Treatment Patterns and Healthcare Resource Utilisation in Patients with Chronic Inflammatory Demyelinating Polyneuropathy in England: A Retrospective, Observational Cohort Study

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Objective

- To understand the treatment patterns and healthcare resource utilisation (HCRU) in patients with Chronic Inflammatory Demyelinating Polyneuropathy (CIDP) in England

Background

- CIDP is a rare disease involving an immune-mediated demyelination and axonal damage of peripheral nerves[1,2] with an estimated prevalence of 1.97 to 4.77 per 100,000 people in the United Kingdom[3]
- Current treatment guidelines recommend corticosteroids, intravenous immunoglobulin (IVIg), and plasma exchange as first-line therapies for CIDP[1]. Despite these options, 20–30% show limited response to first-line therapies, and ~15% remain refractory to all available treatment options[4]
- Patients with CIDP experience substantial functional disabilities with marked reduction in overall quality of life[5]
- At present, there are limited data on the real-world treatment patterns and HCRU in patients with CIDP

Methods

Study design

- This retrospective, observational cohort study included adult patients with CIDP in England using secondary data from the Clinical Practice Research Datalink (CPRD) Aurum between 01 Jan 2005 and 31 Mar 2021, who were eligible for linkage to Hospital Episode Statistics and Office for National Statistics databases

Study population

- Patients aged ≥18 years were included if they had a first diagnosis of CIDP after 01 Jan 2005, ≥6 months of registration in general practitioner (GP) practice prior to the pseudo-index date, and at least 3 months of follow-up
  - A pseudo-index date was defined based on the first outpatient neurology visit, first diagnosis of polyneuropathy in the inpatient care setting, or first referral to neurology
- Patients were excluded if they had a prior diagnosis of systemic lupus erythematosus, motor neuron disease, or multiple sclerosis
- The analysis also included a subgroup of patients (refractory patients), who switched from their first line of treatment (LOT1) to a second line (LOT2) in the first 2 years following CIDP diagnosis

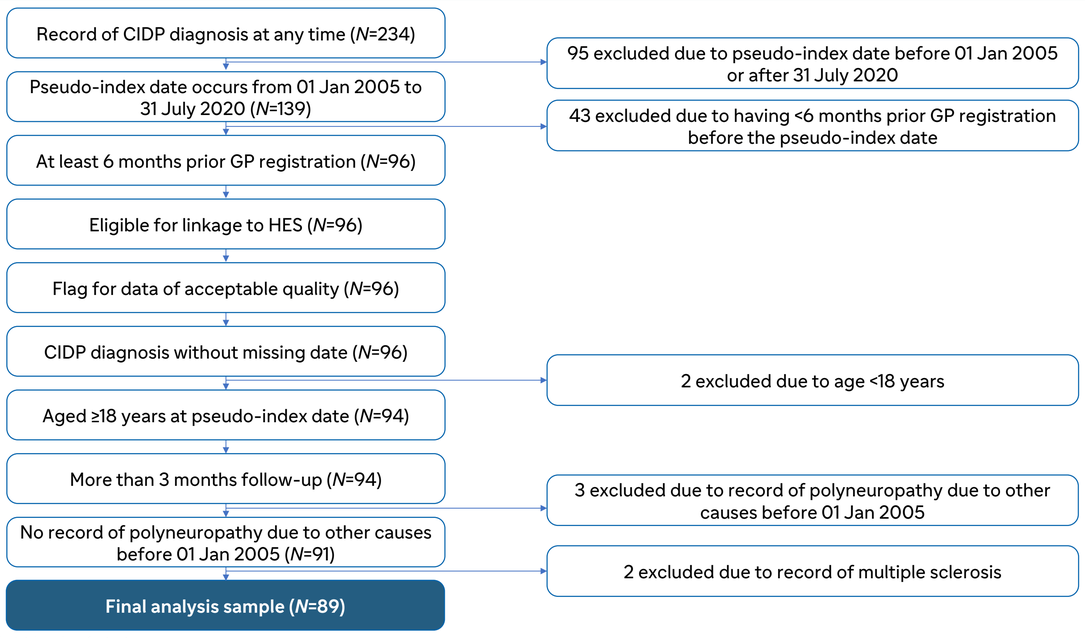
Study assessments and statistical analysis

- Baseline demographics and clinical characteristics were summarized using descriptive analyses
- Treatment combinations, LOTs, treatment interruption, and treatment switches were described
- All-cause and CIDP-specific HCRU were assessed
  - All-cause HCRU: HCRU for any diagnoses
  - CIDP-specific HCRU: HCRU with a CIDP diagnosis as the primary reason for hospital visit

Results

- A total of 89 patients were included in the final sample from 234 patients identified in the database **(Figure 1)**
  - Among 89 patients, 15 were refractory to the LOT1
- Median follow-up duration: 5.7 years for all patients and 6.4 years for patients refractory to LOT1

Figure 1: Population attrition



N is the total number of patients.
CIDP, chronic inflammatory demyelinating polyneuropathy; GP, general practitioner; HES, Hospital Episode Statistics.

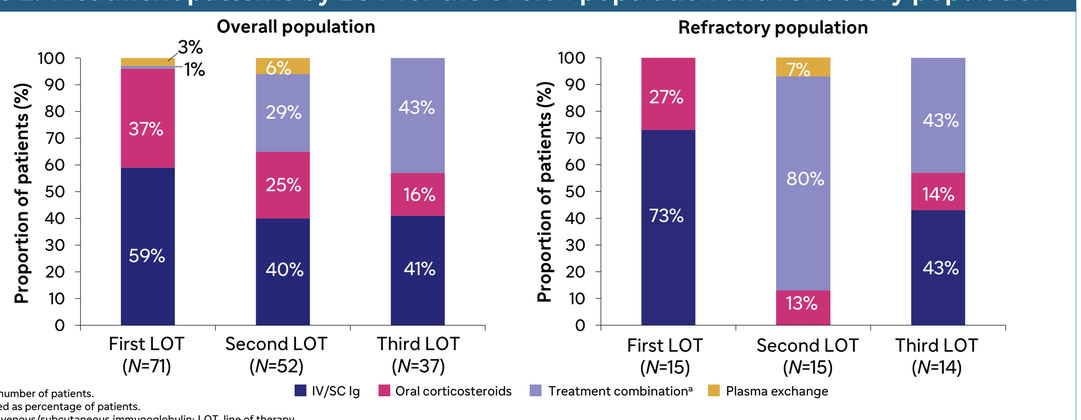
Demographics and clinical characteristics

- Mean (standard deviation) age: overall population = 56.4 (13.7) years; refractory population = 52.3 (14.7) years
- Males: 61% and 53% in overall population and refractory population, respectively
- The most common comorbidities for overall and refractory population were hypertension and osteoarthritis

Treatment patterns

- In the overall population, intravenous/subcutaneous immunoglobulin (IV/SC Ig) was the most common treatment regimen (59%) in LOT1, followed by corticosteroids. Its use was lower in LOT2 and LOT3, with ~40% of patients receiving Ig. Use of treatment combinations increased from LOT2 (29%) to LOT3 (43%) **(Figure 2)**
- In the refractory population, IV/SC Ig was the most commonly used treatment in LOT1 (73%), whereas LOT2 was dominated by treatment combinations (80%) **(Figure 2)**

Figure 2: Treatment patterns by LOT for the overall population and refractory population



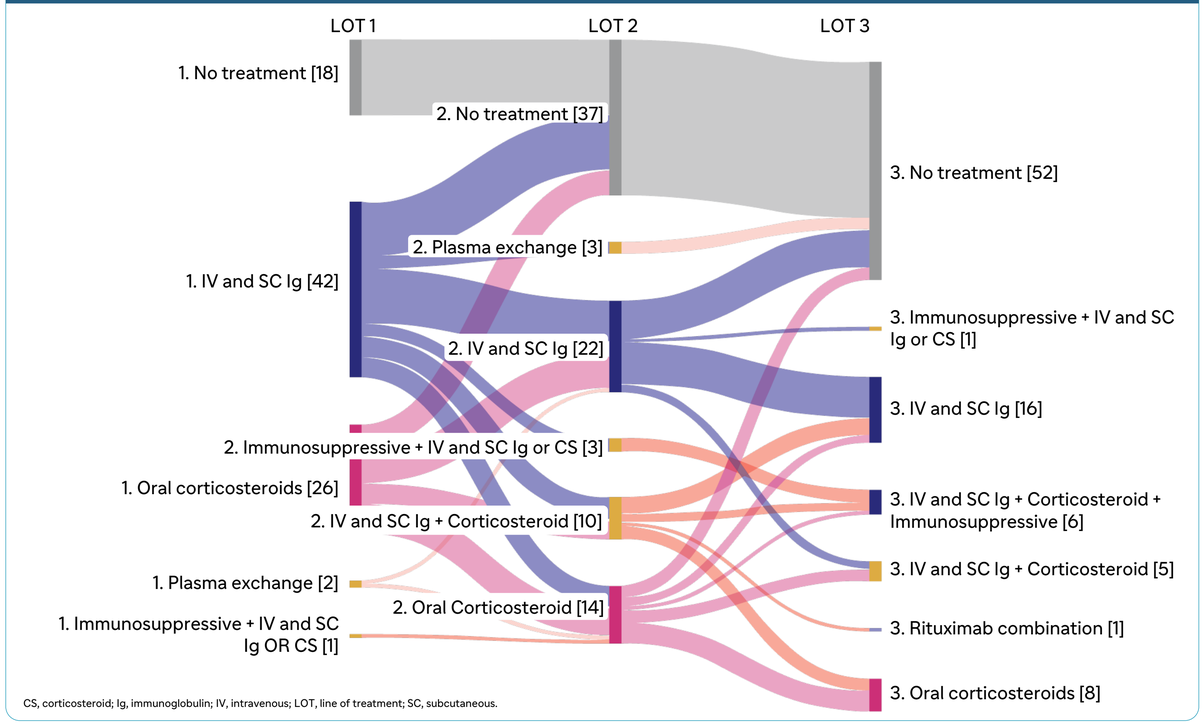
N is the total number of patients.
Data presented as percentage of patients.
IV/SC Ig, intravenous/subcutaneous immunoglobulin; LOT, line of therapy.
[a]Treatment combinations: IV/SC Ig + corticosteroid, IV/SC Ig + immunosuppressant, IV/SC Ig + plasma exchange, IV/SC Ig + corticosteroid + immunosuppressant, corticosteroid + immunosuppressant, corticosteroid + plasma exchange

Conclusions

- This study provides detailed insights into the treatment patterns and HCRU of patients with CIDP in England, highlighting lack of standard approach for second and subsequent LOT
- Patients experienced frequent treatment switching and healthcare encounters, suggestive of inadequate response to standard-of-care therapies in a significant number of patients
- HCRU is indicative of substantial economic burden in this patient population

- Treatment switching and interruptions in patients treated with IV/SC Ig (26.0% switching; 71.0% interruptions) and oral corticosteroids (27.0% switching; 54.0% interruptions) were common at the first LOT
- While LOT1 was generally comprised of IV/SC Ig or oral corticosteroids as monotherapies, the use of combination therapies became more common, as the patients advanced to LOT2 and LOT3. Combination treatment involving Ig were disproportionately higher than IV/SC Ig, oral corticosteroid and plasma exchange, particularly among patients who may have been refractory to LOT1 **(Figure 3)**
- In LOT1 18 patients did not receive any active treatment for CIDP. By LOT2, this number increased to 37, as a subset of patients who were initially treated with IV/SC Ig or oral corticosteroids did not initiate further therapy. This trend continued in LOT3, where 52 patients were recorded as receiving no active treatment **(Figure 3)**

Figure 3: Sankey diagram displaying treatment switches from LOT1 to LOT3 in overall population

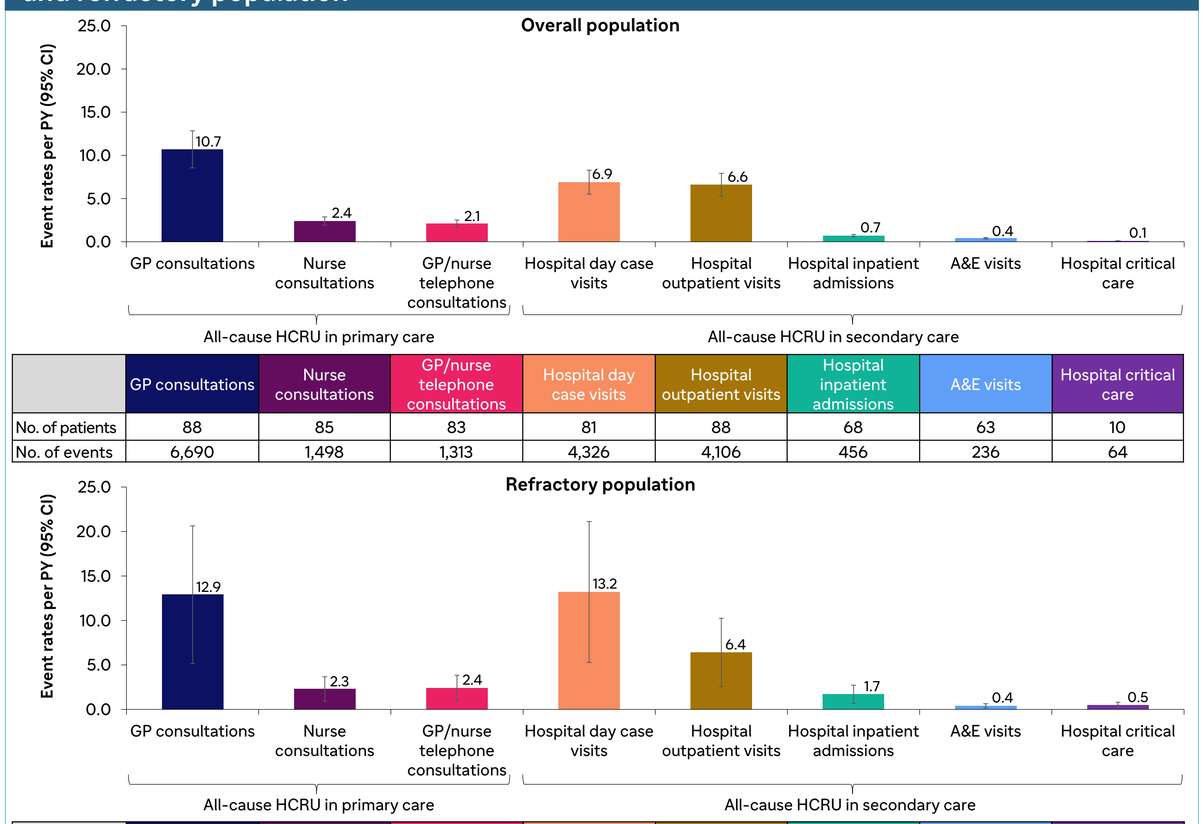


CS, corticosteroid; Ig, immunoglobulin; IV, intravenous; LOT, line of treatment; SC, subcutaneous.

Healthcare resource utilisation

- During the follow-up period, all-cause prescriptions, GP consultations, day case attendances, and outpatient visits were reported in ≥90% of patients, with event rates of 50.9, 10.7, 6.9, and 6.6 per person-year (PY), respectively **(Figure 4)**
- More than 70% of patients visited accident and emergency departments and had all-cause inpatient admissions with event rates of 0.4 and 0.7, with 11% requiring critical care with event rate of 0.1 during the follow-up period **(Figure 4)**
- Patients' refractory to LOT1 had a 15% higher event rate per PY for all-cause healthcare visits

Figure 4: Annual HCRU event rates among patients with CIDP for the overall population and refractory population



	GP consultations	Nurse consultations	GP/nurse telephone consultations	Hospital day case visits	Hospital outpatient visits	Hospital inpatient admissions	A&E visits	Hospital critical care
No. of patients	88	85	83	81	88	68	63	10
No. of events	6,690	1,498	1,313	4,326	4,106	456	236	64

	GP consultations	Nurse consultations	GP/nurse telephone consultations	Hospital day case visits	Hospital outpatient visits	Hospital inpatient admissions	A&E visits	Hospital critical care
No. of patients	15	15	14	51	15	13	12	3
No. of events	1,375	249	252	1,408	683	182	42	55

Event rates are shown per PY, representing the average number of events occurring annually per individual in the study population.
A&E, Accident and Emergency; CI, confidence intervals; CIDP, chronic inflammatory demyelinating polyneuropathy; GP, general practitioner; HCRU, healthcare resource utilisation; PY, person-year.

Limitations

- Study limitations may include potential data incompleteness and coding inaccuracies, as the CPRD comprises data collected for clinical care rather than for research purposes
- As pseudo-index date is an estimated first diagnosis date, the treatment pathways in this study may have over-included (if actual first diagnosis date was in fact later than the estimated pseudo-index date) or under-included treatments (if actual diagnosis date was earlier than pseudo-index date)
- The patient sample may not be fully reflective of the refractory population since some refractory patients may have been missed due to limited availability of treatment data
- The sample size of patients defined as refractory was small, therefore, the results should be interpreted with caution

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DISCLOSURES
Sophie Guillonneau, Omar Saeed, Ekaterina Smolkina, Alex Seluzhytsky, Manuel Nunez, and **Natalia Petruski-Ivleva:** Employees of Sanofi and may hold stocks or stock options in the company.
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