



# LOST DAYS AND PRODUCTIVITY IMPACT OF GOUT

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## BACKGROUND

- Gout is thought to affect approximately 5.1 million US adults, and its prevalence is thought to be increasing due to increased risk factors.<sup>1</sup>
- The potential cost to employers of gout due to acute flares, recurrent attacks, and development of chronic complications is substantial.<sup>2</sup>
- Little research is currently available on the economic impact of gout on the workplace.

**Goal:** To evaluate the impact of gout on employers in terms of workplace absence and decreased productivity.

## METHODS

**Data Source:** The Human Capital Management Services Research Reference Database (HGMS RRD<sup>®</sup>), a dataset of approximately 250,000 employees representing retail, service, manufacturing, and financial industries. Data was collected from 2001-2004 adjudicated claims, payroll, and demographics for sick leave, short-and long-term disability and workers' compensation. Index date for employees with gout was that first associated with the diagnosis (defined as an ICD-9 code of 274.xx). An average index date was assigned to the non-diseased group based on data found for the gout cohort.

**Data Analysis:** Lost time was calculated using a 2-stage regression technique controlling for age, gender, salary, tenure, exempt status, full-time/part time status, race, marital status, region (10 major Zip Code areas), and co-morbidities. At-work productivity was calculated using a generalized linear regression model, controlling for the above variables.

## RESULTS

- Data was available on 1,171 employees with gout and 247,867 employees without gout.
- Gout prevalence was 0.47%
- Employees with gout had 4.56 more sick days than those without gout.
- Employees with gout averaged 3.51% less units processed per hour than employees without gout ( $P=0.4939$ ), and 2.02% fewer units processed per year ( $P=0.7758$ ).

**RESULTS** TABLE 1: Employee Demographics

	EMPLOYEES WITH GOUT <sup>†</sup>		EMPLOYEES WITHOUT GOUT <sup>†</sup>	
VARIABLE	N	MEAN	N	MEAN
Age (at index date)	1,171	45.91	247,849	40.41
Tenure (at index date)	1,171	12.79	247,867	9.73
Gender (%)	1,171		247,867	
Female (%)		15.0%		45.7%
Male (%)		85.0%		54.3%
Married (%)	1,087	66.1%	225,037	56.6%
Ethnicity:	736		170,951	
White (%)		71.7%		65.4%
Black (%)		15.5%		19.6%
Hispanic (%)		5.8%		9.7%
Exempt (%)	1,171	36.0%	247,859	29.5%
Full Time (%)	1,171	94.4%	247,867	86.6%
Annual Salary (\$)	1,145	\$61,361	244,397	\$50,314

Differences between cohorts significant ( $P < 0.05$ ) for all demographic variables

<sup>†</sup> For employees with gout, the index date is the date of the first gout Diagnosis (ICD-9 274.xx) in the study period.

<sup>‡</sup> For employees without gout, the index date is the average index date based on the group of employees with gout.

**TABLE 2:** Comparison of Annual Lost Days per Employee

	EMPLOYEES WITH GOUT <sup>†</sup>		EMPLOYEES WITHOUT GOUT <sup>†</sup>			
COST CATEGORY <sup>‡</sup>	N	ADJUSTED MEAN DAYS LOST	N	ADJUSTED MEAN DAYS LOST	DIFFERENCE IN DAYS LOST	GOUT VS. NON-GOUT P-VALUE <sup>‡</sup>
Sick Leave	600	6.34	123,461	3.56	2.78	< 0.0001
Short-term Disability	484	6.21	102,234	3.18	3.03	0.0003
Long-term Disability	822	0.20	177,477	1.65	-1.45	< 0.0001
Workers' Compensation	1,085	1.64	224,723	1.44	0.20	0.4950
Total		14.39		9.82	4.56	

<sup>†</sup> For employees with gout, the index date is the date of the first gout diagnosis (ICD-9 274.xx) in the study period.

<sup>‡</sup> For employees without gout, the index date is the average index date based on the group of employees with gout.

<sup>‡</sup> Differences are considered significant if  $P < 0.05$ .

**Table 3.** Productivity Comparisons of Work Processed Per Hour and Per Year

	EMPLOYEES WITH GOUT <sup>†</sup>	EMPLOYEES WITHOUT GOUT <sup>†</sup>
<b>Productivity Output<sup>#</sup></b>	<b>N=86</b>	<b>N=27,472</b>
Per Hour		
Mean Adjusted <sup>†</sup> units-processed-per-hour	17.85	18.50
Standard error	0.93	0.05
95% Confidence Interval	[16.03-19.67]	[18.39-18.60]
P-Value <sup>#</sup> (Gout vs. Non-Gout, Hourly)	0.4939	
Per Year		
Mean Adjusted <sup>†</sup> units processed per year	27,482	28,049
Standard error	1,963	112
95% Confidence Interval	[23,635-31,329]	[27,829-28,268]
P-Value <sup>#</sup> (Gout vs. Non-Gout, Annually)	0.7758	

<sup>†</sup> For employees with gout, the index date is the date of the first gout diagnosis (ICD-9 274.xx) in the study period.

<sup>‡</sup> For employees without gout, the index date is the average index date based on the group of employees with gout.

<sup>#</sup> Productivity output measurements come from real worker output data. This data provides the number of units processed (units of work performed) for each employee on a daily basis. The populations in this study were restricted to those employees with productivity data. Outliers (> 4 standard deviations) were removed.

<sup>†</sup> Productivity output measurements shown are adjusted by using regression modeling and by controlling for age, tenure, gender, marital status, race, exempt status, full-time/part-time status, salary, location, and Charlson Comorbidity Index. Differences in adjusted units processed per year between employees with gout and employees without gout are statistically significant if  $P < 0.05$ .

## CONCLUSIONS

- Employees with gout have significantly greater sick leave and short-term disability than employees without gout. Using the prevalence rate of 0.47% calculated for this dataset, total annual lost days across the 64% of the US population (aged 18 years to 64 years) that are insured by an employer can be estimated at approximately 2.527 million days.<sup>3</sup>
- No significant differences were noted in productivity measures. These analyses were limited by sample size and difficulty in determining measures to evaluate this metric in "white collar" positions.
- The study suggests that further research is needed to evaluate the drivers of lost time and productivity in gout patients.
- Better management of gout may be required to improve the health and productivity status of the employee with gout.

## REFERENCES

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