Work Absences and Costs Associated With Rheumatoid Arthritis: A Comparison Between Employees With and Without Rheumatoid Arthritis in a United States Population

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Abstract

Background/Purpose: Rheumatoid Arthritis (RA) was recently reported to have societal costs in the US of $19.3 billion and $39.2 billion (in 2005 dollars) without and with intangible costs, respectively.[1] However, most indirect components were subjectively imputed. This research was designed to use objective data to quantify the incremental work absence and indirect costs associated with RA in an employed population and compare these absences and costs to controls.

Methods: Employee records from multiple large employers in the US providing data about demographic, job-related information, and health care use in the HCMS database were assessed from 1/1/01 to 6/30/10. Patients with RA were identified by claims with primary, secondary, or tertiary ICD-9 codes of 714.xx, and the date of the first claim was considered the index date. Controls were employees without claims for RA, and their index date was defined as the average index date (by employer) among RA patients. All subjects were required to have 12 months continuous health plan enrollment. Absences and indirect costs were measured for the 12 months following each employee's index date. All costs were adjusted to June 2010 US$. Regression modeling was used to separately compare days absent and indirect costs using 2-part models controlling for demographics, job-related variables, location, and modified Charlson Comorbidity Index.

Results: Out of more than 800 000 employees in the HCMS database, 2705 (0.79% of employees) had RA and 338 035 were controls **(Table 1)**. The incremental indirect costs (RA minus controls, **Table 2**) were: Sick Leave $145; Short-term Disability $249; Long-term Disability $41 ($P$ = .0505); Workers' Compensation $90; and Total $525. Incremental absence days **(Table 2)** were: Sick Leave 1.2; Short-term Disability 1.91; Long-term Disability 0.47 (P >.05); Workers' Compensation -0.01 (P >.05), and Total 3.58. All comparisons P <.01 except where noted.

Conclusion: Employees with RA incur 71% more indirect costs than those without RA and utilize 82% more lost time.

Background

- Rheumatoid arthritis (RA) has been reported to have societal costs in the United States of $19.3 billion not including indirect costs (such as quality-of-life deterioration and premature mortality) and $39.2 billion including indirect costs (values are 2005 US$)[1]
- However, in past analyses, most indirect costs were subjectively imputed using medical claims data to estimate the societal cost of absences from work and using information from literature searches based on published data, jury awards, and life-expectancy estimates to estimate other indirect costs

Objective

- Here, we used objective data collected from an employed population
  - To quantify work absences and indirect costs associated with RA
  - To compare work absences and indirect costs between persons with RA and controls (employees without RA)
  - To estimate the burden of RA in the US civilian labor force

Methods

- Employee records from 1/1/01 to 6/30/10 from multiple large employers in the United States that provided data about demographic, job-related information, and health care use in the Human Capital Management Services (HCMS) database were assessed
- Patients with RA were identified by medical claims with primary, secondary, or tertiary International Statistical Classification of Disease, 9th Revision, codes of 714.xx. The date of the first claim was considered the index date
- Controls were employees without claims for RA. The index date for controls was defined as the average index date (by employer) for patients with RA
- All patients were required to have 12 months of continuous health plan enrollment after the index date
- Absences and indirect costs for sick leave, short- and long-term disability, and workers' compensation were measured for 12 months following each employee's index date
- All costs were adjusted to June 2010 US$ using non–seasonally adjusted Consumer Price Indices (CPIs) for medical services, prescription drugs, and all consumer goods[2]
- Regression modeling was used to compare days absent and indirect costs (separately) using 2-part models that controlled for demographics, job-related variables, geographic location, and modified Charlson comorbidity index (mCCI) score[3]
- Incremental costs (days) were defined as the costs (days) of the employees with RA minus the costs (days) of the employees in the control cohort
- All statistical analyses were 2-tailed with $\alpha = 0.05$
- To estimate the burden of RA on the population of workers in the United States, the prevalence rate, costs, incremental annual absence costs, and incremental annual absence days determined in this analysis were applied to the US civilian labor force of 139.88 million persons in 2009[4]

Results

- Of the more than 800 000 employees in the HCMS database, 340 740 were eligible for inclusion in the study. Of these, 2705 employees had RA, and 338 035 employees were controls **(Table 1)**
  - The observed prevalence of RA was 0.794%

Results (continued)

Table 1. Descriptive Statistics For Employees With and Without RA

Variable	Employees With RA (N = 2705)	Employees Without RA (N = 338 035)	*P*-Value
Age at index date (yrs), mean (SD)[a]	45.13 (10.06)	40.37 (9.94)	<.0001
Sex, %			
Female	61.4	40.9	<.0001
Male	38.6	59.1	<.0001
Marital status, %			
Married	42.5	45.1	.0065
Not married	31.1	32.9	.0436
Missing	26.4	22.0	<.0001
Race/ethnicity, %			
White, non-Hispanic	44.1	41.3	.0036
Black, non-Hispanic	8.6	11.6	<.0001
Hispanic	10.8	6.6	<.0001
Other single race	2.4	3.6	.0007
Missing	34.1	36.8	.0036
Annual salary, mean (SD)[b]	$53 499 ($39 976)	$53 655 ($172 919)	.9629
Tenure at index date (yrs), mean (SD)	9.60 (8.73)	8.92 (8.04)	<.0001
Job classification, %			
Exempt	31.3	33.0	.0614
Nonexempt	68.7	67.0	.0614
Work hours, %			
Full-time	94.6	89.7	<.0001
Part-time	5.4	10.3	<.0001
mCCI score, mean (SD)	0.477 (1.106)	0.129 (0.582)	<.0001

[a]Employees without RA N = 338 017.
[b]Employees with RA, N = 2686; employees without RA, N = 332 333.

- **Table 2** presents the indirect adjusted annual costs and the absence days for both cohorts
  - The incremental indirect costs (RA minus controls) per person were
    - Sick leave: $145
    - Short-term disability: $249
    - Long-term disability: $41 ($P$ = .0505)
    - Workers' compensation: $90
    - Total: $525
  - The incremental work-absence days per person were
    - Sick leave: 1.2 days
    - Short-term disability: 1.91 days
    - Long-term disability: 0.47 days (P = .1136)
    - Workers' compensation: -0.01 days (P = .8715)
    - Total: 3.58 days
  - All comparisons P <.01, except where noted

Table 2. Annual Indirect Costs and Absences For Employees With and Without RA

	Employees With RA			Employees Without RA			*P*-Value	
Component	N	Cost[a]	Days[a]	N	Cost[a]	Days[a]	Cost[a]	Days[a]
Sick leave	1106	$470	3.25	145 354	$325	2.05	<.0001	<.0001
Short-term disability	1562	$466	3.74	188 103	$218	1.83	<.0001	<.0001
Long-term disability	2153	$55	0.74	247 497	$14	0.26	.0505	.1136
Workers' compensation	2440	$271	0.18	312 226	$181	0.19	.0093	.8715
Total (sum above)		$1262	7.92		$737[b]	4.34		

[a]Adjusted mean.
[b]Difference due to rounding.

- **Table 3** summarizes the projections for the work-absence impact of RA on the US civilian labor force
  - Using the 0.79% RA prevalence rate from the current analysis, the incremental annual indirect costs of $525/employee, and the work-absence days of 3.58/employee, RA accounted for
    - An annual incremental increase of US$582.58 million in work-absence costs
    - An annual incremental increase of 4.0 million lost work days (equivalent to more than 15 000 full-time employees)

Table 3. Projections of the Work-Absence Impact of RA on the US Civilian Labor Force

Population Characteristic	US Civilian Labor Force
Base population (million)	139.88
RA prevalence (million, projected)	1.11
Incremental work-absence days (million, projected)	3.98
Incremental annual indirect costs (US$ million, projected)	$582.58

Conclusions

- Compared with employees without RA, employees with RA
  - Incur 71% more indirect costs
  - Exhibit 82% more lost time
  - May account for 4 million additional work-absence days annually in the United States

References

1. Birnbaum H, et al. *Curr Med Res Opin.* 2010;26:77–90.
2. http://data.bls.gov/PDQ/outside.jsp?survey=cu. Accessed April 1, 2011.
3. Charlson ME, et al. *J Chronic Dis.* 1987;40:373–83.
4. http://www.bls.gov/news.release/empsit.t01.htm. Accessed August 3, 2011.

Disclosures

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