Healthcare resource utilization associated with giant cell arteritis in the United States

Rajeshwari S. Punekar[1], Patrick R. LaFontaine[2], John H. Stone[3]

[1]Sanofi, Cambridge, MA, USA; [2]Sanofi, Bridgewater, NJ, USA; [3]Harvard Medical School, Boston, MA, USA

BACKGROUND

- Giant cell arteritis (GCA) is a rare, but potentially dangerous, vascular disease caused by segmentary inflammation of the medium- and large-size arteries, including the ophthalmic, vertebral, distal subclavian, and axillary arteries, as well as the thoracic aorta[1]
- GCA typically affects people aged above 50 years,[2] progresses slowly and may present with recurrent polymyalgia rheumatica (PMR)[3]
- Acute complications of GCA arise from ischemic damage to the optic nerve or acute injury to the aortic wall, which can result in sight loss, aortic aneurysm and stroke[3]
- Prompt and long-term treatment with glucocorticoids is standard of care,[4] however, when the glucocorticoid dose is tapered relapses commonly occur leading to prolonged treatment duration and increased incidence of glucocorticoid-associated adverse events[5]
- Presently, there are limited data on the real-world healthcare resource burden of GCA

OBJECTIVE

- The objective of this study was to assess healthcare resource utilization (HCRU) of patients with GCA compared with a matched, general population cohort

METHODS

Study design

- Data were from the Optum's de-identified Clinformatics® Data Mart Database from January 1, 2006 and June 30, 2018 (study period)
- Patients with ≥1 inpatient or ≥2 outpatient claims (≥30 days apart) with GCA-related diagnosis codes between January 1, 2007 and June 30, 2017 (patient identification period) were included in the GCA cohort; the service date of first GCA medical claim was set as their index date (Figure 1)
- Patients with ≥1 medical claim for RA or PMR diagnosis codes during the study period were excluded
- Patients without any medical claims for rheumatoid arthritis, PMR, or GCA during the study period were included in the general population cohort; their index date was set at 12 months from the start of continuous health plan enrollment
- Patients in both cohorts were required to be aged ≥50 years (on the index date) with ≥12 months continuous health plan enrollment before and after the index date

Study outcomes

- Patient baseline demographic and clinical characteristics included:
  - age on the index date, gender
  - health plan type
  - geographic region
  - Elixhauser comorbidity index (ECI) scores
  - chronic medical conditions with corticosteroid use similar to GCA
- HCRU assessed during the baseline and follow-up periods included:
  - inpatient hospitalization
  - emergency room visits
  - outpatient visits (including physician office visits, rheumatologist office visits, rehabilitation visits); other procedures conducted in outpatient setting (lab tests, diagnostic procedures, etc.)
  - pharmacy prescriptions

Analysis

- The GCA and general population cohorts were matched 1:1 on age, gender, region, health plan type, ECI score, chronic medical conditions with corticosteroid use similar to GCA, and baseline HCRU using propensity scores
- Descriptive statistics included mean, standard deviation (SD), and median values for continuous variables and frequency (n and %) for categorical variables
- Continuous variables were compared between the GCA cohort and the matched general population cohort using independent *t*-test or Wilcoxon Sum Rank test depending on the distribution of the outcome
- Categorical variables were compared between GCA cohort and matched general population cohort using Chi-squared test or Fisher's exact test

RESULTS

- Among 6071 patients identified in each of the matched GCA and general population cohorts, mean (SD) age was 74.5 (8.3) years, mean (SD) ECI score was 3.4 (2.6), and the majority were female (73.9%) (Table 1)
- During 12 months baseline period, around 90% of both cohorts had ≥1 prescriptions, ~70% had ≥1 outpatient visits, ~40% had ≥1 emergency room visits, and ~20% had ≥1 inpatient hospitalization
- One-third of the sample had acquired hyperthyroidism and fibromyalgia and one-fourth of the sample had asthma during the baseline period
- During the 1-year follow-up period, the proportions of patients with ≥1 hospitalizations (37.6% vs 20.4%) *P*<0.05, emergency room visits (52.2% vs 31.8%), physician visits (97.6% vs 90.9%), rheumatologist visits (36.0% vs 2.3%) and rehabilitation visits (26.4 vs 19.5) were significantly higher (*P*<0.0001) among GCA patients than the general population cohort, respectively (Figure 2)

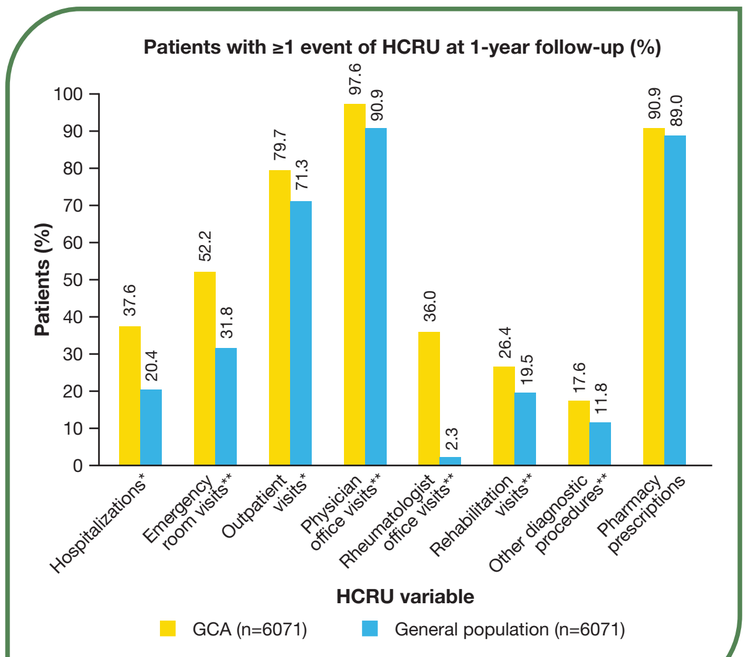
Table 1. Matched baseline characteristics

Demographic variable	GCA (n=6071)	General population (n=6071)
Age, mean (SD)	74.5 (8.3)	74.5 (8.3)
Median	76	76
Gender, n (%)		
Female	4487 (73.9)	4532 (74.6)
Male	1584 (26.1)	1539 (25.4)
Region, n (%)		
North Central	1364 (22.5)	2487 (41.0)
Northeast	844 (13.9)	631 (10.4)
South	1999 (32.9)	1837 (30.3)
West	1851 (30.5)	1099 (18.1)
Unknown	13 (0.2)	17 (0.3)
Health plan type, n (%)		
Exclusive provider organization	82 (1.4)	81 (1.3)
Health maintenance organization	3372 (55.5)	3351 (55.2)
Integrated delivery network	250 (4.1)	258 (4.2)
Point-of-service	506 (8.3)	502 (8.3)
Preferred provider organization	754 (12.4)	760 (12.5)
Other	1107 (18.2)	1119 (18.4)
ECI scores, n (%)		
Mean (SD)	3.4 (2.6)	3.4 (2.5)
Median	3.0	3.0
Conditions with CS use similar to GCA during the entire study period, n (%)		
Asthma	1464 (24.1)	1444 (23.8)
Ankylosing spondylitis	15 (0.2)	9 (0.1)
Crohn's disease	33 (0.5)	33 (0.5)
Juvenile idiopathic arthritis	2 (0)	1 (0)
Psoriatic arthritis	242 (4.0)	257 (4.2)
Ulcerative colitis	111 (1.8)	120 (2.0)
Chronic lymphocytic leukemia	35 (0.6)	51 (0.8)
Non-Hodgkin's lymphoma	100 (1.6)	106 (1.7)
Diffuse diseases of connective tissue (includes lupus)	266 (4.4)	267 (4.4)
Myopathies	955 (15.7)	783 (12.9)
Acquired hypothyroidism	2574 (42.4)	2336 (38.5)
Fibromyalgia	1881 (31.0)	1916 (31.6)
Baseline HCRU n (%) who had ≥1 event		
Hospitalizations	1194 (19.7)	1171 (19.3)
Emergency room visits	2583 (42.5)	2565 (42.3)
Outpatient visits	4368 (71.9)	4452 (73.3)
Pharmacy prescriptions	5430 (89.4)	5429 (89.4)

*P<0.0001

- During the 1-year follow-up period, the proportions of patients with ≥1 hospitalizations (37.6% vs 20.4%) and physician visits (97.6% vs 90.9%) (both P<0.05), emergency room visits (52.2% vs 31.8%), and rheumatologist visits (36.0% vs 2.3%) (both P<0.0001)were significantly higher among GCA patients than the general population cohort, respectively

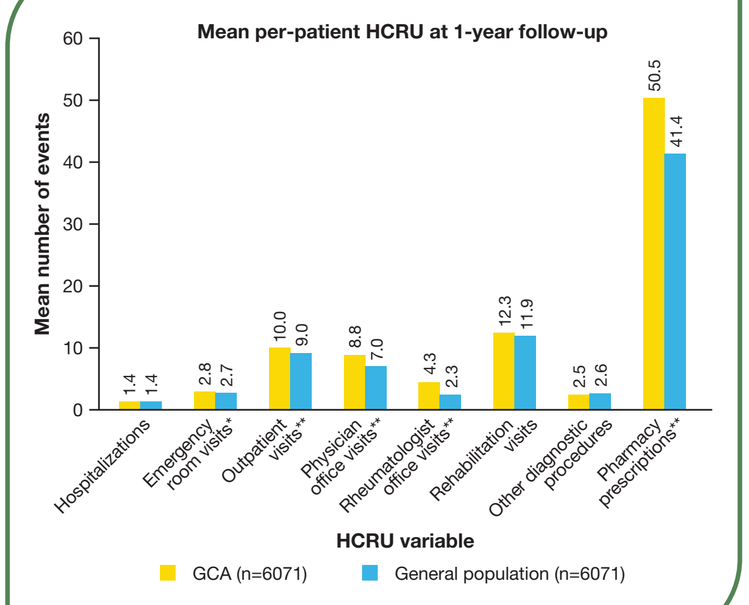
Figure 2. Proportion of patients with at least one event of HCRU at 1-year follow-up



**P<0.0001; *P<0.05

- Mean (SD) outpatient visits (10.0 [8.2] vs 9.0 [8.0]), physician office visits (8.8 [4.5] vs 7.0 [4.3]), rheumatologist office visits (4.3 [2.3] vs 2.3 [1.5]), and pharmacy prescriptions (50.5 [37.4] vs 41.4 [34.0]) per patient were significantly higher (*P*<0.0001) in the GCA cohort compared with the general population cohort (Figure 3)

Figure 3. Mean per patient HCRU events at 1-year follow-up



**P<0.0001; *P<0.05

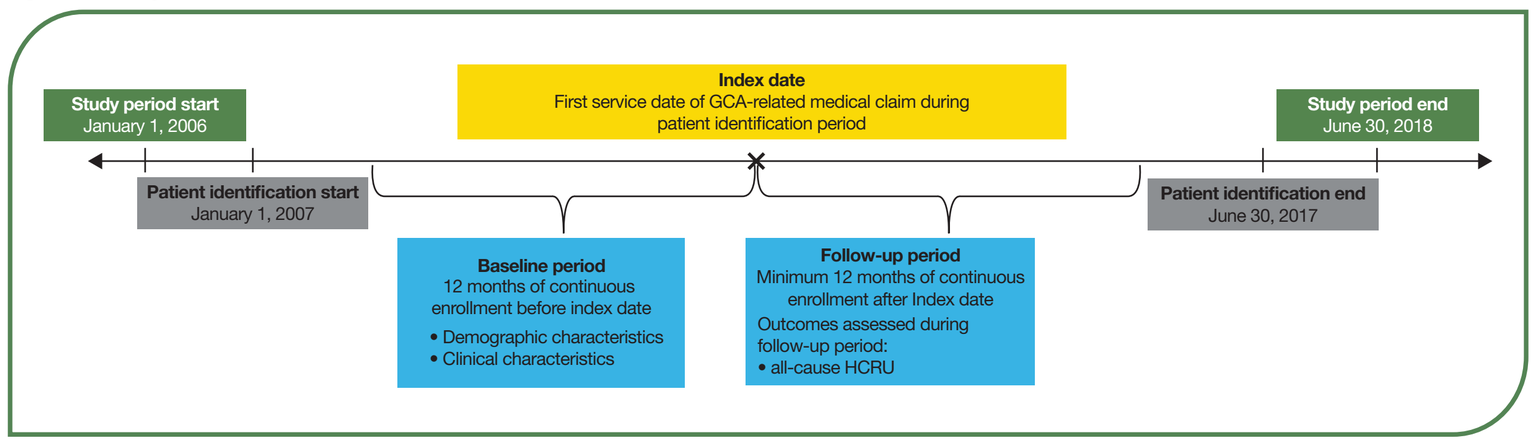
Study limitations

- Claims data are primarily collected for billing purposes rather than research, therefore, prone to be incomplete or have inaccurate coding of diagnoses
- Commercially insured individuals were analyzed, thus our results may not be generalizable to other patient populations
- As with all real-world data sources, there may be missing data that impact the study outcomes

CONCLUSIONS

- This study suggests that GCA is a disease of high healthcare resource burden, as indicated by patients with GCA having significantly increased HCRU versus matched, highly comorbid patients from the general population
- Further research is required to elucidate the full burden of GCA, including healthcare expenditure data, impact on health-related quality of life, the burden beyond 1 year of follow-up, and GCA subgroups that most significantly impact HCRU

Figure 1. Study schema



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Disclosures

RP is an employee and shareholder of Sanofi. PL is an employee of Sanofi. JS is a consultant of Sanofi.