits of CM – including improved productivity – remain unclear, the results of this study suggest that they are substantially greater than medical cost savings alone.

Acknowledgments

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