

Impact of a Disability Management Program on Employee Productivity in a Petrochemical Company

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Background: An inhouse disability management program was implemented to reduce nonoccupational absences in a petrochemical corporation. The program was administered by full-time certified, corporate-based case managers and nine manufacturing location nurses. **Methods:** Employees were required to report all absences on the first day and again on the fourth workday of absence. A medical certification form was required for absences of 4 or more working days. Extended absences were actively managed. An Internet-based case management tool, Medgate, was used as a primary management tool. **Results:** Results were compared with the previous year among the target population and with company business units not participating in the program. The program resulted in a 10% reduction in total absence days per employee (6.9 to 6.2) compared with the previous year, whereas business units not using the program had an 8% increase (5.5 to 5.9). This disability management program resulted in a more than four to one return on investment based on direct expenditures and cost savings in terms of reduced absence days. **Conclusions:** The inhouse disability management program was successful by absence duration, employee satisfaction, and return on investment criteria. (J Occup Environ Med. 2006;48:497–504)

Unexpected nonoccupational absence costs corporate America billions of dollars annually. Consider that employers spent an average of 15% of payroll on absence in 2002, and every day, 3% to 6% of any given workforce is absent as a result of unscheduled issues or disability claims.¹ To accommodate these absences, companies commonly overstaff by 10% to 20% and set aside between 4% and 6% of their total budget to pay for absenteeism.¹ To put the potential cost of absenteeism in perspective, the cost of unscheduled absences and nonoccupational disability in the United States was estimated to be \$1323 per employee in 1998.²

In light of this, there has been a gradual shift toward the management of nonoccupational workplace absences in the United States. This is a time when to remain competitive, companies must find ways to produce more with less human capital. This makes it more important for companies to have a full complement of healthy and productive workers. In today's marketplace, nonoccupational illness and injuries must be managed as a competitive advantage, not accepted as a cost of doing business; must focus on employee abilities, not viewed as an entitlement; must be developed as an integrated set of processes, not managed piecemeal by independent departmental silos; and must take advantage of advancing computer technologies.

This article reports on key aspects of the Shell Oil Company's dis-

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TABLE 1
Study Population* Characteristics

	Managed-All (n = 13,153)	Managed-Refining (n = 6166)	Managed-Nonrefining (n = 6987)	Nonmanaged (n = 9726)
Age				
<30	638 (5%)	280 (5%)	358 (5%)	552 (6%)
30-39	2,437 (19%)	966 (16%)	1,471 (21%)	1,757 (18%)
40-49	4,378 (33%)	1,885 (31%)	2,493 (36%)	3,493 (36%)
50-59	4,868 (37%)	2,614 (43%)	2,254 (32%)	3,441 (35%)
60-69	823 (6%)	421 (7%)	411 (6%)	483 (5%)
Sex				
Male	10,423 (79%)	5,353 (87%)	5,070 (73%)	6,763 (70%)
Female	2,730 (21%)	813 (13%)	1,917 (27%)	2,963 (30%)
Job category				
Manager/professional/office	6,024 (46%)	1,776 (29%)	4,248 (61%)	6,523 (67%)
Operations/maintenance/sales	7,129 (54%)	4,390 (71%)	2,739 (39%)	3,203 (33%)
Employee status				
Staff	7,989 (61%)	2,408 (39%)	5,581 (80%)	8,332 (86%)
Hourly	5,164 (39%)	3,758 (61%)	1,406 (20%)	1,394 (14%)

* As of December 31, 2002.

ABILITY Management Program (DMP) development and the clinical, financial, and customer satisfaction outcome statistics after 12 months of full program implementation. We also present our program model for a large, diffusely located corporation using centrally located certified case managers working together with numerous onsite occupational health nurses.

Background

Shell Oil Company USA (“the Company”), and its subsidiaries, is one of the largest petrochemical companies in the United States. In 2003, the Company employed approximately 23,000 individuals. Shell Health Services provides health and medical services and support for the Company.

A key service of Shell Health Services is implementation of the DMP. In the context of this article, disability management can be defined operationally as “an active process for minimizing the impact of an impairment (resulting from injury, illness, or disease) on the individual’s capacity to participate competitively in the work environment.”³ The program focuses on what the employee can do versus what he or she cannot do, hence the use of the visual imprint of disABILITY Management.

Before 2000, there had been no formal internal or external nonoccupational disability management within the Company. In 2000, a major business unit of the Company elected to outsource nonoccupational absence management. The program was terminated in 2002 as a result of dissatisfaction with absence results and employee dissatisfaction with the processes. This major Company business unit decided to develop and use an inhouse DMP. The DMP was launched in the third quarter of 2002 and fully implemented in January 2003. The DMP connects all the stakeholders that must be involved in successfully returning the employee to his or her normal life activities, including work. Key stakeholders are the employee, the supervisor, the employee’s physician, Shell Health Services, Human Resources, Benefits, and Legal.

The DMP was developed with the following objectives:

1. To identify and track employee lost time
2. To quantify meaningful measures of disability lost time and direct costs
3. To decrease disability costs by using proven management practices
4. To apply company benefits consistently to all employees

5. To ensure employees receive prompt and proper medical care
6. To increase employee ability for a safe and timely return to work
7. To motivate employees to take ownership of their health
8. To improve the relationship with the external medical community
9. To increase employee retention, morale and job satisfaction

Materials and Methods

Study Populations and Resources

Nine occupational nurses, each located at a petroleum refinery, and two full-time corporate-certified case managers administered the program. Both are referred to as case managers in this paper. Study population characteristics can be seen in Table 1. The nine refineries employed approximately 6200. The majority of employees at refinery locations were blue collar hourly paid employees involved in the operations and maintenance of the refineries. The amount of time that each refinery nurse had to devote to the DMP varied given other medical support responsibilities. It had been expected that refinery nurses would devote at least 20% of their time to the DMP. The certified case managers were located at Company headquarters and had ac-

cess to departmental corporate physicians. The corporate case managers provided minimal direct case support to the location nurses but were available for requested assistance. The two corporate case managers managed another approximately 7000 employees diffusely distributed throughout the United States. The employees managed by corporate case managers were nonrefining, primarily white collar staff, employees (Table 1). One corporate occupational physician and one program manager each assisted the corporate case managers part-time. The characteristics of these approximately 9800 nonmanaged employees were similar to the managed nonrefining employee population with respect to age distribution, gender, job category, and employee status (Table 1).

Employee demographics, absence entry, and case management documentation for the managed populations were recorded and maintained in separate but linked databases. A commercially available case management tool, Medgate (Toronto, Ontario, Canada), was purchased to manage all cases. Medgate is linked to the Official Disability Guidelines, and data obtained from this source was used for the return-to-work portion of case management.

Statistics

Company business units that participated in the program were compared pre- and postprogram implementation. Key statistics are shown in Table 2. The statistics used in this study were average days of absence per employee and percentage change comparisons from 2002 to 2003. Results for absences of shorter (1–3 days) and longer duration (4+ days) are presented separately, because only absences of 4 or more days were handled by case managers. Changes in the length of absences of 4 or more days are a direct indication of case management and employee interventions.

DMP Processes

Training programs were developed for employees, supervisors,

TABLE 2
2003 to 2002 Change in Average Days of Absence* Between Managed and Nonmanaged Business Units

	2002	2003	Percent Change
Managed			
Refining			
Midyear population	6,205	6,098	
Average absence days			
As a result of 1- to 3-d events	2.33	2.93	+25.7
As a result of 4+-day events	7.33	5.99	-18.3
Total	9.66	8.92	-8.7
Nonrefining			
Midyear population	7,888	6,573	
Average absence days			
As a result of 1- to 3-d events	1.10	1.06	-3.6
As a result of 4+-day events	3.70	2.65	-28.4
Total	4.80	3.71	-22.7
Refining and nonrefining			
Midyear population	14,093	12,671	
Average absence days			
As a result of 1- to 3-d events	1.64	1.96	+19.5
As a result of 4+-day events	5.30	4.26	-19.6
Total	6.94	6.22	-10.4
Nonmanaged			
Midyear population	9,621	9,910	
Average absence days			
As a result of 1- to 3-d events	1.46	1.65	+13.0
As a result of 4+-day events	4.04	4.28	+5.9
Total	5.50	5.93	+7.8

* Per employee.

timekeepers, and human resources representatives. Supervisors were encouraged to work toward returning the employee to work as soon as medical and safety conditions would allow. Process responsibility flowcharts were critical training tools. The need for correct and prompt time entry and timely submission of a completed medical certification form was emphasized. The medical certification form required the employee's physician to provide the cause of absence, next appointment date, and any work restrictions. Receipt of a medical certification form is a critical step in the DMP because its content dictates the most appropriate management strategy.

All absence days were recorded, but only absences lasting 4 or more days in duration were identified for case management and required submission of a medical certification form. The process for employee reporting and actions is shown in Figure 1.

The case manager is trained to act first and foremost as an advocate for the employee, regardless of the management process used. The case manager plays a critical role by assisting employees to navigate through the complicated internal and external medical and benefit plans maze, to assume personal ownership for their health, to understand the medical and recovery aspects of their illness or injury, and to understand Company policies and their implied expectations. They also provide ongoing health professional availability, even after the employee may have returned to work. It has been shown that successful programs focus on the employee—bringing the employee back to health and then back to work. The goal should be to create win/win situations for both employers and employees.³

The case managers use the Official Disability Guidelines contained within Medgate to determine an ap-

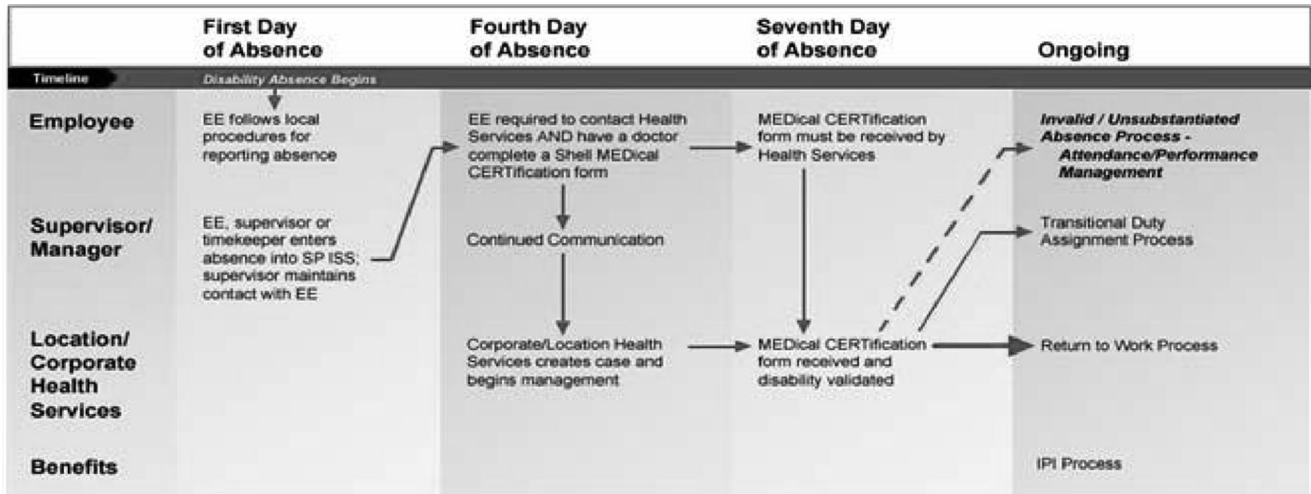


Fig. 1. disABILITY Management Program process.

appropriate management strategy and possible return-to-work date. The case manager determines the availability of transitional duty for all cases with expected absence days in excess of 10 calendar days. The treating physician is contacted if the expected days according to the Official Disability Guidelines and the treating physician's recommended return-to-work date differ by more than 20% to understand and resolve the discrepancy.

Communications

DMP results are communicated throughout the organization on a quarterly basis. It is critical to involve senior management, and they must consider themselves as part of the DMP team. Periodically communicating results to senior management helps ensure a "trickle down" a message of the importance of the DMP and the continued need for adherence to its process requirements. Data and reporting systems for senior management are important for three major reasons: 1) to highlight areas for potential intervention and improvement so that priorities can be set and the potential for savings can be quantified; 2) to provide ongoing reporting and data monitoring so that senior business managers can be held accountable for im-

proved performance; and 3) to evaluate outcomes, return on investment, and potential areas for further investment.² In addition, a comprehensive year-end Company health report is also developed and distributed to management, but it is beyond the scope of this article to provide any details.

Customer Satisfaction Survey

An Internet-based (SurveyMonkey.com) customer satisfaction survey was designed to address three key areas; 1) program communication, 2) DMP processes, and 3) case manager activities. At the end of the year, surveys were sent randomly and confidentially to 20% of employees ($n = 380$) with one or more absences of 4 or more days during the year. The survey consisted of 18 questions and took less than 5 minutes for the employee to complete. Employees did have the option of providing their name should they have wanted to speak with someone about the program. Survey questions and response options are shown in Table 3.

Results

Absence Statistics

At the end of 2003, Company business units using the DMP showed

substantial improvement in average total days of absence and extended absences (4 or more days) compared with the previous year. The quantitative differences between Company business units using and not using the DMP are shown in Table 2 and graphically highlighted in Figure 2. Company business units using the program had a 10.4% decrease (6.9 to 6.2 days) in average days of absence, whereas those not using the program had a 7.8% increase (5.5 to 5.9 days). The impact of case management is even more striking when one examines extended absences, especially among demographically similar populations. The managed nonrefining population exhibited a 28% decrease in average days lost as a result of 4+ days absences; whereas the nonmanaged employees had a 6% increase in the average absence days per employee for extended absences.

Cost Savings

The direct cost savings attributable to the DMP was determined using an average daily wage for the entire workforce. The average daily wage for all managed employees in 2003 was \$250 per day. Because there was a 0.7-day difference in average total absence days between 2003 and 2002, it can be estimated that 9123

TABLE 3
Customer Satisfaction Survey Questions and Response Options

How helpful was the DMP? (very, somewhat, neutral, not)
 How satisfied were you with the way the program requirements were communicated to you? (very, somewhat, neutral, not)
 Was it easy to report your absence? (very, somewhat, neutral, not)
 Are you satisfied that the nature of your disability was kept confidential? (yes, no)
 Did you find the medical certification form easy to obtain (yes, no), understand (yes, no), and return (yes, no) to Shell Health Services?
 Was your care manager courteous, respectful, friendly, and professional towards you? (yes, no)
 Was your care manager knowledgeable about the medical aspects of your disability? (Yes, No)
 Did your care manager respond to your needs and questions in a timely manner? (yes, no)
 Did your care manager return your calls within 1 business day? (yes, no)
 Did you use the toll-free phone number to contact your care manager? (yes, no)
 Which description best summarizes your experience with the toll free phone system? (not used, very easy, somewhat easy, difficult)
 How helpful was the DMP in helping you return to work in an appropriate length of time? (very, somewhat, neutral, not)
 Did you return to work at full or transitional duty on your first day back to work? (full, transitional)
 If you returned to work on transitional duty, did it help you ease back to full duty? (yes, no)
 Who entered your absence into Shell People? (you, timekeeper, supervisor, unknown)
 When was the absence entered into Shell People? (before, during, after return to work, unknown)

Notes: Survey as developed using SurveyMonkey.com, an Internet survey development and administration tool. Surveys were sent randomly to 20% of employees with at least one absence of 4 or more days.

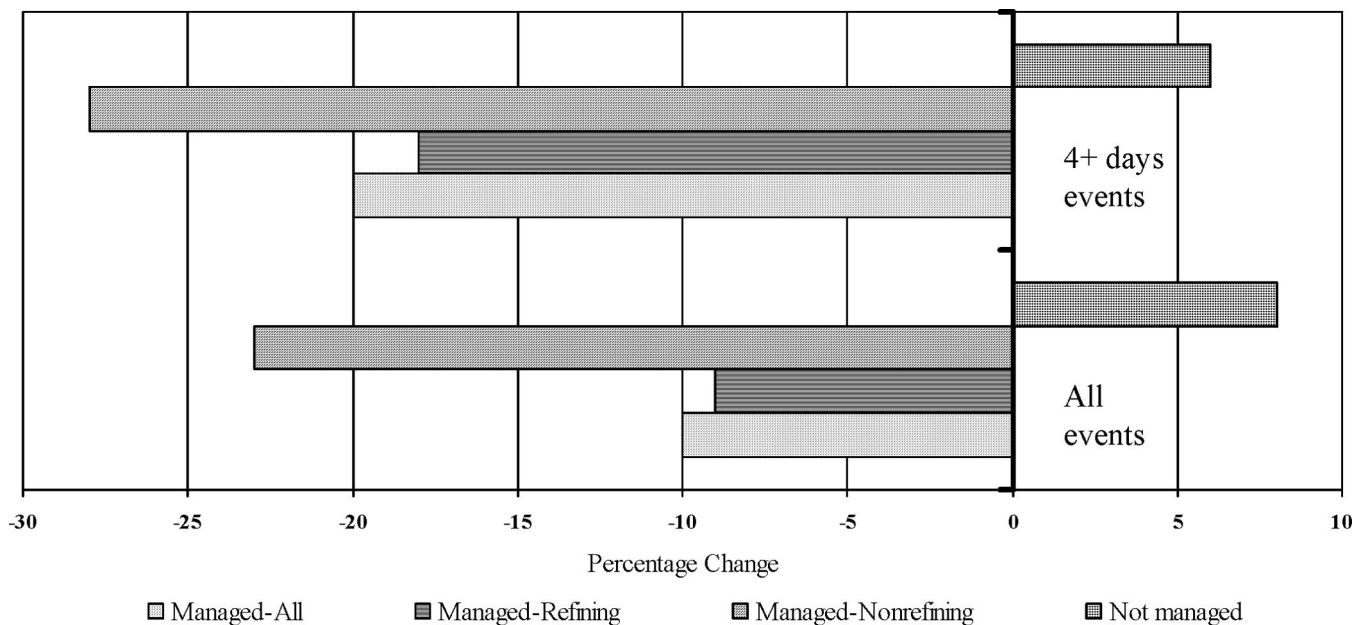


Fig. 2. Percentage change between 2002 and 2003 in average days of absence.

days were “saved” in 2003. In other words, there was an increase of 9123 workdays relative to 2002 in which employees were paid for productive work rather than being paid for short-term disability. Cumulatively, this resulted in a direct cost savings of approximately \$2,300,000. This value does not consider indirect cost savings, which include overtime pay, replacement hiring and training, and gains in productivity.

The disABILITY Management Program resulted in a more than four to

one return on investment based on direct expenditures of approximately \$500,000 and the stated savings of approximately \$2,300,000. Personnel resources, including Company-paid benefits, consisted of two full-time case managers (\$200,000), nine location nurses allocating 20% of their time to the program (\$120,000), 40% of a senior manager’s time (\$63,000), and a minimal percentage of time of a corporate physician, epidemiologist, and administrative assistant (\$52,000). Other direct costs included the pur-

chase of the Medgate Internet-based case management tool, miscellaneous information technology support, office space rent, office computers, and office supplies (\$65,000).

Customer Satisfaction

Completed surveys were obtained from 50% (*n* = 190) of those who received it. A high level of employee satisfaction was received for most program elements. Overall, there was less satisfaction among employees managed by manufacturing location onsite

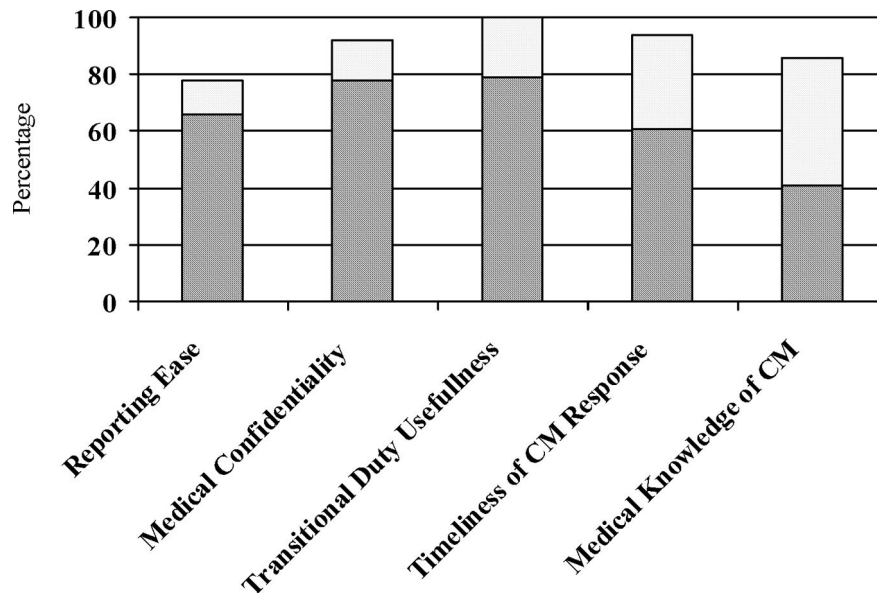


Fig. 3. Level of employee satisfaction with key program elements.

nurses than for those nonmanufacturing locations managed by corporate-located certified case managers (Fig. 3). Onsite nurses received lower satisfaction scores for timeliness of response and medical knowledge of employee-specific diagnoses. Regardless of who managed the absence, a high level of satisfaction was expressed in the ease of reporting the absence, use of the medical certification form, the transitional duty process, professionalism, and assurance of medical confidentiality, the satisfaction level being somewhat higher in all parameters for the cases managed by the certified case managers (Fig. 3).

Discussion

Our results are similar to those of Doheny after 1 year of DMP implementation.⁴ They had documented a savings of 25% in the direct cost of absence and a 20% reduction in the length of long-term absences. We demonstrated a 20% reduction in absence days per employee resulting from absences of 4 or more days. Furthermore, the results indicate that two of the program goals, a reduction in direct disability cost and the length of extended absences, can be accomplished with a high level of employee satisfaction.

Managed refining and managed nonrefining business units exhibited 9% and 23% reductions in total absence days and 18% and 28% reductions in average total absence days and extended absences, respectively. However, it is interesting to postulate why there was a large difference in total absence days per employee at the end of the year between the two different managed populations, refining (8.9 days) and nonrefining (3.7 days). It is possible that Company cultural differences factor into this discrepancy. The impact of organizational cultural differences on absenteeism has been previously demonstrated.¹ The problem is that behavioral and organizational factors influence an employee's "absence behavior." Market research, survey statistics, and real-life company case studies indicate the organization plays a much larger role in causing employees to withdraw and drive absences than previously understood.¹

Alternatively, it is possible that blue collar work populations have a higher prevalence of health risk factors than white collar workers. There is evidence that the prevalence of smoking, high blood pressure, and obesity is more apparent among blue collar populations.^{5,6} It is also possi-

ble that the 12% difference in the distribution employees 50 years and older may have impacted the final results (Table 1).

We were fortunate in that we had two employee populations that were demographically similar. They were similar with regard to age distribution, gender, job category, and employee status (Table 1). However, one population had been managed, ie, nonrefining, whereas the other was not. Perhaps the most important set of data points supporting an in-house DMP is the difference in absence statistics between these two groups (Table 2). This is most evident in the extended absence results.

Disability management programs that focus solely on lost days and early return to work may peak at some point after program implementation. This peak, depending on preimplementation absence management practices, occurs during the first 1 to 2 years. Mobley et al had found that at 18 months, a steady state appears to be attained that presumably reflects a point of maximum benefits resulting from the sum total of all interventions. After 3 years of follow up, a plateau state was achieved for both total disability as well as the three-component disability leave rates. These trends were

highly statistically associated with a Poisson random variable distribution for total disability, extended disability, and workers' compensation during the first 72 to 100 weeks.⁷ In this context, it is important to understand why employees are absent from work so that further improvement in the health of the workforce can occur.

The reduction of average absence days from 6.94 days in 2002 to 6.22 days in 2003 among employees participating in the disability management program is likely to be a combination of the true program effect and the employees' awareness of the program, which may have influenced their absence behavior (ie, a possible Hawthorne effect^{8,9}). Therefore, the return on investment reported in this study could have been overestimated. The impact of the DMP will continually be evaluated in the coming years. The improvement in absence days resulting from a potential Hawthorne effect will be monitored, because the positive outcomes may taper off in a few years and eventually return to original pre-DMP levels.

Our program has been designed to be dynamic. We have focused our initial efforts toward process efficiency and promotion of transitional duty. One of the goals of our DMP is to motivate and assist employees to take ownership of their health. Case managers had done this on an informal basis during the first year of program implementation. A concerted effort has now been made to accurately track absence length for major diagnostic codes and procedures and to compare them with the Official Disability Guidelines. This will be a good measure of both employee and case manager efforts. Information is now made available to assist the employees in managing their specific conditions and to promote their level of fitness. For example, case managers contact employees who are absent from work on multiple occasions as a result of uncontrolled diabetes or hypertension. Case managers discuss their disease management with them and provide

them with several informational resources. Company-prepared brochures are now provided to pregnant women, employees with low back conditions, and employees with chronic depression to help them manage their conditions and be better prepared for an uncomplicated recovery and a return to work. The goal is for employees to view case managers as an available health resource who will be approachable and knowledgeable in ways that improve the health of the workforce—one employee at a time if necessary. We want to encourage employees to be proactive in their own health management using inhouse case managers as a valuable resource. The success of the program will be monitored and measured over time.

Companies are often faced with the dilemma of insourcing or outsourcing disability management programs. Employers often dismiss insourcing because they do not realize the cost/benefit ratio or they want to distance themselves, at least theoretically, from difficult “people” decisions. However, to effectively manage absence, employers should control (and own whenever feasible) medical management and return-to-work decisions. This becomes more important as these decisions percolate through the organization's administration of legislatively required programs such as the Family and Medical Leave Act (FMLA) and the Americans with Disability Act (ADA).¹⁰ An inhouse, fully integrated DMP reduces the likelihood of employee and administrative confusion and errors that can often result from separate, but linked, programs being outsourced to several different vendors, eg, workers' compensation, short-term disability and long-term disability. This was certainly the case in our company. Insourcing the DMP also instills a sense of ownership and creates an enhanced sense of teamwork throughout the organization by eliminating functional silos. The program is doomed to inefficiencies if inhouse cooperation is lacking.

There are a few hurdles that must be addressed or overcome when an inhouse DMP is implemented. Employees must be informed and believe that their medical information will remain confidential at every DMP process step. Second, employees must trust that their fellow employees, who administer the DMP, are first and foremost advocates for their health and well-being. Finally, senior management must be convinced that the DMP can be efficient, cost-effective, and readily accepted by employees. These potential concerns about developing an inhouse DMP can often be easily overcome by gathering important pre- and postprogram metrics, by conducting thorough training, and by regular communications to all employees.

We believe that the DMP is best administered by dedicated inhouse staff and that this is best done by a core group of dedicated case management professionals supporting manufacturing plant nurses. We believe this model is most efficacious and efficient for a large corporation with widely dispersed locations. Location nurses have too many other responsibilities to be expected to implement all aspects of a DMP without outside (corporate) assistance. We have modified our program to include the turnover of difficult cases, either medically or administratively, to certified corporate case managers. Furthermore, all location and corporate case managers are required to use the same management system, Medgate, for case management. This allows for review of difficult cases by fellow case managers who may be able to assist. This is also an excellent training tool for new and existing case managers.

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