A retrospective database study to describe the prevalence, patient characteristics and healthcare burden of prurigo nodularis (PN) in England

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BACKGROUND

- Prurigo nodularis (PN) is a chronic inflammatory skin disease characterised by intense itch and is associated with significant quality-of-life impairment.[1]
- Previous studies revealed a significant economic burden associated with PN[2]; however there is a paucity of well-designed studies to determine the prevalence and economic burden of PN in the United Kingdom.[3]

OBJECTIVES

- The objective of this study was to assess the prevalence, patient characteristics and healthcare resource utilisation associated with PN in England.

MATERIALS AND METHODS

Study design

- The study was a retrospective, non-interventional, database analysis carried out utilising the Clinical Practice Research Datalink (CPRD) Aurum and Gold databases linked to Hospital Episode Statistics (HES).
- The CPRD (Aurum and Gold) database contains anonymised, primary care data of approximately 60 million patients, including 16 million active patients covering close to 10% of the UK population.[4] The CPRD is also linked to secondary care data.
- Patients were selected for inclusion in the study based on a record of a Read, Systematized Nomenclature of Medicine-Clinical Terms (SNOMED-CT) or the International Classification of Diseases version 10 (ICD-10)[4] code.

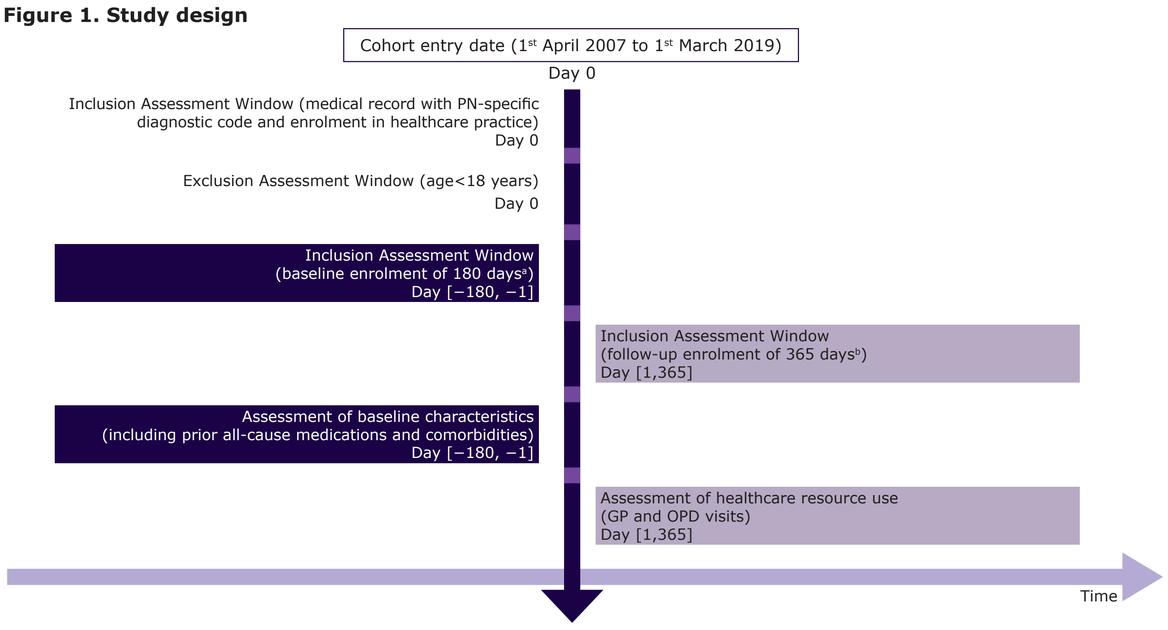
Inclusion criteria

- Adult patients with PN were defined by the presence of at least one record with PN-specific diagnosis codes (as shown below).
  - ICD-10: L28.1 (PN or nodular prurigo)
  - READ: M1830 (PN)
  - SNOMED-CT: 63501000 (PN or nodular prurigo)
- Patients were included if their first diagnosis of PN was made between 1st April 2007 and 1st March 2019 (identification period), with a minimum of 1-year of follow-up post the index diagnosis and a minimum of 180 days of wash-in period (**Figure 1**).

Prevalence and healthcare burden

- Point prevalence of PN was calculated for 2007–19.
- Adult patients (≥18 years) with the first diagnosis of PN occurring prior to 30th June of the respective year with an active registration with CPRD practice on this date formed the numerator population.
- The denominator population for the prevalence analysis comprises adult patients in the dataset with a CPRD follow-up that overlaps with the midpoint (June 30th) of a calendar year.
- Visit to general practitioners (GP), out-patient dermatologists (OPD) and inpatient admissions (PN-specific and accident and emergency admissions) were extracted from the consultation tables and were used to evaluate the all-cause healthcare resource utilisation (expressed as per patient year [PPY]) during the first year of diagnosis and 2 to 5 years after index diagnosis.

Figure 1. Study design



[a]Start of patient record untill index diagnosis; inpatient record available from 1st April 1997 and outpatient record available from 1st April 2003
[b]1-year post-index diagnosis
GP, general practitioner; OPD, out-patient dermatologist; PN, prurigo nodularis

RESULTS

- A total of 8,933 patients with PN were included in the analysis (mean age 61 years, 57% female).
- The baseline patient characteristics, assessed at the time of index diagnosis, are provided in **Table 1**.

Prevalence estimates

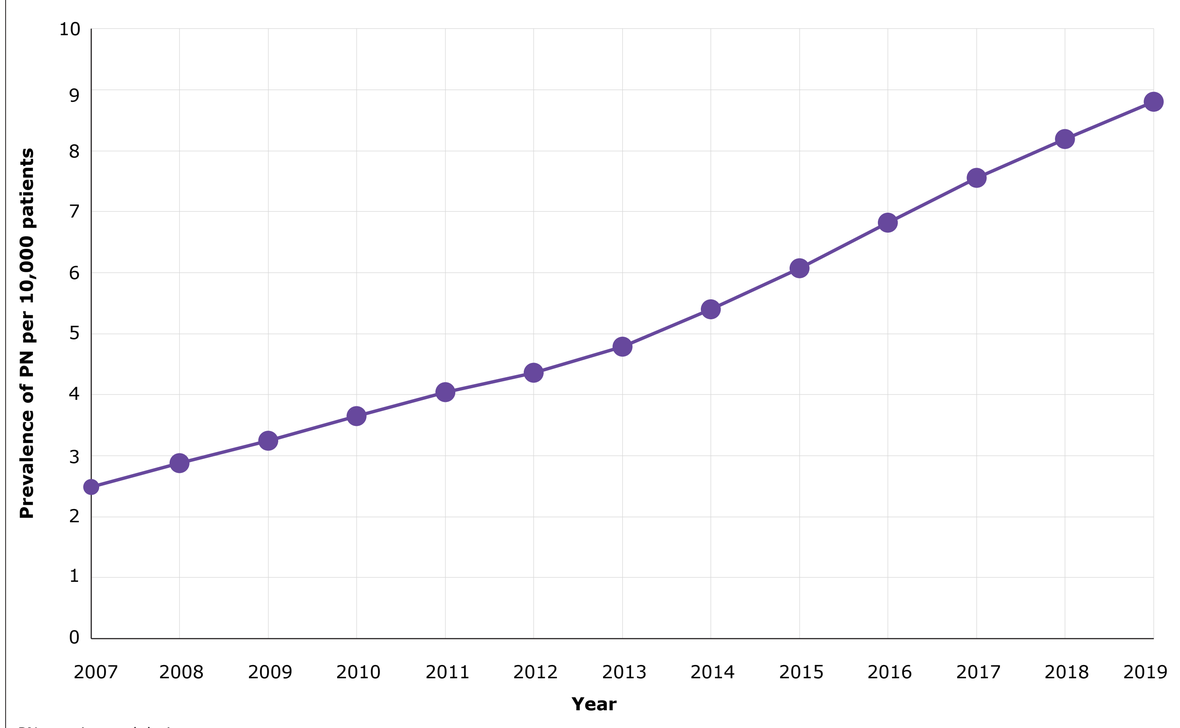
- The point prevalence for 2019 was found to be 8.8 per 10,000 patients. A steady increase in the prevalence of PN was observed from 2007 (2.49 per 10,000 patients) to 2019 (**Figure 2**).

Table 1: Baseline characteristics of included patients[a]

Characteristic	*N* = 8,933
Gender	
Female, *n* (%)	5,114 (57%)
Age (years)	
Mean (± SD)	61 (17)
BMI	
Mean (SD)	30 (7)
Missing, *n* (%)	4,608 (52%)
CCI	
Mean (SD)	1.73 (1.89)
Prior atopic comorbidities, *n* (%)	
Atopic dermatitis	3,486 (39%)
Asthma	2,911 (33%)
Eosinophilic oesophagitis	257 (2.9%)
Chronic rhinosinusitis with/without nasal polyposis	74 (0.8%)
Chronic spontaneous urticaria	<5
Prior non-atopic comorbidities, *n* (%)	
Chronic kidney disease	1,392 (16%)
COPD	1,052 (12%)
Renal dialysis	240 (2.7%)
HIV	142 (1.6%)
Renal transplantation	80 (0.9%)
All cause prior treatments, *n* (%)	
Topical corticosteroids - moderate/potent/very Potent	7,527 (84%)
Second generation H1 antihistamine	5,541 (62%)
First generation H1 antihistamine	4,049 (45%)
Systemic corticosteroids (oral)	3,360 (38%)
Tricyclic antidepressants	1,176 (13%)
Gabapentinoids	1,157 (13%)
Systemic corticosteroids (injectable)	759 (8.5%)
Immunosuppressant	355 (4.0%)

[a] Baseline characteristics were calculated on the index date. Where data is not available, we used an algorithm to find the nearest value within one year.
The mean (quartile 1, quartile 3) follow-up period was 4.78 (2.33, 6.55); BMI, Body mass index; CCI, Charlson's comorbidity index; COPD, chronic obstructive pulmonary disease; HIV, human immunodeficiency virus; SD, standard deviation

Figure 2. Prevalence estimates of PN from 2007 to 2019



PN, prurigo nodularis

Healthcare burden

- The details of all-cause healthcare resource use is provided in **Table 2**.
- The mean rate of GP attendance increased from 15.35 PPY in the first year of diagnosis to 16.8 PPY during years 2 to 5 after index diagnosis.
- The mean rate of visiting an OPD decreased from 3.99 PPY in the first year of diagnosis to 1.67 PPY during years 2 to 5 after index diagnosis; more patients required an OPD visit in the first year (49.6% vs. 32.7%, 2–5 years after diagnosis).
- In the subset of patients with at least one OPD record (*n = 5,229*), the mean rate of visiting an OPD was 8.05 PPY in the first year and 2.83 PPY in years 2 to 5 post index diagnosis.

Table 2. All-cause healthcare resource use

Group	First-year post diagnosis	2 to 5 years post diagnosis	Overall follow-up
GP visits			
Number of patients with a visit (%)	8,640 (96.7)	8,510 (95.3)	8,883 (99.4)
Mean rate of visit (PPY) (95% CI)	15.35 (15.27–15.43)	16.8 (16.74–16.86)	14.27 (14.24–14.31)
OPD visits (overall patients)			
Number of patients with a visit (%)	4,429 (49.6)	2,920 (32.7)	5,229 (58.5)
Mean rate of visit (PPY) (95% CI)	3.99 (3.95–4.03)	1.67 (1.66–1.69)	1.76 (1.75–1.77)
OPD visits (subset of patients attending OPD)			
Number of patients with a visit (%)	4,429 (100)	2,274 (51.3)	4,429 (100)
Mean rate of visit (PPY) (95% CI)	8.05 (7.97–8.13)	2.83 (2.8–2.86)	3.2 (3.18–3.23)
HES outpatient (any)			
Number of patients with a visit (%)	7,102 (79.5)	7,407 (82.9)	8,312 (93.1)
Mean rate of visit (PPY) (95% CI)	8.83 (8.77–8.89)	7.53 (7.49–7.57)	6.68 (6.66–6.71)
HES inpatient (PN specific - primary)			
Number of patients with a visit (%)	376 (4.2)	45 (0.5)	409 (4.6)
Mean rate of visit (PPY) (95% CI)	0.08 (0.07–0.08)	0.01 (0.01–0.02)	0.02 (0.02–0.02)
HES A&E			
Number of patients with a visit (%)	2,701 (30.2)	4,761 (53.3)	6,080 (68.1)
Mean rate of visit (PPY) (95% CI)	0.62 (0.6–0.64)	0.74 (0.73–0.75)	0.63 (0.62–0.63)
HES inpatient (dermatology)			
Number of patients with a visit (%)	519 (5.8)	218 (2.4)	697 (7.8)
Mean rate of visit (PPY) (95% CI)	0.12 (0.11–0.12)	0.03 (0.03–0.03)	0.04 (0.04–0.04)

A&E: accident and emergency; CI, confidence interval; GP: general practitioners; HES: Hospital Episode Statistics; OPD: out-patient dermatology; PN, prurigo nodularis; PPY: per patient year

CONCLUSIONS

- The PN prevalence for 2019 identified in this study was consistent with a recent German study (0.08% vs 0.11%)[5]; an increase in the prevalence of PN was observed from 2007 to 2019, possibly due to an increased disease awareness with the introduction of the ICD-10 diagnostic code.
- There is a high disease burden in PN patients with high number of dermatology visits.

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DISCLOSURES

Donia Bahloul, Onyinye Diribe and Robert McDonald are employees of Sanofi and may hold stock/stock options in Sanofi. Ryan B. Thomas is an employee of and a stockholder at Regeneron Pharmaceuticals, Inc. Elgan Mathias, Ellen Hubbuck and Ben Heywood are employees of Human Data Sciences. Seán Conlon is an ex-employee of Sanofi (employed by Sanofi at the time of the work).

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