Cost of Illness to the Employer of Gastroesophageal Reflux Disease (GERD): Comparison of Medical, Pharmacy, Sick Leave, Short- and Long-Term Disability, and Workers' Compensation Claims and Medical Claims by Place of Service Between Employees With and Without GERD

Richard A Brook[1], Sara Campbell[2], Peter Wahlqvist[3], Mari-Ann Wallander[3], Nathan L Kleinman[2], Ingela Wiklund[3], James E Smeeding[4]

[1]The JeSTARx Group, Newfoundland, NJ, USA; [2]Human Capital Management Services, Cheyenne, WY, USA; [3]AstraZeneca R&D, Mölndal, Sweden; [4]The JeSTARx Group, Dallas, TX, USA

CONCLUSIONS

- **GERD is associated with substantial direct and indirect costs, of which direct medical costs (excluding prescription medications) contributed 65% of total incremental costs in this study.**
- **These results indicate an opportunity for improved management of patients with GERD that may result in reduced costs from a healthcare, employer and societal perspective.**

INTRODUCTION

- Employers pay for more than just salary for their employees in the form of paid vacations, taxes, and retirement benefits. Other contributions are 'health-related', such as healthcare and prescription drug insurance claims costs, sick leave, short- and long-term disability salary replacement payments while employees are absent because of illness, and workers' compensation medical claims costs and salary replacement payments.[1]
- As a result, to assess the impact of gastroesophageal reflux disease (GERD) from an employer's perspective, a wide array of health-related outcomes must be quantified. Previous studies, however, have largely focused on direct medical and prescription drug costs of GERD, and few have reported on total absenteeism costs.

AIM

- To examine the annual cost of illness of GERD in an employed population, quantifying the impact of the disease on employer costs by examining not only annual health benefit costs per employee for medical and prescription drug claims, but also claims for sick leave, short- and long-term disability, and workers' compensation (indirect costs).

METHODS

- An analysis was performed on data from the Human Capital Management Services (HCMS) Research Reference Database consisting of approximately 350 000 employee records representing the retail, service, manufacturing, and financial industries. Anonymity of person-level data was maintained according to the Health Insurance Portability and Accountability Act guidelines.
- From the database, ICD-9 codes were used to identify employees with a primary, secondary, or tertiary diagnosis of GERD (251.5x, 530.1, 530.10, 530.11, 530.12, 530.19, 530.81, 787.1x and 787.2x). Non-GERD employees were defined as the control group.
- The index date for each employee with GERD was the first date of service associated with the disease. For controls, the index date was the average index date of subjects with GERD.
- For the purposes of the analysis, subjects from the GERD and control groups needed to be continuously employed and eligible for health benefits for at least 1 year after their index date.
- Outcome measures included medical and prescription drug claims, plus payments for absences (sick leave, short- and long-term disability, and workers' compensation).
- For the population subset that had place-of-service data, the direct medical claims were assigned to the following places of service: doctor's office, inpatient (hospital), outpatient (hospital or clinic), emergency department, laboratory, or other.

Statistical analysis

- Two-stage regression analysis was used to model the cost differences between patients with and without GERD using separate regression models for:
  - direct medical costs
  - prescription drug costs
  - absence (indirect) costs.
- The models controlled for population differences in age, tenure (years with current employer), sex, marital status, race, exempt/nonexempt status (exempt employees are not paid on an hourly basis and are not paid for overtime work), full-time/part-time status, salary, Charlson Comorbidity Index[2] and region (defined by the first digit of the employee's postal zip code).
- In the analysis of medical costs and place-of-service data, the models controlled for diagnosis of cancer and human immunodeficiency virus infection instead of the Charlson Comorbidity Index.

RESULTS

- Data were available for 267 269 eligible employees of which 11 653 had GERD. The mean age of employees with GERD was 43 years, and 94% were full-time workers (Table 1).

Table 1. Descriptive statistics for employees with and without gastroesophageal reflux disease (GERD)

Characteristic	Employees with GERD (n = 11 653)	Employees without GERD (n = 255 616)
Mean age at index date, years (SE)	43.2 (0.1)	40.3 (0.02)[a]
Mean tenure at index date, years (SE)	10.2 (0.1)	9.5 (0.02)
Women, %	49.0	42.2
Married, %[b]	61.2	57.6
Race, %[c]		
White	71.6	65.6
Black	13.1	19.3
Hispanic	12.2	10.1
Exempt employees, %	31.0	28.7[d]
Full-time employment, %	93.7	87.5
Mean annual salary (SE), $US[e]	52 993 (987)	49 391 (177)

[a]n = 255 601.
[b]n = 10 653 and n = 230 989 for employees with and without GERD, respectively.
[c]n = 8843 and n = 183 691 for employees with and without GERD, respectively.
[d]n = 255 608.
[e]n = 11 564 and n = 252 255 for employees with and without GERD, respectively.
Abbreviation: SE = standard error.

Table 2. Comparison of annual health benefit costs ($US) per employee with and without gastroesophageal reflux disease (GERD)

Cost category	Employees with GERD		Employees without GERD		*P*-value
	n	Adjusted mean cost	n	Adjusted mean cost	
Direct medical	11 653	$3794	255 616	$1627	< .0001
Prescription drugs	11 653	$922	255 616	$364	< .0001
Sick leave	6172	$498	133 466	$353	< .0001
Short-term disability	5573	$417	118 494	$246	< .0001
Long-term disability	9611	$53	187 191	$26	.0088
Workers' compensation	10 790	$1194	232 281	$906	< .0001
Total		$6878		$3522	< 0.01

- Comparison of annual health benefit costs showed significant differences between employees with and without GERD (Table 2). Direct medical costs, prescription drug costs and workers' compensation were the largest cost drivers.
- GERD was associated with an annual mean incremental cost of $US3355 per employee, of which direct medical costs accounted for 65%, prescription drug costs for 17%, and indirect costs (sick leave, short- and long-term disability, and workers' compensation) for 19% (Figure 1).
- Among evaluable employees with place-of-service data, all comparisons between employees with and without GERD were statistically significant (Table 3).
- Overall, GERD was associated with an annual mean incremental medical cost of $2318 per employee in the place-of-service subset; the largest cost drivers were the 'outpatient (hospital or clinic)' and 'inpatient (hospital)' categories (47% and 28.5%, respectively) (Figure 2).

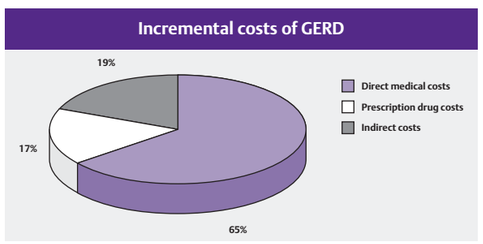

Figure 1. Contribution of direct medical, prescription drug and indirect costs (sick leave, short- and long-term disability, and workers' compensation) to the annual mean incremental cost of gastroesophageal reflux disease (GERD).

Table 3. Adjusted annual cost of healthcare, by place of service, per employee with and without gastroesophageal reflux disease (GERD)

Place of service	Mean annual cost ($US)		*P*-value
	Employees with GERD (n = 5878)	Employees without GERD (n = 80 422)	
Doctor's office	$1081	$581	< .0001
Inpatient (hospital)	$1222	$562	< .0001
Outpatient (hospital or clinic)	$1821	$737	< .0001
Emergency department	$37	$18	< .0001
Laboratory	$21	$12	< .0001
Other	$85	$38	< .0001
Total	$4267	$1949	< .0001

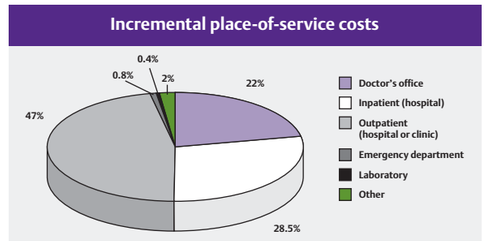

Figure 2. Contribution of place-of-service costs to the annual mean incremental cost of gastroesophageal reflux disease.

REFERENCES

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Supported by AstraZeneca R&D, Mölndal, Sweden.