

The Economic Burden of Gout: A Systematic Review of Direct and Indirect Costs

Sharan Rai^{1,2}, Aliya Haji^{1,2}, Lindsay Burns^{1,2}, Hyon K. Choi^{1,2,3}

¹Arthritis Research Centre of Canada, ²University of British Columbia, ³Boston University

BACKGROUND

- The prevalence of gout, an excruciating and disabling joint disease has been increasing in recent decades such that it now constitutes the most common inflammatory arthritis in the US.
- A high rate of uncontrolled disease and high comorbidity burden suggest that the economic impact of gout could potentially be substantial.
- To clarify this impact, our objective was to systematically reviewed the literature on the healthcare costs and productivity loss associated with gout.

METHODS

- We conducted a mapped search of MEDLINE, EMBASE, IPA, and CINAHL databases for articles published between Jan 1993 to Jun 2013 that reported either direct or indirect costs of gout, encompassing healthcare utilization and productivity loss, respectively.
- Our search strategy employed mapped subject heading terms together with keywords for unindexed terms relating to the themes of gout and cost.
- Titles and abstracts were reviewed for preliminary inclusion criteria of: 1) full-text, original, published article; 2) gout patient population; 3) direct or indirect cost reported; 4) English language. Non-human studies and case-reports/series were excluded.
- Where possible, data were abstracted and tabulated on annual all-cause and gout-related direct and indirect costs per patient.

DIRECT (MEDICAL SERVICES + PRESCRIPTION) COSTS

Gout Population	All-Cause Healthcare Costs	Gout-Related Healthcare Cost	Country	Cost Year	References
<3 attacks	\$9,009 ^a -\$10,547 ^b	\$192 ^b	USA	2011	Lynch <i>et al.</i> 2013; Saseen <i>et al.</i> 2012
≥3 attacks/year	\$9,748 ^a -\$17,603 ^b	\$870 ^b -\$5,924 ^b	USA	2008-2011	Lynch <i>et al.</i> 2013; Saseen <i>et al.</i> 2012; Wu <i>et al.</i> 2012
≥6 attacks/year	\$25,778 ^b	\$12,620 ^b	USA	2008	Wu <i>et al.</i> 2012
Employees with gout	\$3,985 ^c	-	USA	2001-2004	Brook <i>et al.</i> 2006
SUA <6.0 mg/dL	\$11,365 ^d -\$15,237 ^e	\$332 ^d -\$505 ^b	USA	2002-2010	Halpern <i>et al.</i> 2009; Park <i>et al.</i> 2012; Wu <i>et al.</i> 2008
SUA ≥6.0 and <9.0 g/dL	\$11,551 ^d -\$14,935 ^e	\$353 ^d -\$696 ^b	USA	2002-2010	Halpern <i>et al.</i> 2009; Park <i>et al.</i> 2012; Wu <i>et al.</i> 2008
SUA ≥9.0	\$14,474 ^d -\$18,340 ^e	\$663 ^d -\$723 ^e	USA	2002-2010	Halpern <i>et al.</i> 2009; Park <i>et al.</i> 2012; Wu <i>et al.</i> 2008
Gout patient with tophi	\$22,562 ^b	-	USA	2005	Wu <i>et al.</i> 2008
Gout patients without tophi	\$14,574 ^b	-	USA	2005	Wu <i>et al.</i> 2008
Gout patients ≥65 years of age	\$14,734 ^b	\$876 ^b	USA	2005	Wu <i>et al.</i> 2008
≥3 attacks/year	€ 2,517 ^f	-	Spain	2007	Sicras-Mainar <i>et al.</i> 2013
1-2 attacks/year	€ 2,101 ^f	-	Spain	2007	Sicras-Mainar <i>et al.</i> 2013

MEDICAL SERVICES COSTS

Gout Population	All-Cause Healthcare Costs	Gout-Related Healthcare Cost	Country	Cost Year	References
<3 attacks	\$7,332 ^a -\$8,209 ^b	\$176 ^b	USA	2011	Lynch <i>et al.</i> 2013; Saseen <i>et al.</i> 2012
≥3 attacks/year	\$8,505 ^b -\$14,866 ^b	\$834 ^b -\$5,477 ^b	USA	2008-2011	Lynch <i>et al.</i> 2013; Saseen <i>et al.</i> 2012; Wu <i>et al.</i> 2012
≥6 attacks/year	\$22,516 ^b	\$12,046 ^b	USA	2008	Wu <i>et al.</i> 2012
Employees with gout	\$3,122 ^c	-	USA	2001-2004	Brook <i>et al.</i> 2006

INDIRECT (WORK PRODUCTIVITY LOSS) COSTS

Gout Population	Indirect Cost	Country	Cost Year	References
<3 attacks	\$915 ^a	USA	2011	Lynch <i>et al.</i> 2013
≥3 attacks/year	\$2,021 ^a	USA	2011	Lynch <i>et al.</i> 2013
Employees with gout	\$2,885 ^c	USA	2001-2004	Brook <i>et al.</i> 2006
SUA <6.0 mg/dL	\$3,900 ^b	USA	2006	Edwards <i>et al.</i> 2011
≥3 attacks/year	€ 88 ^f	Spain	2007	Sicras-Mainar <i>et al.</i> 2013
1-2 attacks/year	€ 29 ^f	Spain	2007	Sicras-Mainar <i>et al.</i> 2013

^a Adjusted for age, sex, marital status, race, exempt status, salary, tenure, and region; ^b Unadjusted cost; ^c Adjusted for age, sex, annual salary, tenure, exempt status, race, marital status, location, and Charlson Comorbidity Index; ^d Adjusted for age, sex, insurance, Charlson Comorbidity Index, presence of hypertension, and medication use; ^e Adjusted for age, sex, index year, Charlson Comorbidity Index, and medication use; ^f Adjusted for age, sex, resource utilization, and Charlson Comorbidity Index

RESULTS

- Our search strategy yielded a total of 2,954 unique articles. Of these, 11 studies reporting direct and indirect costs for gout met our inclusion criteria and were included for review.
- 7 studies reported on gout-specific direct costs, and 4 on indirect costs. These data are summarized in the **Table** and below.
- US estimates of the annual direct costs per patient ranged from \$3,985–\$25,778 for all-cause costs and \$192–\$12,620 for gout-specific costs.
- Annual per-patient medical services costs ranged from \$3,122–\$22,516 for all-cause costs and \$176–\$12,046 for gout-specific costs.
- Annual per-patient indirect costs ranged from \$915–\$3,900.
- Patient characteristics associated with increased costs included: 1) ≥ 3 flares per year; 2) serum uric acid levels ≥ 6 mg/dL; 3) presence of tophi.

CONCLUSION

- Overall, the economic burden of gout is substantial, with direct healthcare costs approaching that of other inflammatory arthropathies such as rheumatoid arthritis.**
- There was a paucity of data on indirect costs associated with gout and a lack of standardized cost reporting.**
- Characteristics associated with increased costs generally reflected poorly controlled disease status and were largely modifiable.**
- As gout represents a form of arthritis that can be fully controlled with proper therapeutic approaches, substantial resources could be spared by closing the gap between guideline recommendations and practice.**