A targeted literature review of economic evaluations, health-related quality of life, healthcare resource use and economic outcomes associated with giant cell arteritis

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INTRODUCTION

- Giant cell arteritis (GCA) is a systemic inflammatory disorder involving narrowing of medium and large-sized vessels. This results in systemic manifestations and ischemia, leading to a range of symptoms including tenderness of scalp and jaw claudication.
- Glucocorticoids (GC) are the standard of care. The risk of adverse events associated with long term GC use and high rates of relapse (~50%) illustrate remaining unmet need.[1]
- **Objective:** To identify, and summarize existing literature on economic evaluations, health-related quality of life (HRQoL), healthcare resource utilization (HCRU) and costs in individuals with GCA, and subsequently identify relevant knowledge gaps.

METHODS

- A targeted literature review was conducted in July 2023. Search strategies were implemented in MEDLINE, EMBASE, Cochrane, HTA and NHS economic evaluation databases.
- Hand searches on HTA websites, clinical trial registries and key congresses were also performed.
- All records identified were screened against pre-defined PICO criteria (Table 1) during the first pass (title/abstract) and second pass (full text).
- All English language studies except case reports, case series, comments, narrative reviews, editorials, animal studies, and notes were included.
- Screening and data extractions were completed by one reviewer. Uncertainties were discussed with a second independent reviewer, who also performed quality checks of extracted data.
- Study selection, data extraction and summary of findings was conducted using current best practices.

Table 1. PICO criteria

Population	Adults (≥50 years age) with newly diagnosed or relapsing GCA		
Interventions/ Comparator	Any intervention or comparator		
Outcomes	**Economic Evaluations** • Model parameters and aspects of model design • Description of model and cost assumptions • Summary health outcomes (e.g. QALYs, LYG) • Model results including ICERs	**HRQoL and Health utilities** • HRQoL data • Descriptive summary of health states, and/or change in health status/QoL results • Preference-based measures of utilities • Direct utility estimates • Mapping algorithms for utilities	**HCRU and costs** • Cost drivers • Direct and indirect costs • Healthcare resource use • Methods of valuation

Abbreviations: HRQoL, health-related quality of life; HCRU, healthcare resource utilization; QALYs, quality adjusted life years, LYG, life years gained; ICER, incremental cost effectiveness ratio

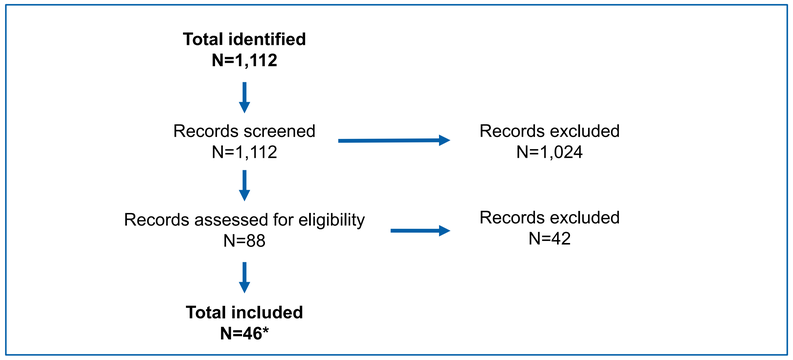
RESULTS

- A total of 1,112 records were identified, of which 46 were included (Figure 1).

Economic Evaluations

- Six economic evaluations were identified with a majority of studies using a semi-Markov model from a payer perspective.
- One study evaluated the cost-effectiveness of a fast-track GCA pathway,[2] the remaining five studies[3-7] estimated the budget impact or cost-effectiveness/utility of tocilizumab (TCZ) plus prednisolone (Table 2).

Figure 1. PRISMA Flow Diagram



* Two additional records were included which were identified from another source during the hand search

Table 2. Economic evaluations of TCZ plus prednisone in GCA

Country (Year)	Publication type	Economic evaluation	Results
Canada (2018) [7]	HTA assessment	CEA/CUA	Company (base case): $85,496 per QALY CDR (base case): $187,389 per QALY
UK (2018) [6]	HTA assessment	CEA/CUA	Company (base case): £28,272 per QALY ERG (base case): £65,801 with PAS
Italy (2018) [3]	Abstract	BIA	Switch to TCZ results in increased costs of €11,250 per person
Turkey (2018) [4]	Abstract	CEA/CUA	ICER per flare avoided: 4,017.70 TRY (~$140)
NR (2017) [5]	Abstract	CEA/CUA	Improved QoL (utility +0.13) to those on prednisone alone was driven by the reduction in their risk of flare.

Abbreviations: BIA, budget impact analysis; CEA, cost effectiveness analysis; CUA, cost utility analysis; ERG, Evidence Review Group; GCA, giant cell arteritis; HTA, health technology assessment; ICER, incremental cost effectiveness ratio; NR, not reported; QALY, quality adjusted life year; TCZ, tocilizumab; TRY, Turkish lira.

HRQoL/utility studies

- Seventeen studies reported HRQoL and/or utility outcomes associated with GCA. The short form-36 (SF-36) was the primary HRQoL measure (47%), and all utility studies used generic preference-based measures.
- Individuals with GCA are significantly impacted in both role physical and role emotional (SF-36 subscale scores), compared to non-GCA individuals (Figure 2).[8] Similar results were observed for physical functioning.[9]

Figure 2: HRQoL, SF-36 in GCA vs non-GCA in Ireland[8]

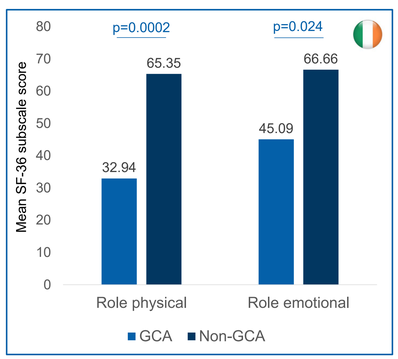
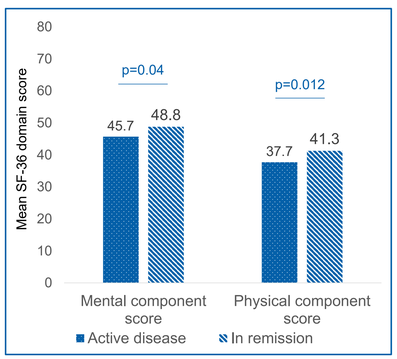


Figure 3: HRQoL per GCA disease state[10]



Abbreviations: GCA, giant cell arteritis; HRQoL, health-related quality of life; SF-36, short form 36

- HRQoL in individuals with active disease was significantly lower compared to those in remission (Figure 3).[10]
- Impaired HRQoL at baseline was an important predictor of treatment failure among TCZ-treated and placebo-treated individuals.[11]
- ***Evidence gaps:*** No disease specific HRQoL tools nor caregiver data were identified. Data by health state was limited.

HCRU and cost studies

- Twenty-three studies were identified, majority were from the US (n=12).
- Individuals with GCA had significantly increased HCRU versus matched general population (Figure 4a).[12] Similar results were shown in a Swedish study comparing GCA individuals to a reference population (Figure 4b).[13]
- Mean length of hospital stay was reported around 5 days for GCA individuals in the USA.[14,15]
- Direct costs including hospitalizations, AE-related, prescription & outpatient costs, were higher for individuals with GCA and polymyalgia rheumatica (PMR) compared to those with GCA only (Figure 5).[16]
- ***Evidence gap:*** No data was identified overall or by health state on work productivity, indirect costs and/or caregivers' impact.

Figure 4: HCRU use in individuals with GCA vs general population in the USA (a)[12] and reference population in Sweden (b) [13]

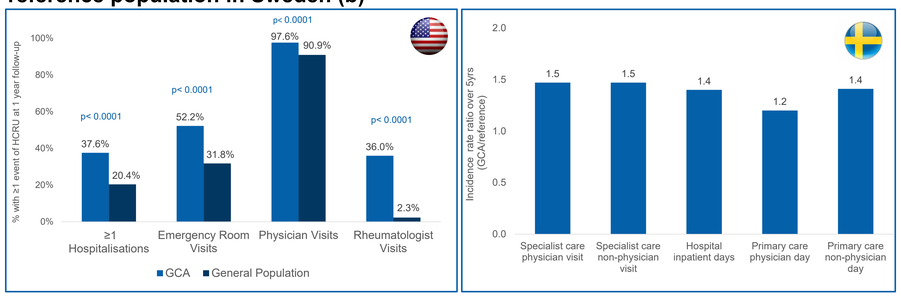
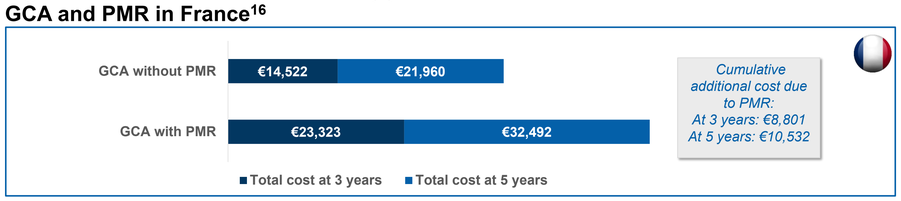


Figure 5: Total direct medical costs (€) for individuals with GCA vs individuals with GCA and PMR in France[16]



CONCLUSION

- GCA is associated with significantly impaired HRQoL, increased HCRU and associated costs compared to non-GCA and matched highly co-morbid populations.
- Several evidence gaps were identified, particularly a lack of disease specific HRQoL tools and indirect costs associated with GCA. Further research is needed to fully understand the extent of GCA disease burden.

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