

## **Supplementary Material**

# **High Systemic Disease Risk and Therapeutic Delays in Plaque Psoriasis: A Retrospective Analysis of Apremilast Use in the British Association of Dermatologists Biologic and Immunomodulators Register (BADBIR)**

Kave Shams<sup>1,2,a</sup>, Jennifer Montgomery<sup>3,a</sup>, Jason Morley<sup>3</sup>, Vaiva Gerasimaviciute<sup>4</sup>, Anouchka Seesaghur<sup>5</sup>, David Neasham<sup>4</sup>, Kathy V. Tran<sup>6</sup>, Myriam Cordey<sup>6</sup>, Andrew Taylor<sup>3</sup>

<sup>1</sup>Leeds Centre for Dermatology, Chapel Allerton Hospital, Leeds, UK; <sup>2</sup>Leeds Institute of Rheumatic and Musculoskeletal Medicine, University of Leeds, Leeds, UK; <sup>3</sup>Global Medical, Amgen UK Ltd, Cambridge, UK; <sup>4</sup>Centre for Observational Research, Amgen UK Ltd, Uxbridge, UK; <sup>5</sup>Global Patient Safety, Amgen UK Ltd, Uxbridge, UK; <sup>6</sup>Center for Observational Research, Amgen Inc., Thousand Oaks, CA, USA

<sup>a</sup>Kave Shams and Jennifer Montgomery are co-first authors.

### **Correspondence:**

Kave Shams, Associate Professor and Consultant Dermatologist, University of Leeds, Wellcome Trust Brenner Building, Office 6.12, St James' University Hospital, Beckett Street, Leeds LS9 7TF, UK

e-mail: [kaveshams@nhs.net](mailto:kaveshams@nhs.net)

## Supplementary Tables

**Table S1.** Smoking status, alcohol consumption and the most common comorbidities<sup>a</sup> in patients with psoriasis and no pre-existing CVD, first prescribed apremilast in UK clinical practice between October 2015 and March 2021 and registered in BADBIR, by Framingham risk category

| Patient characteristic            | CVD risk                                    |                                                        |                                              |
|-----------------------------------|---------------------------------------------|--------------------------------------------------------|----------------------------------------------|
|                                   | Low<br>(Framingham score<br><10%)<br>(n=68) | Intermediate<br>(Framingham score<br>10–20%)<br>(n=99) | High<br>(Framingham score<br>>20%)<br>(n=19) |
| <b>Smoking status, n (%)</b>      |                                             |                                                        |                                              |
| Never smoked                      | 28 (41.2)                                   | 42 (42.4)                                              | 2 (10.5)                                     |
| Past smoker                       | 27 (39.7)                                   | 39 (39.4)                                              | 6 (31.6)                                     |
| Current smoker                    | 13 (19.1)                                   | 18 (18.2)                                              | 11 (57.9)                                    |
| <b>Alcohol consumption, n (%)</b> |                                             |                                                        |                                              |
| Does not drink alcohol            | 22 (32.4)                                   | 31 (31.3)                                              | 8 (42.1)                                     |
| Lower-risk drinking               | 36 (52.9)                                   | 52 (52.5)                                              | 10 (52.6)                                    |
| Hazardous drinking                | 7 (10.3)                                    | 14 (14.1)                                              | 1 (5.3)                                      |
| Harmful drinking                  | 2 (2.9)                                     | 2 (2.0)                                                | 0                                            |
| Missing data                      | 1 (1.5)                                     | 0                                                      | 0                                            |
| <b>Comorbidities, n (%)</b>       |                                             |                                                        |                                              |
| Anxiety                           | 1 (1.5)                                     | 3 (3.0)                                                | 0                                            |
| COPD                              | 1 (1.5)                                     | 3 (3.0)                                                | 0                                            |
| Depression                        | 10 (14.7)                                   | 22 (22.2)                                              | 4 (21.1)                                     |
| Diabetes                          | 1 (1.5)                                     | 20 (20.2)                                              | 13 (68.4)                                    |
| Dyslipidaemia                     | 0                                           | 14 (14.1)                                              | 6 (31.6)                                     |
| Hypertension                      | 2 (2.9)                                     | 30 (30.3)                                              | 12 (63.2)                                    |
| Non-skin cancer                   | 4 (5.9)                                     | 6 (6.1)                                                | 2 (10.5)                                     |
| Psoriatic arthritis               | 12 (17.6)                                   | 21 (21.2)                                              | 3 (15.8)                                     |
| Skin cancer                       | 0                                           | 9 (9.1)                                                | 0                                            |
| Tuberculosis                      | 2 (2.9)                                     | 2 (2.0)                                                | 0                                            |

Results are for patients aged 30–74 years with available data for all Framingham components (age, BMI, diabetes, hypertension treatment, smoking, systolic blood pressure), N=186.

<sup>a</sup>Comorbidities recorded in ≥4 patients.

BADBIR, British Association of Dermatologists Biologic and Immunomodulators Register; BMI, body mass index; COPD, chronic obstructive pulmonary disease; CVD, cardiovascular disease.

**Table S2.** Characteristics of patients with psoriasis first prescribed apremilast in UK clinical practice between October 2015 and March 2021 and registered in BADBIR, by Fitzpatrick skin type (I–III and IV–VI)

| Patient characteristic                                              | Fitzpatrick skin type |                   |
|---------------------------------------------------------------------|-----------------------|-------------------|
|                                                                     | I–III<br>(n=187)      | IV–VI<br>(n=78)   |
| <b>Sex, n (%)</b>                                                   |                       |                   |
| Female                                                              | 90 (48.1)             | 36 (46.2)         |
| Male                                                                | 97 (51.9)             | 42 (53.8)         |
| <b>Age at psoriasis diagnosis, years, median (Q1, Q3)</b>           | 22 (16, 37)           | 24 (15, 36)       |
| <b>Age at registration, years, median (Q1, Q3)</b>                  | 50 (37, 58)           | 51 (39, 61)       |
| <b>Age at first apremilast prescription, years, median (Q1, Q3)</b> | 50 (37, 59)           | 51 (39, 62)       |
| <b>Ethnicity, n (%)</b>                                             |                       |                   |
| White                                                               | 181 (96.8)            | 59 (75.6)         |
| Asian (Chinese, Indian, Pakistani)                                  | 2 (1.1)               | 14 (17.9)         |
| Other                                                               | 4 (2.1)               | 5 (6.4)           |
| <b>BMI, kg/m<sup>2</sup>, median (Q1, Q3)</b>                       | 30.2 (26.5, 36.5)     | 28.9 (25.9, 33.7) |
| <b>Smoking status, n (%)</b>                                        |                       |                   |
| Never smoked                                                        | 68 (36.4)             | 33 (42.3)         |
| Past smoker                                                         | 73 (39.0)             | 25 (32.1)         |
| Current smoker                                                      | 39 (20.9)             | 17 (21.8)         |
| Missing data                                                        | 7 (3.7)               | 3 (3.8)           |
| <b>Alcohol consumption, n (%)</b>                                   |                       |                   |
| Does not drink alcohol                                              | 55 (29.4)             | 26 (33.3)         |
| Lower-risk drinking                                                 | 92 (49.2)             | 37 (47.4)         |
| Hazardous drinking                                                  | 15 (8.0)              | 9 (11.5)          |
| Harmful drinking                                                    | 4 (2.1)               | 0                 |
| Missing data                                                        | 21 (11.2)             | 6 (7.7)           |
| <b>Number of concurrent therapies</b>                               |                       |                   |
| Mean (SD)                                                           | 3 (3)                 | 3 (3)             |
| Median (Q1, Q3)                                                     | 2 (0, 4)              | 2.5 (1, 5)        |
| <b>Comorbidities, n (%)</b>                                         |                       |                   |
| Hypertension                                                        | 46 (24.6)             | 16 (20.5)         |
| Depression                                                          | 43 (23.0)             | 14 (17.9)         |
| Psoriatic arthritis                                                 | 32 (17.1)             | 16 (20.5)         |
| Diabetes                                                            | 26 (13.9)             | 16 (20.5)         |

|                                                                                                                          |                         |                          |
|--------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------|
| Dyslipidaemia                                                                                                            | 21 (11.2)               | 5 (6.4)                  |
| Non-skin cancer                                                                                                          | 12 (6.4)                | 5 (6.4)                  |
| Skin cancer                                                                                                              | 10 (5.3)                | 2 (2.6)                  |
| Anxiety                                                                                                                  | 8 (4.3)                 | 0                        |
| COPD                                                                                                                     | 5 (2.7)                 | 1 (1.3)                  |
| Tuberculosis                                                                                                             | 3 (1.6)                 | 2 (2.6)                  |
| Angina pectoris                                                                                                          | 3 (1.6)                 | 1 (1.3)                  |
| Myocardial infarction                                                                                                    | 1 (0.5)                 | 1 (1.3)                  |
| Stroke or transient ischaemic attack                                                                                     | 4 (2.2)                 | 0                        |
| <b>Family history of psoriasis, n (%)</b>                                                                                | <b>89 (50.9)</b>        | <b>24 (34.8)</b>         |
| <b>Time from psoriasis diagnosis to first apremilast prescription, years, median (Q1, Q3)</b>                            | <b>19.6 (11, 30.4)</b>  | <b>17.7 (10.5, 34.2)</b> |
| <b>Time from first dermatologist appointment to first apremilast prescription, years, median (Q1, Q3)</b>                | <b>13.3 (5.7, 24.1)</b> | <b>12.3 (6.4, 28.0)</b>  |
| <b>Time since discontinuation of most recent prior therapy to first apremilast prescription, months, median (Q1, Q3)</b> | <b>2.2 (0.1, 7.6)</b>   | <b>2.6 (0.4, 9.6)</b>    |

BADBIR, British Association of Dermatologists Biologic and Immunomodulators Register; BMI, body mass index; COPD, chronic obstructive pulmonary disease; Q, quartile; SD, standard deviation.

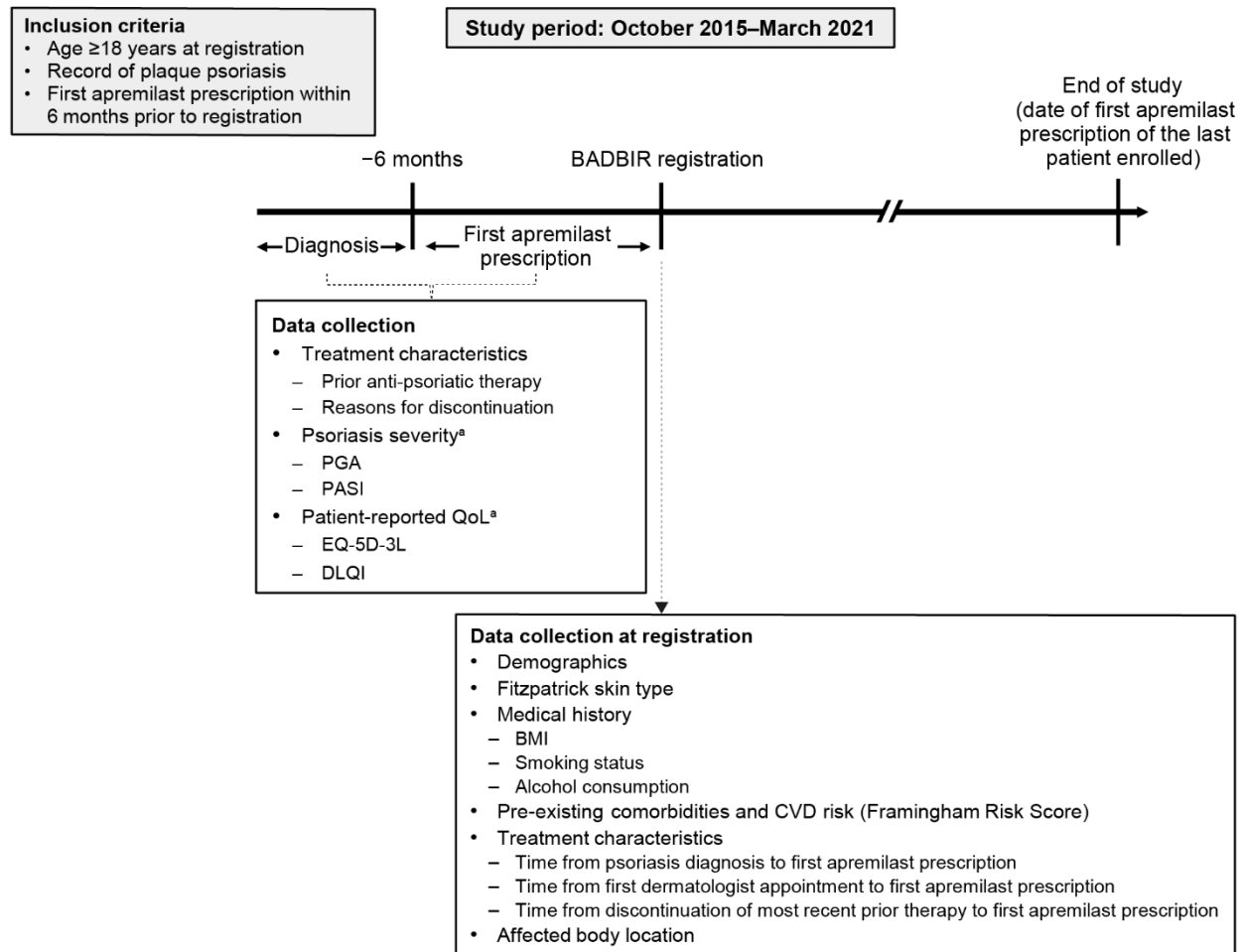
**Table S3.** Psoriasis location, severity and quality of life in patients with psoriasis first prescribed apremilast in UK clinical practice between October 2015 and March 2021 and registered in BADBIR, by Fitzpatrick skin type

| Psoriasis characteristic             | Fitzpatrick skin type |                   |
|--------------------------------------|-----------------------|-------------------|
|                                      | I–III<br>(n=187)      | IV–VI<br>(n=78)   |
| <b>Body location affected, n (%)</b> |                       |                   |
| Scalp                                | 135 (72.2)            | 65 (83.3)         |
| Nails                                | 100 (53.5)            | 40 (51.3)         |
| Nails and scalp                      | 79 (42.2)             | 36 (46.2)         |
| Flexural                             | 76 (40.6)             | 29 (37.2)         |
| Palms                                | 28 (15.0)             | 16 (20.5)         |
| Missing data                         | 24 (12.8)             | 9 (11.5)          |
| <b>PGA, n (%)</b>                    |                       |                   |
| Clear                                | 1 (0.5)               | 0                 |
| Almost clear                         | 2 (1.1)               | 1 (1.3)           |
| Mild                                 | 3 (1.6)               | 0                 |
| Moderate                             | 38 (20.3)             | 13 (16.7)         |
| Moderate-to-severe                   | 71 (38.0)             | 25 (32.1)         |
| Severe                               | 37 (19.8)             | 16 (20.5)         |
| Missing data                         | 35 (18.7)             | 23 (29.5)         |
| <b>PASI score</b>                    |                       |                   |
| ≥10, n (%)                           | 152 (81.3)            | 67 (85.9)         |
| <10, n (%)                           | 31 (16.6)             | 9 (11.5)          |
| Mean (SD)                            | 14.5 (7.7)            | 14.7 (7.0)        |
| Median (Q1, Q3)                      | 12.6 (10.6, 17.1)     | 13.1 (10.3, 16.1) |
| Missing data                         | 4 (2.1)               | 2 (2.6)           |
| <b>DLQI score</b>                    |                       |                   |
| >10, n (%)                           | 106 (56.7)            | 51 (65.4)         |
| ≤10, n (%)                           | 53 (28.3)             | 17 (21.8)         |
| Mean (SD)                            | 13.9 (7.8)            | 15.7 (7.9)        |
| Median (Q1, Q3)                      | 15 (8, 20)            | 16 (10.5, 20.5)   |
| Missing data                         | 28 (15.0)             | 10 (12.8)         |

BADBIR, British Association of Dermatologists Biologic and Immunomodulators Register; DLQI, Dermatology Life Quality Index; PASI, Psoriasis Area Severity Index; PGA, Physician Global Assessment; Q, quartile; SD, standard deviation.

## Supplementary Figure

**Figure S1.** Study design



Patients previously exposed to a biologic therapy were excluded.

<sup>a</sup>The closest value recorded prior to (and including) the apremilast prescription date was collected.

BADBIR, British Association of Dermatologists Biologic and Immunomodulators Register; BMI, body mass index; CVD, cardiovascular disease; DLQI, Dermatology Life Quality Index; EQ-5D-3L, EuroQol five-dimensional, three-level questionnaire; PASI, Psoriasis Area Severity Index; PGA, Physician Global Assessment; QoL, quality of life.