

COST COMPARISONS BY PLACE OF SERVICE FOR PERSONS WITH AND WITHOUT GOUT

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ABSTRACT

PURPOSE: To compare the costs associated with care among employees with and without gout by place of service where care is received.

METHODS: A retrospective analysis of a 2001 to 2004 employer database containing payroll and demographic data, medical and pharmacy claims, and lost time and work output data was performed. Annual healthcare costs for employees with gout and without gout were compared for care received in six different place of service categories: doctor's office, inpatient hospital, outpatient hospital or clinic, emergency department, laboratory, and other. Two-stage regression models were used to compare each category of costs between employees with and without gout. Age, gender, marital status, race, salary and other job-related variables, region of the United States, and the Charlson Comorbidity Index were considered for inclusion in the models as independent variables to control for possible confounding differences between the gout and non-gout cohorts. Two stages were used in the regressions to model both the likelihood of having cost in the given place of service (logistic regression) and to model the amount of cost in that place of service (generalized linear models). This methodology accounts for non-normal healthcare cost distributions better than do other simpler methods.

RESULTS: Data were available for 309 employees with gout and a control group of 62,690 employees without gout to explore costs within the places of service for their medical care. Significantly higher annual costs ($P < 0.0005$) were found for the gout cohort for care received at the doctor's office (\$1160 for employees with gout versus \$655 for employees without gout), Inpatient Hospital (\$1371 versus \$615), Outpatient Hospital or Clinic (\$1798 versus \$844), and laboratory (\$18 versus \$6). Non significant differences ($P > 0.05$) were found for care in the emergency department (\$33 for employees with gout versus \$26 for employees without gout) and other locations (\$50 versus \$37). Age, gender, marital status, race, full-time versus part-time status, salary, and region also had significant impacts on cost in most of the regression models.

CONCLUSIONS: Gout patients have higher costs of care throughout the health-system's places of service. The cost differences are significant for most service locations. Because gout patients' costs are higher in every service location, coordination among health providers is essential for the overall care and treatment of patients with gout.

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OBJECTIVE:

To compare the costs associated with care among employees with and without gout by place of service.

BACKGROUND:

- Gout is the most common form of inflammatory joint disease in men aged 40 years and older.¹
- Gout usually presents acutely with the clinical picture of a patient with a painful, warm, erythematous, monoarticular joint inflammation, generally in the lower extremities.²
- There is little research available as to the burden of illness of gout in an employed population.
- Gout is thought to be increasing in prevalence, in part, secondary to increased risk factors such as obesity, alcohol consumption, hypertension, end-stage renal failure, and use of predisposing medications such as aspirin and thiazide diuretics.³
- Little is known about the annual cost of care of gout per employee by location of medical service.

METHODS:

Data Source:

- Data was obtained from the Human Capital Management Services Research Reference Database (HCMHS RRD^b) of approximately 250,000 employees using 2001-2004 adjudicated claims, payroll, and demographics data.
- Point of service categories included: doctor's office; inpatient hospital; outpatient hospital or clinic; emergency department; laboratory; and other.

Data Analysis:

- Costs were calculated using a 2-stage regression technique.
- First, logistic regression was used to model the likelihood of cost generation in the given place of service.
- Then, generalized linear models were used to model the actual amount of cost generated in the place of service.
- Models controlled for age, gender, marital status, race, salary and other job related variables, region, and Charlson Comorbidity Index.
- Cost differences were considered statistically significant at the $P \leq 0.05$ level.

RESULTS

- Point of service data was available for 309 persons with gout and 62,690 persons without gout (Table 1).
- All demographic comparisons between the two groups, except the percent black, were statistically significant ($P \leq 0.05$; Table 1).
- The prevalence of gout was 0.49% in the sample cohort.
- All costs by place of service were greater for employees with gout (Table 2 and Figure 1) than employees without gout.
- All cost differences were significant ($P \leq 0.05$) except for those generated in the emergency department and the other locations category.

TABLE 1: Employee Demographics (during the year following each subject's index date[†])

	EMPLOYEES WITH GOUT (n=309)		EMPLOYEES WITHOUT GOUT			
Variable	Mean	95% Confidence Interval	N	Mean	95% Confidence Interval	Δ in Means [‡]
Age (at index date [†])	46.19	[45.12-47.25]	62,672	41.88	[41.80-41.96]	4.31 [*]
Tenure (at index date [†])	9.53	[8.63-10.43]	62,690	8.27	[8.21-8.33]	1.26 [*]
% Female	26.9%	[21.9%-31.8%]	62,690	65.5%	[65.1%-65.9%]	-38.7% [*]
% Married [†]	67.9%	[62.6%-73.1%]	62,658	54.9%	[54.5%-55.3%]	12.9% [*]
Ethnicity:						
% White	74.4%	[69.5%-79.3%]	62,689	66.7%	[66.3%-67.0%]	7.8% [*]
% Black	9.7%	[6.4%-13.0%]	62,689	11.1%	[10.9%-11.4%]	-1.4% [*]
% Hispanic	9.1%	[5.6%-12.3%]	62,689	13.9%	[13.6%-14.1%]	-4.8% [*]
% Exempt	51.1%	[45.5%-56.7%]	62,690	35.8%	[35.4%-36.2%]	15.3% [*]
% Full Time	98.4%	[97.0%-99.8%]	62,690	95.2%	[95.0%-95.4%]	3.2% [*]
Annual Salary (\$) [†]	\$79,983	[\$67,133-\$92,934]	62,630	\$54,954	[\$54,548-\$55,361]	\$25,029 [*]

[†] For employees with disease, the index date is the date of the first gout diagnosis (ICD9 274.xx) in the study period. For employees without disease, the index date is the average index date based on the group of employees with disease.

[‡] One employee with Gout did not provide marital status; N=308.

^{*} Significant difference $P < 0.05$.

TABLE 2: Differences in Annual Cost of Care per Employee by Place of Service (during the year following each subject's index date[†])

PLACE OF SERVICE	COST DIFFERENCE [§]	P VALUE [¶]
Doctor's office	\$505	< 0.0001
Inpatient hospital	\$756	0.0005
Outpatient hospital or clinic	\$954	< 0.0001
Emergency department	\$7	0.4391
Laboratory	\$12	< 0.0001
Other locations	\$13	0.1363
Total	\$2,247	

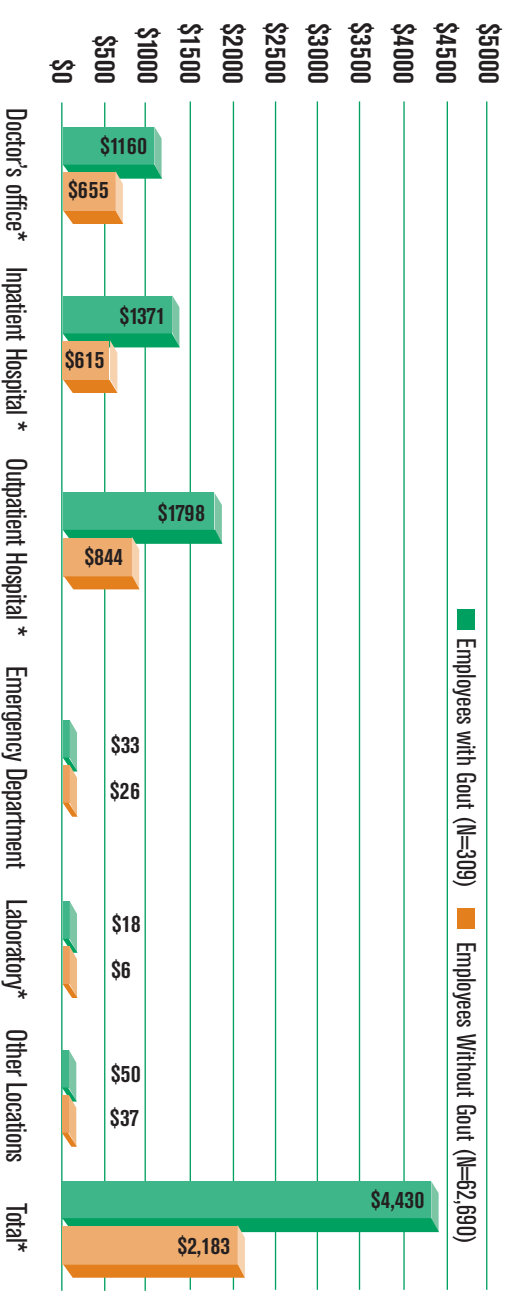
[†] For employees with disease, the index date is the date of the first gout diagnosis (ICD9 274.xx) in the study period. For employees without disease, the index date is the average index date based on the group of employees with disease.

[‡] Employees with gout: n=309; Employees without gout: n=62,690.

[§] Costs controlled for by age, gender, annual salary, tenure, exemption from over-time status, race, marital status, location, and Charlson Comorbidity Index.

[¶] Differences considered significant at $P \leq 0.05$.

Figure 1: Annual Average Benefits Cost per Employee



CONCLUSIONS:

- Costs per employee with gout for visits to physicians' offices, outpatient clinics, inpatient facilities, and laboratory were significantly higher than for those without gout.
- Emergency department visits costs and other location costs were low, and not significantly different between cohorts.
- Increased incidence of comorbid disease conditions may also account for the increased costs found at all places of service.
- Results of this analysis emphasize the seriousness of gout and the cost of this condition to the employed population.

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