Article type: Review

Real-world evidence for ixekizumab in the treatment of psoriasis, psoriatic arthritis and axial spondyloarthritis: systematic literature review 2022–2023

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Supplementary materials

Supplementary Table 1. Search strategies used in published literature searches

Category		Search terms	Hits June	Hits November
		Embase (June 8, 2022 to July 19, 2023) and (July 20, 2023 to November 15, 2023)		
Population	1	exp psoriasis/	117,538	120,295
	2	exp psoriatic arthritis/	30,954	32,025
	3	exp spondyloarthritis/	73,800	75,834
	4	(psoriasis or 'psoriatic arthritis' or 'spondylarthritis').ti,ab.	94,511	96,800
	5	or/1-4	167,947	168,783
Intervention	6	exp ixekizumab/	3500	3713
	7	(Ixekizumab or ly 2439821 or ly2439821 or taltz*).mp.	3631	3845
	8	or/6-7	3631	3845
Total pre limits	9	5 and 8	3191	3383
Limits	10	(exp animal/ or exp invertebrate/ or nonhuman/ or animal experiment/ or animal tissue/ or animal model/ or exp plant/ or exp fungus/) not (exp human/ or human tissue/) {Including Related Terms}	13,192	13,769
	11	9 not 10	3191	3383
	12	limit 11 to English language	3158	3348
	13	limit 12 to yr="2022–Current"	789	394
	14	limit 13 to dc=20220608–20231115	515	207
	15	limit 14 to (clinical trial or randomized controlled trial or controlled clinical trial or multicentre study or phase 1 clinical trial or phase 2 clinical trial or phase 3 clinical trial)	67	34
Total hits	16	14 not 15	**448**	**173**
		Ovid Medline (June 8, 2022–July 19, 2023) and (July 20, 2023–November 15, 2023)		
Population	1	exp Psoriasis/	47,980	48,700

	2	exp Arthritis, Psoriatic/	8100	8322
	3	exp spondylarthritis/	30,792	31,203
	4	(psoriasis or ‘psoriatic arthritis’ or ‘spondylarthritis’).ti,ab.	56,172	57,434
	5	or/1-4	85,574	87,042
Intervention	6	(Ixekizumab or ly439821 or ly2439821 or taltz*).mp.	1018	1060
Total pre limits	7	5 and 6	888	921
Limits	8	(exp Nonhuman/ or exp nonhuman/ or exp Animals/ or exp Primates/) not humans.sh.	51,39,443	51,70,652
	9	7 not 8	888	921
	10	limit 9 to English language	879	910
	11	limit 10 to yr=“2022–Current”	236	109
	12	limit 11 to dt=20220608–20231115	104	31
	13	limit 12 to (adaptive clinical trial or clinical trial, all or clinical trial, phase I or clinical trial, phase II or clinical trial, phase III or clinical trial, veterinary or clinical trial protocol or clinical trial or controlled clinical trial)	6	0
Total hits	14	12 not 13	**98**	**31**
		EBM Reviews (June 8, 2022 to July 19, 2023) and (July 20, 2023 to November 15, 2023)		
Population	1	exp Psoriasis/	4535	4590
	2	exp Arthritis, Psoriatic/	632	641
	3	exp spondylarthritis/	1823	1845
	4	(psoriasis or ‘psoriatic arthritis’ or ‘spondylarthritis’).ti,ab.	10,400	10,543
	5	or/1–4	11,804	11,962
Intervention	6	(Ixekizumab or ly439821 or ly2439821 or taltz*).mp.	655	663
Total pre limits	7	5 and 7	1148	1167
Limits	8	(exp Nonhuman/ or exp nonhuman/ or exp Animals/ or exp Primates/) not humans.sh.	2963	2948
	9	7 not 8	1148	1167
	10	limit 9 to English language	1109	1128

		[Limit not valid in CDSR, ACP Journal Club, CCA, CLCMR; records were retained]		
	11	limit 10 to yr="2022–Current"	101	41
	12	limit 11 to clinical trial protocol	39	22
	13	11 not 12	62	19
Total hits	14	Remove duplicates from 13	**62**	**19**

Supplementary Table 2. Conferences included in the search

Global/regional conferences
Academy of Managed Care Pharmacy
American Academy of Dermatology Conference
American College of Rheumatology (ACR) Conference
Asia-Pacific League of Associations for Rheumatology Congress (APLAR)
Congress of Clinical Dermatology
Congress of Clinical Rheumatology-East (CCSR-East)
Congress of Clinical Rheumatology-West (CCSR-West)
European Academy of Dermatology and Venereology Congress (EADV)
European Academy of Dermatology and Venereology (EADV) Spring Symposium (EADV-S)
European Alliance of Associations for Rheumatology (EULAR) Conference
European Association of Hospital Pharmacists
European Society for Dermatological Research (ESDR)
Inflammatory Skin Disease Summit
International Conference on Pharmacoepidemiology (ICPE)
International Congress on Controversies in Rheumatology & Autoimmunity (CORA)
International Congress on Spondyloarthritides
International Dermatology Outcome Measures
International Federation of Psoriasis Associations – World Psoriasis & Psoriatic Arthritis Conference
International Societies for Investigative Dermatology
National Psoriasis Foundation Conference
Pan-American League of Associations for Rheumatology Congress (PANLAR)
Skin Inflammation & Psoriasis International Network Congress
The International Society for Pharmacoeconomics and Outcomes Research (ISPOR)
The International Society for Pharmacoeconomics and Outcomes Research (ISPOR) AP
The International Society for Pharmacoeconomics and Outcomes Research (ISPOR) EU
The International Society for Pharmacoeconomics and Outcomes Research (ISPOR) LA
World Congress of Dermatology
National conferences
Australian Society of Rheumatology (ARA)
Belgian Dermatology Days
British Dermatological Nursing Group
British Society for Rheumatology
De Koninklijke Belgische Vereniging voor Reumatologie (KBVR)/ La Société Royale Belge de Rhumatologie (SRBR) (Belgium)

Deutsche Dermatologischen Gesellschaft

France Society of Rheumatology

German Society for Rheumatology

Italian Society of Rheumatology (SIR)

Japan Congress of Rheumatology

Korean Congress of Rheumatology

Scandinavian Congress of Rheumatology

Spanish Congress of Rheumatology

Swiss Society of Dermatology & Venereology

The Annual Conference of Indian Rheumatology Association (IRACON)

The Annual Congress of the Italian Society of Hospital Pharmacy (SIFO)

The Annual Meeting for the Japanese Society for Investigative Dermatology

The Annual Meeting of the Australasian College of Dermatologists

The Annual Meeting of the British Association of Dermatologists

The Annual Meeting of the Chinese Society of Investigative Dermatology

The Annual Meeting of the German Society of Experimental Dermatology

The Annual Meeting of the Korean Society for Psoriasis

The Annual Meeting of Latin American Dermatologists

The Annual Meeting of the Taiwanese Dermatological Association

The Annual Meeting of the Taiwanese Society for Investigative Dermatology

The National Congress of Dermatology of the Spanish Academy of Dermatology and Venerology

The Psoriasis Research Group of the French Society of Dermatology

Supplementary Table 3. Eligibility criteria

Study characteristic	Eligible	Ineligible
Population	Patients with at least one or more of the following diseases: • PsO • PsA • axSpA No restriction on age, severity of disease, or comorbidity.	Studies of other disease areas
Intervention and comparators	Taltz® (ixekizumab) No restriction on comparators	Studies that do not include Taltz (ixekizumab)

Outcomes	Outcomes including but not restricted to†:
	Clinical effectiveness measures
	• PASI-50, 75, 90, 100, absolute PASI
	• BSA%, BSA≥3, BSA≥10
	• Nail Psoriasis outcomes (any scale)
	  ・ The Psoriasis Nail Severity Score
	  ・ NAS score
	  ・ Baran scoring system
	  ・ NAPSI
	  ・ modified NAPSI
	  ・ Nijmegen Nail Psoriasis Activity Index
	  ・ NAPPA
	  ・ Brigham Scalp Nail Inverse Palmoplantar Psoriasis Composite Index
	• ACR20, 50, 70
	• DAPSA
	• PsARC
	• Assessment of Spondyloarthritis International Society (ASAS20, 40)
	• BASDAI
	• BASFI
	• BASMI
	• ASDAS
	–CRP/ESR	

- HAQ-DI
- PGA and sPGA
- MRI-based scores (SPARCC/Berlin)
- Laboratory-based inflammatory markers
- Radiographic measures of structural progression (mSASSS)

QoL and other PROs measured using validated tools[†]:

- SF-36 mental and physical component scores
- EQ-5D
- DLQI
- PDI
- VAS
- NRS and NPRS, including itch, skin and joint pain and fatigue
- Spinal pain and spinal pain at night
- SPI
- Skindex-29
- PSO-life
- PsAID
- ASAS – health index
- Patient treatment satisfaction
- PatGA
- Nail psoriasis-specific QoL instruments:
  - Nail Psoriasis Quality 10
  - Nail Assessment in Psoriasis and Psoriatic Arthritis Quality of Life
- Mental health
  - Anxiety, depression, and suicidal ideation

Treatment patterns

- Prescription patterns
- Adherence to guidelines
- Persistence/drug survival/time on treatment

	• Real-world dosing and dose adjustments (escalation/de-escalation) • Treatment discontinuation and reasons (lack or loss of effectiveness) • Treatment switches • Concomitant treatments **Safety** Overall IR (this may include N and % with the event, IR per 100 patient-years, incidence proportion [%]) of specific and/or serious AEs • Discontinuation due to AE • Discontinuation due to lack of efficacy • Death/mortality • Serious and severe AEs • Cardiovascular AEs (MACE) • Serious infections • Malignancy • Immunogenicity • Injection site reactions • Infusion reactions • IBD **Economic outcomes** • Cost per responder • Direct costs • Number needed to treat • Indirect costs • Resource use/healthcare utilization • WPAI	
Study design	**Observational studies, including** • Prospective/longitudinal studies • Retrospective studies (cohort studies using medical records, claims data, routine care data, real-world databases, and registries) • Matched case-control studies	• RWE observational studies with <25 Taltz® (ixekizumab) patients • All clinical trials • Case reports or case series • Protocols

	• Cross-sectional studies **Pragmatic studies‡** **Cost studies** – only if ixekizumab and RWE specific	• Commentaries, editorials • Letters* Reviews‡ (including systematic reviews)
Time frame	June 8, 2022, to November 15, 2023	Publications before June 8, 2022
Country	No restriction	N/A
Language	English	Non-English

ACR, American College of Rheumatology; AE, adverse event; ASAS, Assessment of SpondyloArthritis international Society; ASDAS, Ankylosing Spondylitis Disease Activity Score; AxSpA, axial spondyloarthritis; BASDAI, Bath Ankylosing Spondylitis Disease Activity Index; BASFI, Bath Ankylosing Spondylitis Functional Index; BASMI, Bath Ankylosing Spondylitis Metrology Index; BSA, body surface area; CRP, C-reactive protein; DAPSA, Disease activity index for psoriatic arthritis; DLQI, Dermatology Life Quality Index; ESR, erythrocyte sedimentation rate; HAQ-DI, Health Assessment Questionnaire-Disability Index; IBD, inflammatory bowel disease; IR, incidence rate; MACE, major adverse cardiovascular events; MRI, magnetic resonance imaging; mSASSS, Modified Stroke Ankylosing Spondylitis Spinal Score; NAPPA, Nail Assessment in Psoriasis and Psoriatic Arthritis; NAPSI, Nail Psoriasis Severity Index; NAS, Nail Area Severity; NPRS, numeric pain rating scale; NRS, numeric rating scales; PatGA, Patient Global Assessment; PASI, Psoriasis Area and Severity Index; PDI, Psoriasis Disability Index; PGA, Physician Global Assessment; PRO, patient-reported outcomes; PsA, psoriatic arthritis; PsAID, Psoriatic Arthritis Impact of Disease; PsARC, Psoriatic Arthritis Response Criteria; PsO, psoriasis; PSO-life, Psoriasis-life; QoL, quality of life; RWE, real-world evidence; SF-36, Short Form-36; SPARCC, Spondyloarthritis Research Consortium of Canada; sPGA, Static PGA; SPI, Simplified Psoriasis Index; VAS, visual analogue scale; WPAI, Work productivity and activity impairment.

† Studies where the authors were validating the translation of an instrument or evaluating the performance of a new instrument were excluded.

‡ Studies not identified as a pragmatic, practical, or naturalistic trial in the title or abstract were excluded.

* Letters to editors were eligible if reporting research results.

⁑ Reference lists of relevant reviews were crosschecked to screen for potentially relevant studies.

Supplementary Table 4. Characteristics of comparative studies by outcome categories evaluated

Study ID	Study design and treatments			Population characteristics					
	Study design/data source (country)	Follow-up duration	Treatments (pt N)	Population (disease severity)	Coexisting PsA, %	Biologic experienced, %	Males %	Mean age, y	Outcomes investigated
PsO									
Clinical effectiveness									
Costanzo et al. 2023[1]	Prospective cohort study/ multicenter cohort (multinational)	12 mo	IXE (272) SEC (120) Other biologics (518)	Pts with non-missing data for PASI90 and/or sPGA (0/1) at mo 12 (moderate-to-severe PsO)	Anti-IL-17A cohort: 24.5 Other biologics: 17.6	NR	NR	Anti-IL-17A cohort: 47.0 Other biologics: 44.7	PASI75/90/100 PGA Previous therapy
Lynde et al. 2023[2]	Prospective cohort study/ multicenter cohort (multinational)	36 mo	IXE (532) SEC (241) GUS (303) RIS (259) ADA (284) UST (127)	Pts aged ≥18 y with PsO diagnosis ≥6 mo before BL (moderate-to-severe PsO)	IXE: 30.3 SEC: 27.4 GUS: 23.4 RIS: 12.4 ADA: 22.5 UST: 15.0	IXE: 38.4 SEC: 36.1 GUS: 58.7 RIS: 42.9 ADA: 8.8 UST: 27.6	IXE: 58.8 SEC: 53.5 GUS: 59.1 RIS: 62.2 ADA: 57.4 UST: 60.6	IXE: 47.4 SEC: 45.4 GUS: 44.2 RIS: 44.1 ADA: 45.1 UST: 46.4	PASI score PASI90/100 BSA PGA DLQI Previous therapy
Ting et al. 2023[3]	Retrospective cohort study/ multicenter cohort (Australia)	15 y	IXE (59) ADA (97) ETA (26) INF (70) TIL (11) RIS (36) GUS (35) UST (143) SEC (100)	Outpts from Apr 2006 to Dec 2020 (moderate-to-severe PsO)	NR	NR	NR	NR	PASI75/100
Burzi et al. 2023[4]	Retrospective cohort study/	52 wk	Anti-IL-17 or anti-IL-23	Pts receiving an anti-IL-17	NR	NR	NR	NR	PASI100 (scalp) PGA

	single-center cohort (Italy)		agents N = 1053	or anti-IL-23 agent with involvement of scalp, genital area, or palmoplantar site (NR)					
Tichy et al. 2022[5]	Cross-sectional observational study/registry (Czech Republic)	168 wk	IXE (48) BRO (33) SEC (9)	Pts who switched anti-IL-17 agents with BL PASI scores >10 before first-line biological therapy and after switching to another anti IL-17 (severe chronic plaque PsO)	IXE: 47.9 BRO: 24.2 SEC: 55.6	100	IXE: 52.1 BRO: 63.6 SEC: 44.4	NR	PASI score PASI75/90 DLQI Treatment switching
Khattri et al. 2023[6]	Prospective cohort study/ multicenter cohort (multinational)	12 wk	IXE (500) SEC (219) RIS (230) BRO (60) TIL (83) GUS (272) ADA (225) UST (112)	Pts aged ≥18 y with diagnosis of PsO ≥6 mo before BL initiating or switching biologic receiving FDA-approved dosing (moderate-to-severe PsO)	Bio-naïve: IXE: 22.1 SEC: 18.2 RIS: 8.3 BRO: 7.9 TIL: 14.0 GUS: 8.4 ADA: 21.3 UST: 11.1 Bio-experienced: IXE: 42.5	IXE: 38.6 SEC: 37.4 RIS: 42.2 BRO: 36.7 TIL: 31.3 GUS: 60.7 ADA: 8.0 UST: 27.7	IXE: 57.8 SEC: 53.4 RIS: 63.0 BRO: 56.7 TIL: 59.0 GUS: 58.1 ADA: 58.2 UST: 58.0	Bio-naïve: IXE: 46.2 SEC: 43.8 RIS: 41.0 BRO: 45.9 TIL: 45.1 GUS: 42.1 ADA: 44.9 UST: 44.9 Bio-experienced: IXE: 49.1	PASI score PASI90/100 PGA

					SEC: 41.5 RIS: 19.6 BRO: 50.0 TIL: 26.9 GUS: 32.7 ADA: 44.4 UST: 29.0			SEC: 48.6 RIS: 48.0 BRO: 41.8 TIL: 46.1 GUS: 45.6 ADA: 47.0 UST: 49.0	
Timis et al. 2023[7]	Prospective case-control (Romania)	6 mo	Cases (106) IXE (37) SEC (21) GUS (5) CER (5) UST (7) RIS (16) ADA (15 Controls (106)	Pts with PsO and age-, gender- and background-matched controls (NR)	NR	0	Cases: 62.3 Controls: 57.5	Cases: 49.5 Controls: 43.9	PASI score DLQI
Loft et al. 2023[8]	Prospective cohort study/ registry (Denmark)	12 mo	Treatment series IXE (151) SEC (430)	Pts in DERMBIO treated with IXE or SEC between Apr 2015 and Oct 2019 (NR)	44.6	100	59.4	Previous exposure to an anti-IL-17A: 48.5 Previous exposure to other biologics: 47.9	PASI score PASI75/90/100 DLQI Previous therapy
Travaglini et al. 2023[9]	Prospective cohort study/ multicenter cohort (multinational)	36 mo	Anti-IL-17A (23) Other biologics (36) IXE (19) GUS (18)	Pts aged ≥18 y who initiated or switched biologic treatment during routine	23.7	Overall: 52.5 Anti-IL-17A: 56.5 Other biologics: 50 IXE: 68.4	Overall: 71.2 Anti-IL-17A: 69.6	Overall: 45.7 Anti-IL-17A: 48.3 Other biologics: 44.1	PASI90/100 sPGA PSSD

				care (moderate-to-severe PsO)		GUS: 94.4	Other biologics: 72.2 IXE: 78.9 GUS: 77.8	IXE: 49.3 GUS: 43.7	
Reich et al. 2023[10]	Prospective cohort study/ multicenter cohort (multinational)	36 mo	Anti-IL-17A (773) Other biologics (1208) IXE (532) SEC (241) GUS (303) RIS (259) ADA (284) UST (127)	Pts aged≥18 y who initiated or switched biologic treatment during routine care (moderate to severe PsO)	NR	Overall: 35.7 Anti-IL-17A: 37.7 Other biologics: 34.4 IXE: 38.4 SEC: 36.1 GUS: 58.7 RIS: 42.9 ADA: 8.8 UST: 27.6	Overall: 57.7 Anti-IL-17A: 57.2 Other biologics: 58 IXE: 58.8 SEC: 53.5 GUS: 59.1 RIS: 62.2 ADA: 57.4 USE: 60.6	Overall: 45.3 Anti-IL-17A: 46.8 Other biologics: 44.4 IXE: 47.4 SEC: 45.4 GUS: 44.2 RIS: 44.1 ADA: 45.1 UST: 46.4	PASI100 PSSD DLQI
Egeberg et al. 2023[11]	Prospective cohort study/ multicenter cohort (multinational)	12 mo	Anti-IL17A (123) IXE (94) SEC (29) Other biologics (140)	Adults with moderate-to-severe PsO for 2–6 mo initiating/switching biologics, with BL and mo 12 mNAPSI data (moderate-to-severe PsO)	Pts with NP: 29.7 Pts without NP: 14.0 (P<0.001)	NR	NR	NR	mNAPSI
Piaserico et al. 2023[12]	Prospective cohort study/ multicenter cohort (multinational)	12 wk	IXE (532) SEC (241)	Pts enrolled in PSoHO stratified at BL by presence of	NR	NR	NR	NR	PASI90/100 sPGA

			Other biologics (1208)	smoking, diabetes, hypertension, dyslipidemia, depression, anxiety (moderate-to-severe PsO)					
Smith et al. 2023[13]	Prospective cohort study/ multicenter cohort (Australia)	12 wk	Anti-IL-17A (36) IXE (30) SEC (6) Other biologics (74) TIL (42) RIS (14) GUS (9) UST (6) ADA (3)	Pts in the Australian sub-population of PsOHO (moderate-to-severe PsO)	NR	35.5	60.0	48.4	PASI score PASI90/100 sPGA
Piaserico et al. 2023[14]	Prospective cohort study/ multicenter cohort (multinational)	12 wk	Anti-IL-17A (773) Other biologics (1208) IXE (532) SEC (241) GUS (303) RIS (259) ADA (284) UST (127)	PsoHO study of pts who initiated or switched biologic treatment during routine care (moderate-to-severe PsO)	NR	NR	Overall: 57.7 Anti-IL-17A: 57.2 Other biologics: 58 IXE: 58.8 SEC: 53.5 GUS: 59.1 RIS: 62.2 ADA: 57.4 UST: 60.6	Overall: 45.3 Anti-IL-17A: 46.8 Other biologics: 44.4 IXE: 47.4 SEC: 45.4 GUS: 44.2 RIS: 44.1 ADA: 45.1 UST: 46.4	Skin clearance at special areas

Xiao et al. 2023[15]	Retrospective cohort study/ single-center cohort (China)	52 wk	IXE (55) ADA (79) SEC (278) UST (52)	Adult pts in the psoriasis cohort of West China Hospital (moderate-to-severe plaque PsO)	NR	NR	NR	NR	PASI 75/90
Esen et al. 2023[16] **PsO and PsA**	Retrospective cohort study/ single-center cohort (Turkey)	6 mo	Overall (83)	Pts aged ≥18 y who received SEC, IXE, RIS, or GUS between Jan 2019 and 2023 (moderate-to-severe PsO)	28.9	NR	60.2	43.31	PASI score CRP
Clinical effectiveness, safety, and treatment patterns									
Megna et al. 2022[17] Potestio et al. 2023[18]	Retrospective cohort study/ single-center cohort (Italy)	24 wk	IXE (98) BRO (41)	Pts attending a single center from Nov 1, 2019, to Dec 1, 2021, with BSA≥5 and/or PASI≥7, with PsO duration >1 y (moderate-to-severe PsO)	IXE: 41.8 BRO 36.5	Anti-TNF: IXE: 52.1 BRO: 56.1 Anti-IL-23/23: IXE: 22.4 BRO: 31.7 Anti-IL-17: IXE: 27.5 BRO: 21.9	IXE: 68.3 BRO: 58.8	IXE: 54.4 BRO: 48.3	PASI score PASI90/100 BSA AEs Lack of effectiveness Loss of effectiveness Previous treatments Discontinuations
Sermsaksasithorn et al. 2022[19]	Retrospective cohort study/ single-center cohort (Thailand)	80 wk	IXE (86) BRO (8) SEC (48)	Pts aged ≥18 y treated at a single center between Jan 1, 2017, and	IXE: 9.3 BRO: 0.0 SEC: 10.4	IXE: 19.2 BRO: 62.5 SEC: 18.8	IXE: 61.6 SEC: 54.2 BRO: 37.5	IXE: 45.0 BRO: 43.5 SEC: 44.0	PASI100 PGA AEs

				Apr 1, 2021 (moderate-to-severe PsO)					Treatment patterns Treatment switching
Kojanova et al. 2022[20]	Retrospective multicenter study/registry (Czech Republic)	36 mo	IXE (275) SEC (485) BRO (296)	Pts who received ≥1 dose of IXE, SEC, or BRO before Jun 4, 2021 (moderate-to-severe PsO)	IXE: 40.0 BRO: 15.5 SEC: 45.2	IXE: 70.9 BRO: 50.3 SEC: 58.6	IXE: 55.3 BRO: 66.9 SEC: 58.1	IXE: 52.5 BRO: 48.8 SEC: 51	PASI score PASI75/90/100 AEs DLQI Treatment patterns Treatment persistence Treatment discontinuations Treatment switching
Mastorino et al. 2024[21]	Retrospective cohort study/ single-center cohort (Italy)	52 wk	Overall (1057) IXE (189) SEC (256) BRO (203) GUS (74) RIS (236) TIL (99)	Pts who initiated treatment with SEC, GUS, RIS, TIL, IXE, or BRO, between Apr 1, 2015, and Jun 30, 2022 (moderate-to-severe PsO)	27	36.7	Overall: 65 IXE: 65 SEC: 64 BRO: 73 GUS: 58 RIS: 63 TIL: 59	Overall: 54.69 IXE: 56.05 SEC: 57.54 BRO: 53 GUS: 46.57 RIS: 52.04 TIL: 57.54	PASI score PASI90 AEs Lack of effectiveness Previous therapy Drug survival Discontinuations
Mastorino et al. 2023[22]	Retrospective cohort study/ single-center cohort (Italy)	52 wk	Scalp: Anti-IL-17 (212) Anti-IL-23 (96) IXE (49) SEC (55)	Pts in the registry 'Psocare SS-Dermo-20' treated with anti-IL-17 anti-IL-23 agents from Jan 2017 to	Scalp: Anti-IL-17: 30.3 Anti-IL-23: 11.4 IXE: 32.7 SEC: 56	Scalp: Anti-IL-17: 35.2 Anti-IL-23: 39.8 IXE: 28.6 SEC: 29.7 BRO: 40 GUS: 39.3	Scalp: Anti-IL-17: 73.4 Anti-IL-23: 67 IXE: 75.5 SEC: 68.5	Scalp: Anti-IL-17: 56 Anti-IL-23: 51 IXE: 55 SEC: 56 BRO: 52 GUS: 44	PASI score PASI75/90/100 sPGA Discontinuations

			BRO (108) GUS (28) RIS (38) TIL (30) Genital: Anti-IL-17 (109) Anti-IL-23 (27) IXE (30) SEC (32) BRO (47) GUS (13) RIS (9) TIL (5) Palmoplantar: Anti-IL-17 (71) Anti-IL-23 (23) IXE (13) SEC (32) BRO (26) GUS (5) RIS (8) TIL (10)	Jun 2022 with involvement of ≥1 of scalp, genital, and palmoplantar sites (NR)	BRO: 25 GUS: 17.8 RIS: 10.5 TIL: 13.3 Genital: Anti-IL-17: 31 Anti-IL-23: 18.5 IXE: 36.7 SEC: 40.6 BRO: 26 GUS: 20 RIS: 22.2 TIL: 20 Palmoplantar: Anti-IL-17: 62 Anti-IL-23: 13 IXE: 50 SEC: 37.5 BRO: 100 GUS: 20 RIS: 12.5 TIL: 7.7	RIS: 55.3 TIL: 10 Genital: Anti-IL-17: 35 Anti-IL-23: 26 IXE: 26.7 SEC: 40.7 BRO: 34 GUS: 0 RIS: 33.3 TIL: 20 Palmoplantar: Anti-IL-17: 49 Anti-IL-23: 21.7 IXE: 41.7 SEC: 42 BRO: 56 GUS: 40 RIS: 25 TIL: 16.7	BRO 73 GUS: 64.3 RIS: 65.8 TIL: 73.3 Genital: Anti-IL-17: 69.8 Anti-IL-23: 55.6 IXE: 76.7 SEC: 62.5 BRO: 70 GUS: 50 RIS: 77.8 TIL: 60 Palmoplantar: Anti-IL-17: 61.2 Anti-IL-23: 43.5 IXE: 50 SEC: 59.4 BRO: 58 GUS: 40 RIS: 50 TIL: 38.4	RIS: 51 TIL: 61 Genital: Anti-IL-17: 54 Anti-IL-23: 49 IXE: 55 SEC: 55 BRO: 48 GUS: 41 RIS: 52 TIL: 58 Palmoplantar: Anti-IL-17: 61 Anti-IL-23: 50 IXE: 58 SEC: 63 BRO: 54 GUS: 48 RIS: 48 TIL: 56	
Kuang et al. 2023[23]	Cross-sectional study/	1 y	Overall (300)	Pts visiting hospitals from Mar to May	NR	<100	63.0	42.8	Time to reduce skin lesion by half Discontinuations

	multicenter (China)			2023 (moderate-to-severe PsO)					Previous therapy Treatment persistence
Clinical effectiveness and safety									
Ting et al. 2023[24]	Retrospective cohort study/ multicenter cohort (Australia)	5 y	Total N=312	Pt data from two outpt clinics from Apr 2006 to Dec 2020 (NR)	NR	NR	NR	NR	PASI100 Lack of effectiveness Loss of effectiveness Drug survival Treatment discontinuations
Clinical effectiveness and treatment patterns									
Akbulut et al. 2022[25]	Retrospective cohort study/ multicenter cohort (NR)	52 wk	SEC to IXE switch (109) IXE to SEC switch (15)	Pts who received SEC or IXE after failure of other anti-IL-17 treatment (moderate-to-severe plaque PsO)	NR	NR	55.6	44 (median)	PASI score PASI75/90/100 Previous treatment Treatment persistence Treatment switching
Castro-Ayarza et al. 2023[26]	Prospective cohort study/ multicenter cohort (Colombia)	12 mo	IXE (65) ADA (142) UST (85) SEC (71) GUS (40) ETA (30)	Outpts aged ≥18 y with vulgar PsO followed from Oct 2015 to Feb 2021 in a specialized multicenter health institution (NR)	NR	NR	63.4	52 (median)	PASI score DLQI Treatment patterns

Mastorino et al. 2023[27,28]	Retrospective cohort study/ single-center cohort (Italy)	52 wk	IXE (189) SEC (255) BRO (194)	Pts receiving BRO, SEC, or IXE attending a dermatology clinic (moderate-to-severe PsO)	Arthropathy IXE: 39.7 SEC: 35.5 BRO: 28.4	IXE: 36 SEC: 37.5 BRO: 39.2	IXE: 65.1 SEC: 63.3 BRO: 78.4	NR	PASI score PASI90/100 DLQI Drug survival
Pinter et al. 2023[29]	Prospective cohort study/ multicenter cohort (multinational)	12 wk	Anti-IL-17A (773) Other biologics (1208)	Pts in PSoHO (moderate-to-severe PsO)	Anti-IL-17A: 29.4 Other biologics: 19.4	Anti-IL-17A: 37.6 Other biologics: 34.4	Anti-IL-17A: 57.2 Other biologics: 58.0	Anti-IL-17A: Pts with <2 y disease duration: 42.0 Pts with ≥2 y disease duration: 47.2 Other biologics: Pts with <2 y disease duration: 41.5 Pts with ≥2 y disease duration: 44.6	PASI100 Previous therapy
Safety									
Torres et al. 2022[30]	Retrospective cohort study/ multicenter cohort (multinational)	2305 PY for IXE Data at 48 mo reported	IXE (1073) SEC (1542) BRO (549) GUS (879) TIL (130) RIS (693)	Pts treated with an anti-IL-17 or anti-IL-23 agent between Feb 1, 2015, and Oct 31, 2021, as either first choice or switching option	IXE: 33.5 SEC: 35.0 BRO: 20.2 GUS: 18.3 TIL: 10.0 RIS: 15.1	IXE: 51.8 SEC: 47.5 BRO: 52.6 GUS: 60.4 TIL: 46.2 RIS: 59.0	IXE: 61.7 SEC: 61.0 BRO: 62.5 GUS: 57.6 TIL: 60.0 RIS: 60.9	SEC: 53.2 IXE: 52.7 BRO: 52.1 GUS: 52.8 TIL: 52.6 RIS: 50.5	AEs Previous treatments Drug survival Treatment discontinuations Treatment patterns

				(moderate-to-severe PsO)					
Megna et al. 2023[31]	Prospective cohort study/ single-center cohort (Italy)	6 mo	IXE (36) ADA (32) ETA (20) GOL (4) CZP (20) UST (22) SEC (20) BRO (20) GUS (20) TIL (20) RIS (20)	Pts aged ≥18 y with ≥1 y disease duration receiving biologic treatment for ≥6 mo to 3 y (moderate-to-severe PsO)	IXE: 5.1 ADA: 2.5 ETA: 4.3 GOL: 1.7 CZP: 2.5 UST: 0 SEC: 7.7 BRO: 0 GUS: 2.5 TIL: 5.1 RIS: 0.8	IXE: 93.2 ADA: 88.1 ETA: 92.3 GOL: 100 CZP: 91.5 UST: 94.1 SEC: 95.7 BRO: 92.3 GUS: 93.2 TIL: 92.3 RIS: 96.6	IXE: 61.1 ADA: 43.8 ETA: 50.0 GOL: 50.0 CZP: 10.0 UST: 27.3 SEC: 60.0 BRO: 50.0 GUS: 60.0 TIL: 60.0 RIS: 60.0	IXE: 52.44 ADA: 43.9 ETA: 55.5 GOL: 58 CZP: 34.8 UST: 59 SEC: 58.9 BRO: 45 GUS: 57.4 TIL: 52.6 RIS: 50.2	AEs (limited to injection site reactions)
Yuan et al. 2023[32]	Retrospective cohort study/ single-center cohort (China)	24 wk	Overall (1208)	Pts with PsO and latent TB infection who received biological therapy with or without prior anti-TB therapy from Jan 2020 to Jun 2021 (moderate-to-severe PsO)	NR	NR	73	39.0	AEs Infections
Safety and treatment patterns									
Li et al. 2022[33]	Retrospective study/single-center cohort (China)	52 wk	IXE (70) SEC (175) GUS (36) ADA (105)	Medical records for pts aged ≥18 y receiving IXE, SEC, GUS, or ADA from Jan 2020 to Dec	IXE: 8.6 SEC: 11.4 GUS: 5.6 ADA: 26.7	IXE: 17.1 SEC: 18.3 GUS: 44.4 ADA: 28.6	IXE: 81.4 SEC: 68 GUS: 77.8 ADA: 79	IXE:42.9 SEC: 43.1 GUS: 41.0 ADA: 44.8	AEs Lack of effectiveness Previous treatments Drug survival

				2021 at a single center, who had pustular or erythrodermic PsO (moderate-to-severe PsO)					Treatment discontinuations
Yiu et al. 2022[34]	Prospective cohort study/ registry (UK and Republic of Ireland)	Overall median follow-up: 2.1 years. IXE (median 1.3 y [IQR 0.6–2.0])	IXE (703) ADA (6607) SEC (2677) UST (5405) GUS (730)	Pts with ≥1 follow-up visit (severe chronic plaque PsO)	IXE: 41.0 ADA: 29.2 SEC: 34.4 UST: 23.5 GUS: 26.0	IXE: 81.8 ADA: 25.2 SEC: 64.2 UST: 53.5 GUS: 76.4	IXE: 56.0 ADA: 58.2 SEC: 57.3 UST: 57.9 GUS: 56.4	Median IXE 46.0 ADA: 45.0 SEC: 47.0 UST: 46.0 GUS 48.0	AEs Previous treatments Drug survival Treatment discontinuations
Voisin et al. 2023[35]	Retrospective chart review/ multicenter cohort (Canada)	8 mo (study duration Jan to Aug 2022)	IXE (45) BRO (6) SEC (49)	Pts who had terminated use of BRO, IXE, or SEC were identified using an EMR system (NR)	IXE: 33.3 BRO: 33.3 SEC: 28.6	100	IXE: 31.1 BRO: 33.3 SEC: 33.3	BRO: 49.5 IXE: 55.1 SEC: 58.8	AEs Lack of effectiveness Loss of effectiveness Previous treatments Treatment discontinuations Treatment switching
Yanase et al. 2023[36]	Retrospective cohort study/ multicenter cohort (Japan)	10 y	APR (265) CyA (167) INF (138) ADA (197) SEC (217) IXE (137) BRO (145) UST (242)	Pts who received ≥1 systemic treatment after 2010 and were treated with biologics or oral agents between 2010	APR: 34.0 CyA: 26.9 INF: 39.9 ADA: 45.6 SEC: 38.3 IXE: 41.0 BRO: 29.6 UST: 28.9	INF: 21.7 ADA: 35.0 SEC: 67.3 IXE: 68.6 BRO: 71.0 UST: 54.9 GUS: 84.2 RIS: 78.7	APR: 73 CyA: 73 INF: 76 ADA: 78 SEC: 73 IXE: 81 BRO: 77 UST: 83	APR: 57.6 CyA: 49.6 INF: 50.5 ADA: 52.1 SEC: 55.4 IXE: 54.9 BRO: 55.5	AEs (limited o infections) Lack of effectiveness Loss of effectiveness Drug survival Treatment discontinuations

			GUS (104) RIS (62)	and May 2020 (NR)	GUS: 35.0 RIS: 22.4		GUS: 71 RIS: 77	UST: 54.7 GUS: 56.1 RIS: 57.2	Treatment switching
Torres et al. 2023[37]	Prospective cohort study/ multicenter cohort (multinational)	1 y	Anti-IL-17A, IXE and SEC (773) Other biologics, ADA, BRO, CER, ETA, GUS, INF, RIS, UST (1208)	Pts initiating/ switching biologics (moderate-to-severe PsO)	NR	NR	NR	NR	Lack of effectiveness Treatment discontinuations
Jin et al. 2022[38] **PsO and PsA**	Population-based cohort study/claims database (USA)	117,744 PY of follow-up	Before propensity score stratification weighting MarketScan: ADA (28,484) APR (9145) CER (1189) ETA (17,850) GOL (1585) INF (4017) IXE (1299) SEC (3861) USE (13,448) Optum: ADA (13,768) APR (5766) CER (989)	Pts aged ≥18 y with ≥2 in- or outpt diagnosis codes of PsO or ≥2 in- or outpt PsA during the 6-mo BL period, excluding pts hospitalized for serious infection 60 days before index date (moderate-to-severe PsO/PsA)	PsO + PsA: MarketScan: ADA: 13.7 APR: 15.8 CER: 36.2 ETA: 14.8 GOL: 24.0 INF: 29.3 IXE: 12.9 SEC: 20.7 UST: 10.3 Optum ADA: 20.0 APR: 18.8 CER: 44.6 ETA: 20.3 GOL: 38.5 INF: 43.0 IXE: 21.5	Biologic experienced (before propensity score stratification weighting) MarketScan: ADA: 30.8 APR: 23.6 CER: 44 ETA: 31.4 GOL: 47.7 INF: 42.3 IXE: 15.0 SEC: 24.6 UST: 19.5 Optum: ADA: 24.4 APR: 17.3	Before propensity score stratification weighting MarketScan: ADA: 51.2 APR: 43.1 CER: 36.3 ETA: 49.3 GOL: 41.1 INF: 41.1 IXE: 53.2 SEC: 47.4 UST: 51.3 Optum: ADA: 53.0 APR: 46.2 CER: 39.1	Before propensity score stratification weighting MarketScan: ADA: 46.8 APR: 50.6 CER: 50.4 ETA: 47.6 GOL: 49.1 INF: 49.8 IXE: 49.3 SEC: 49.4 UST: 47.2 Optum: ADA: 47.6 APR: 51.6 CER: 49.3 ETA: 48.3	AEs (limited to infections) HCRU Prescription patterns

			ETA (7588) GOL (1164) INF (1348) IXE (661) SEC (2990) UST (8231)		SEC: 27.1 UST: 14.1	CER: 36 ETA: 26.2 GOL: 42.2 INF: 45.4 IXE: 15.7 SEC: 16.9 UST: 17.7	ETA: 51.4 GOL: 44.1 INF: 42.1 IXE: 52.5 SEC: 48.5 UST: 52.8	GOL: 49.0 INF: 52.5 IXE: 53.3 SEC: 50.7 UST: 47.5	
Economic outcomes									
Nyholm et al. 2023[39]	Economic evaluation/ simulated treatment sequence model (Italy, Germany)	5-y time horizon	NA	NA (moderate-to-severe PsO)	NA	NA	NA	NA	Cost effectiveness
Economic outcomes and treatment patterns									
Blauvelt et al. 2022[40]	Retrospective observational study/claims database (USA)	24 mo	IXE (471) SEC (990)	Pts aged ≥18 y with ≥1 inpt or 2 non-diagnostic outpt claims (≥30 days apart) for PsO between Mar 1, 2015, and Oct 31, 2019 and ≥1 claim for IXE or SEC between Mar 1, 2016, and Oct 31, 2019 on or after a PsO diagnosis (NR)	NR	Before weighting: IXE: 55.4 SEC: 54.7 After weighting IXE: 54.9 SEC: 54.9	Before weighting: IXE: 55.0 SEC: 52.7 After weighting: IXE: 53.8 SEC: 53.5	Before weighting: IXE: 48.1 SEC: 48.2 After weighting: IXE: 48.0 SEC: 48.1	Direct costs Cost drivers Prescription patterns Treatment adherence

Blauvelt et al. 2022[41]	Retrospective observational study/claims database (USA)	24 mo	IXE (407) ADA (2702)	Pts aged ≥18 y with ≥1 inpt or 2 non-diagnostic outpt claims with a PsO diagnosis between Mar 1, 2015, and Oct 31, 2019, and ≥1 claim for IXE or ADA between Mar 1, 2016, and Oct 31, 2019 (NR)	NR	Before weighting: IXE: 55.6 ADA: 28.6 After weighting: IXE: 29.2 ADA: 32.1	Before weighting: IXE: 55.4 ADA: 56.6 After weighting: IXE: 57.9 ADA: 56.3	Before weighting: IXE: 48.4 ADA: 46.4 After weighting: IXE: 46.3 ADA: 46.7	Direct costs Cost drivers HCRU Prescription patterns Treatment adherence
Novatski et al. 2022[42]	Retrospective database analysis/claims database (USA)	1 y	Switches to: SEC (581) IXE (246) ETA (NR) APR (NR) Switches from ADA to: SEC (239) IXE (118)	Pts aged 18–65 y identified at index of biologic and entered study within 1 y of switching to a second biologic (NR)	NR	100	NR	NR	Direct costs Prescription patterns
Yang et al. 2022[43]	Retrospective analysis/claims database (USA)	5 y (2013–2017)	NR	Data from the Centers for Medicare and Medicaid Services' Medicare Part D Public Use Files from 2013 to 2017 (NR)	NR	NR	NR	NR	Direct costs Prescription patterns

Blauvelt et al. 2023[44]	Retrospective observational study/claims database (USA)	18 mo	IXE (411) SEC (780)	Pts aged ≥18 y with ≥1 inpt or ≥2 non-diagnostic outpt claims with ≥1 claim for IXE or SEC between Mar 1, 2016, and Oct 31, 2019 (NR)	NR	100	Before weighting: IXE: 56.9 SEC: 52.9 After weighting: IXE: 54.2 SEC: 54.4	Before weighting: IXE: 48.8 SEC: 48.5 After weighting: IXE: 48.5 SEC: 48.6	Direct costs Cost drivers HCRU Prescription patterns Treatment adherence
Treatment patterns									
Hu et al. 2022[45]	Retrospective cohort study/ single-center cohort (China)	4 wk	IXE (118) SEC (217)	Pts receiving either IXE or SEC at a clinic (moderate-to-severe PsO skin lesion at upper limbs: IXE 13.8%, SEC 7.0%)	NR	NR	IXE: 79.7 SEC: 61.8	IXE: 42.8 SEC: 39.9	DLQI Prescription patterns
Bucur et al. 2022[46]	Retrospective cohort study/NR (Romania)	First-line therapy: 16.3 mo Second-line therapy: 15.5 mo	IXE or SEC (311)	Pts with previous/current treatment with IXE and SEC (moderate-to-severe PsO)	NR	100	NR	NR	Prescription patterns Treatment adherence Persistence Treatment switching
Schots et al. 2023[47]	Observational cohort study/ BIOLOPTIM project plus single-center cohort (Belgium)	>100 mo	IXE, SEC, BRO (111)	Pts aged ≥18 y at start of their first biologic and treated with at least one IL-17i (SEC,	30.6	44.1	65.8	47.0 (median)	Prescription patterns Drug survival Treatment discontinuations

				IXE, and/or BRO); database lock Sep 1, 2021 (NR)					Treatment switching
Curmin et al. 2022[48]	Prospective cohort study/ multicenter cohort (France)	7 y	ADA (832) ETA (340) INF (44) CER (6) UST (732) SEC (78) IXE (63) BRO (13) GUS (45)	Adults receiving systemic treatment from 41 French dermatology centers since Jul 2012 who started a biologic before Dec 31, 2019 (moderate-to-severe plaque PsO)	NR	0	60.5	46.0 (median)	Prescription patterns Treatment discontinuations Treatment switching
Yiu et al. 2022[49]	Prospective cohort study/ registry (UK)	14 y	IXE (703) ADA (6607) UST (5405) SEC (2677) GUS (730)	Nov 2007 to Aug 2021 (NR)	NR	NR	NR	NR	Drug survival
Rasouliyan et al. 2022[50]	Retrospective database analysis/ database (Denmark)	8 y	N = 159,818	Pts with prescription or procedure data, 2014–2021 (mild, moderate, and severe PsO)	NR	NR	45	Age ≥60 y: 44	Prescription patterns
Puig at al. 2022[51]	Retrospective database	12 mo	BRO (140) GUS (263)	Administrative claims from	NR	NR	NR	NR	Treatment switching

	analysis/claims database (Japan)		IXE (231) RIS (228) SEC (286) TIL (16) UST (179)	the Japan Medical Data Center payer-based database from Jul 2014 to Jun 2021 for pts with a claim for an approved IL-inhibiting treatment (moderate-to-severe PsO)					Treatment discontinuations
Pinter et al. 2023[52]	Retrospective database analysis/ claims database (Japan)	12 mo	BRO (112) GUS (184) IXE (144) RIS (123) SEC (235) UST (296)	Administrative claims from the Japan Medical Data Center payer-based database from Jul 2014 to Jun 2021 for pts with a claim for an approved IL-inhibiting biologic treatment (moderate-to-severe PsO)	NR	Both; individual subgroup data NR	NR	NR	Treatment patterns
Oh et al. 2022[53] **PsO and PsA**	Retrospective cohort study/ claims database (Korea)	16.1 wk	ETA (369 ADA (1049) INF (195) UST (2488) SEC (738)	Pts with an outpt visit or admission history for plaque PsO prescribed biologics	PsO + PsA: ETA: 23.8 ADA: 25.9 INF: 23.1 UST: 28.1 SEC: 22.1	ETA: 7.6 ADA: 15.9 INF: 19.0 UST: 7.2 SEC: 43.1	ETA: 63.4 ADA: 66.9 INF: 63.6 UST: 69.1 SEC: 69.2	44.8	Prescription patterns Drug survival Treatment discontinuations

			GUS (679) IXE (116)	approved in Korea (NR)	GUS: 26.8 IXE: 21.6	GUS: 43.0 IXE: 38.8	GUS: 70.0 IXE: 66.4		
Pina Vegas et al. 2022[54] **PsO and PsA**	Observational cohort study/ database (France)	Median (IQR), y PsO: 1.4 (0.9–2.3) PsA: 1.2 (0.8–2.0)	PsO ADA (5944) CER (408) ETA (2057) GOL (0) INF (1790) SEC (2133) IXE (502) BRO (76) UST (3982) PsA ADA (2380) CER (359) ETA (1610) GOL (583) INF (42) SEC (696) IXE (58) BRO (0) UST (803)	Pts aged ≥18 y registered in the Système National des Données de Santé eligible for inclusion from Jan 1, 2015, to May 31, 2019, with ≥1 prescription of a biologic agent (moderate-to-severe PsO/PsA)	NR	0	PsO Anti-TNF (ADA, CER, ETA, GOL, INF): 51.2 Anti-IL-17 (SEC, IXE, BRO): 59.1 Anti-IL-12/23 (UST): 58.5 PsA Anti-TNF (ADA, CER, ETA, GOL, INF): 45.5 Anti-IL-17 (SEC, IXE, BRO): 44.0 Anti-IL-12/23 (UST): 45.8	PsO: 48.5 PsA: 49.1	HCRU Previous treatments Drug survival/Drug persistence
Thein et al. 2023[55]	Prospective cohort study/ registry (Denmark)	3 y	ADA (1985) GUS (106) IXE (258) SEC (852) UST (1476)	Pts aged ≥18 y starting ADA, GUS, IXE, SEC, or UST with follow-up time capped at 3 y (NR)	ADA: 22.47 GUS: 28.30 IXE: 25.19 SEC: 26.53 UST: 12.47	ADA: 67.8 GUS: <3 IXE: 10.5 SEC: 45.5 UST: 53.0	ADA: 62.02 GUS: 58.49 IXE: 58.53 SEC: 59.39 UST: 61.25	ADA: 45.93 GUS: 47.64 IXE: 48.94 SEC: 46.66 UST: 45.77	Prescription patterns Treatment persistence

Thai et al. 2023[56]	Retrospective cohort study/ claims database (USA)	12 mo	Cohort 1: Oral systemic treatment (11,993) Cohort 2: Biologics UST (1906) ETA (1521) SEC (567) ADA (5331) IXE (195) GUS (193) INF (31) Others (9)	Pts aged ≥18 y with ≥1 prescription for oral or biologic medication during index period (cohorts not mutually exclusive). Excluded: pts with multiple oral or biologic medication initiations on index date, or combination treatment (NR)	0	Cohort 1: APR: 16 CyA: 14 MET: 9 ACR: 8 Cohort 2: NR	Cohort 1 APR: 47 CyA: 47 MET: 45 ACR: 52 Cohort 2 UST: 53 ETA: 52 SEC: 55 ADA: 53 IXE: 54 GUS: 56 INF: 45 Others: 44	Cohort 1: APR: 49.7 CyA: 45.5 MET: 50.7 ACR: 54.1 Cohort 2 UST: 46.2 ETA: 46.8 SEC: 46.8 ADA: 45.7 IXE: 49.5 GUS: 46.8 INF: 54.5 Others: 49.9	Prescription patterns Drug persistence Discontinuations Treatment switching
Perrone et al. 2023[57]	Retrospective cohort study/ database (Italy)	1 y	2017 (241,552) 2018 (269,856) 2019 (293,905) 2020 (301,639)	Among 2017–2018–2019 and 2020, pts identified by discharge codes for PsO, PsO exemption code, or prescription of topical anti-PsO drug (mixed)	2017: 3.4 2018: 3.4 2019: 3.5 2020: 3.7	2	2017: 52.2 2018: 52.0 2019: 52.0 2020: 51.9	2017: 57.0 2018: 57.3 2019: 57.8 2020: 57.9	Prescription patterns Treatment persistence
Wu et al. 2023[58]	Retrospective database analysis/claims database (USA)	12 mo	IXE (515) RIS (756) GUS (856)	Pts aged ≥18 y initiating an FDA-approved	NR	0	Anti-IL-17s: 51.2	Anti-IL-17s: 46.0	Treatment switching

			SEC (663) ADA (1533) UST (673)	biologic between Jan 1, 2018, and Dec 31, 2021 (moderate-to-severe plaque PsO)			Anti-IL-23s: 51.1 Anti-TNFs: 50.8 Anti-IL 12/23s: 52.7	Anti-IL-23s: 44.6 Anti-TNFs: 45.0 Anti-IL 12/23s: 44.5	
Wu et al. 2023[59]	Retrospective cohort study/ claims database (USA)	≥12 mo	RIS (744) ADA (692) UST (349) SEC (420) IXE (378) GUS (719)	Pts aged ≥18 y who initiated RIS, anti-TNFs, other anti-IL-23s, anti-IL-12/23, or anti-IL-17s between Apr 23, 2019, and Jun 30, 2021 (moderate-to-severe PsO)	0	RIS: 21.1 ADA: 4.2 UST: 13.5 SEC: 21.2 IXE: 25.1 GUS: 24.3	RIS: 49.9 ADA: 51.9 UST: 52.7 SEC: 50.2 IXE: 52.7 GUS: 53.4	RIS: 44.9 ADA: 45.7 UST: 44.6 SEC: 46.3 IXE: 46.4 GUS: 46.1	Prescription patterns
Ting et al. 2023[60]	Retrospective cohort study/ multicenter cohort (Australia)	3 y	IXE (59 ADA (97) ETA (26) INF (70) TIL (11) RIS (36) GUS (35) UST (143) SEC (100)	Pts visiting outpt dermatology clinics in Sydney, Australia, from Apr 2006 to Dec 2020 who received treatment with biologics (moderate-to-severe PsO)	NR	48.9	NR	NR	Prescription patterns Drug survival

Fitzgerald et al. 2023[61] Fitzgerald et al. 2023[62]	Retrospective descriptive analysis/claims database (USA)	3, 6, 12, 18, and 24 mo	IXE (3728) GUS (3408) ADA (8017) SEC (6123)	Pts aged ≥18 y with ≥2 claims with a diagnosis for PsO and ≥1 claim for GUS, ADA, SEC, or IXE with the first observed claim on or after Jul 13, 2017 (mixed)	IXE: 38.3 GUS: 16.7 ADA: 40.8 SEC: 54.2	IXE: 58.2 GUS: 47.8 ADA: 16.2 SEC: 55.5	IXE: 49.7 GUS: 52.9 ADA: 45.9 SEC: 45.8	IXE: 49.1 GUS: 47.9 ADA: 47.4 SEC: 49.4	Prescription patterns Treatment persistence Direct costs Adherence Discontinuations
Zhdanava et al. 2023[63]	Retrospective database analysis/claims database (USA)	24 mo	Pairwise analyses: GUS (1314) vs SEC (3294) GUS (1564) vs IXE (2667)	Pts aged ≥18 y with a first claim for the study biologic from Jul 13, 2017, to Jan 5, 2021 and ≥2 dates with diagnosis of PsO (NR)	NR	100	GUS vs SEC GUS: 53.5 SEC:53.5 GUS vs IXE GUS: 52.8 IXE: 52.8	GUS vs SEC GUS: 49.3 SEC: 49.3 GUS vs IXE GUS: 49.4 IXE: 49.4	Prescription patterns Treatment persistence Treatment switching Direct costs
Fitzgerald et al. 2023[64]	Retrospective database analysis/claims database (USA)	24 mo	Pairwise analyses: GUS (2202) vs SEC (2772) GUS (2241) vs IXE (2007)	Pts aged ≥18 y with a first claim for the study biologic during the period Jul 13, 2017, to Jan 5, 2021, with no claims for other PsO-indicated biologics on index date or BL period	NR	0	GUS vs SEC GUS: 51.0 SEC: 51.0 GUS vs IXE GUS: 51.0 IXE: 51.0	GUS vs SEC GUS: 46.5 SEC: 46.5 GUS vs IXE GUS: 46.5 IXE: 46.5	Prescription patterns Treatment persistence Treatment switching Direct costs

				(bio-naïve) (NR)					
Marcombes et al. 2023[65]	Retrospective cohort study/ database (France)	5 y	TNFi (26,635) Anti- IL-12/23 (7142) Anti-IL-17 (5682) Anti-IL-23i (3288)	Pts with PsO with ≥1 prescription of a biologic for PsO between Jan 1, 2009, and Dec 31, 2021 (NR)	NR	NR	55	49	Treatment persistence
Wang et al. 2023[66] **PsO and PsA**	Retrospective cohort study/ database (Japan)	36 mo	Overall: IXE (624) SEC (897) BRO (488) PsO: IXE (322) SEC (489) BRO (317) PsA: IXE (236) SEC (337) BRO (103)	Pts aged ≥15 y with ≥1 claim for an anti-IL-17 drug on or after the first PsO diagnosis (includes PsO, PsA, GPP, and EP) (NR)	33.8	PsO: IXE: 32.9 SEC: 21.9 BRO: 38.5 PsA: IXE: 48.7 SEC: 40.9 BRO: 65.0	PsO: IXE: 71.4 SEC: 73.2 BRO: 74.8 PsA: IXE: 58.5 SEC: 51.0 BRO: 66.0	PsO: IXE: 55.7 SEC: 54.1 BRO: 54.6 PsA: IXE: 55.8 SEC: 55.4 BRO: 52.8	Prescription patterns Drug survival Discontinuations
Armstrong et al. 2023[67]	Retrospective cohort study/ database (USA)	24 mo	Overall (7997) ADA (2110) BRO (10) CER (51) ETA (113) GUS (1400) INF (12)	Pts aged ≥18 y who initiated a new treatment with a biologic for PsO between Jan 1, 2018, and Sep 30, 2021 (NR)	NR	NR	Overall: 51.7 ADA: 50.9 BRO: 40 CER: 15.7 ETA: 55.7 GUS: 51.2 INF: 50.0	Overall: 44.9 ADA: 45.0 BRO: 48.0 CER: 34.9 ETA: 47.8 GUS: 44.7 INF: 52.6 IXE: 45.8	Treatment switches

			IXE (884) RIS (1389) SEC (961) TIL (97) UST (970)				IXE: 52.1 RIS: 51.2 SEC: 53.5 TIL: 51.5 USE: 54.5	RIS: 44.2 SEC: 45.9 TIL: 47.8 UST: 44.2	
Pinter et al. 2023[68]	Retrospective cohort study/ claims database (Germany)	1 y	IXE (259) RIS (145) GUS (354) TIL (205) UST (241) BRO (166) SEC (612) ADA (454) CER (29) ETA (91) INF (9)	Pts aged ≥18 y with PsO initiating a biologic therapy (NR)	NR	0	NR	NR	Discontinuations Treatment switches
Pinter et al. 2023[69]	Retrospective cohort study/ claims database (Germany)	1 y	IXE (142) RIS (92) GUS (209) TIL (118) UST (133) BRO (77) SEC (359) ADA (171) CER (13) ETA (45) INF (7)	Pts aged ≥18 y with PsO initiating a biologic therapy (NR)	NR	22.2	NR	NR	Dose escalation
Yiu et al. 2023[70]	Retrospective cohort study/ database (UK, Ireland)	Median follow-up 2.3 y	Overall (11,877)	Pts with PsO in the BADBIR registry	NR	NR	NR	NR	Drug survival

				receiving treatment with ADA, BRO, IXE, SEC, GUS, RIS, or UST between Nov 2007 and Jun 2023 (NR)					
Oh et al. 2023[71]	Retrospective cohort study/ double-center cohort (South Korea)	18 mo	Overall (176)	Pts with PsO treated with one of GUS, SEC, IXE, or RIS from 2018 to 2022 (moderate-to-severe PsO)	NR	NR	NR	NR	Drug survival Discontinuations
PsA									
Safety and treatment patterns									
Joven et al. 2022[72]	Retrospective cohort study/ multicenter cohort (Spain)	12 mo	IXE (80) SEC150 (103) SEC300 (38)	Pts aged ≥18 y newly initiating treatment with SEC or IXE (NR)	PsO: 69.6	IXE: 93.8 SEC300: 68.4 SEC150: 58.3	IXE: 52.5 SEC150: 52.4 SEC300: 47.4	IXE: 53.7 SEC150: 51.8 SEC300: 46.1	Lack of effectiveness Previous treatments Treatment persistence Treatment discontinuations
Joven et al. 2023[73]	Retrospective cohort study/ multicenter cohort (Spain)	Mean follow-up period 21.4 mo	Overall (221) SEC150 (103) SEC300 (38) IXE (80)	Pts with PsA, initiating an anti-IL-17 for the first time between Jan 2019 and the end of Mar 2021 (moderate-	PsO Overall: 69.6 SEC150: 68.3 SEC300: 84.8 IXE: 64.5	Overall: 72.9 SEC150: 58.3 SEC300: 68.4 IXE: 93.8	Overall: 51.6 SEC150: 52.4 SEC300: 47.4 IXE: 52.5	Overall: 51.5 SEC150: 51.8 SEC300: 46.1 IXE: 53.7	AEs Lack of effectiveness Previous treatments Treatment persistence Discontinuations

				to-severe PsA)					Treatment switches
Hansen et al. 2023[74]	Retrospective cohort study/ registry (Denmark)	48 mo	First-time switchers: IXE (24) SEC (510) Second-time switchers: IXE (67) SEC (35)	Pts with PsA in the DANBIO registry 2014–Jun 2021 treated with IL-17A inhibitors who had previously received ≥1 TNFi (NR)	NR	First-time switchers: 2.0 Second-time switchers: 4.0	First-time switchers: 41 Second-time switchers: 43	Median age: First-time switchers 51.0 Second-time switchers: 52.7	AEs Loss of effectiveness Drug survival Discontinuations
Safety									
Bastard et al. 2023[75]	Retrospective database analysis/claims database (France)	Median follow-up 13.2 mo	TNFi (8946) Anti-IL-17 (1796) Anti-IL-12/23 (1177) JAKi (152)	Pts aged ≥18 y with PsA, registered between Jan 1, 2015, and Jun 30, 2021, who were new users of targeted therapies (NR)	NR	0	42.2	48.7	Mortality Infections
Treatment patterns									
Pina Vegas et al. 2022[76]	Observational cohort study/ database (France)	246 d (126–506)	Anti-TNF, ADA, CER, ETA, GOL, INF (1580)	Pts aged ≥18 y eligible for inclusion between Jan 1, 2015, and Dec 31, 2020 (moderate-to-severe PsO)	PsO: 26.6	100	Anti-TNF, ADA, CER, ETA, GOL, INF: 31.8	52.44	Prescription patterns Treatment persistence

			Anti-IL-17, SEC, IXE (969) Anti-IL-12/23, UST (426)				Anti-IL-17, SEC, IXE: 38.3 Anti-IL-12/23, UST: 36.1		
Rasouliyan et al. 2022[77]	Retrospective database analysis/ database (USA)	8 y	N=7,234 PsA pts	Pts with prescription or procedure database data for 2014–2021 (NR)	NR	NR	44	≥60 y: 38	Prescription patterns
Glintborg et al. 2022[78]	Prospective cohort study/ registry (Nordic countries)	12 y	Newer b/tsDMARD (4855) anti-TNFs (19,470).	Pts who initiated either a newer b/tsDMARD or an anti-TNF from Jan 2009 until Dec 2020 (NR)	NR	Both b/tsDMARD-experienced and -naïve; subgroup NR	IXE: 38 ABT: 33 APR: 42 BAR: 27 SEC: 40 TOF: 33 UPA: 33 UST: 37 Anti-TNF: 44	IXE: 52 ABT: 54 APR: 53 BAR: 55 SEC: 51 TOF: 54 UPA: 52 UST: 50 Anti-TNF: 49	Prescription patterns
Pizzicato et al. 2023[79]	Retrospective cohort study/ claims database (USA)	12 mo	Unweighted IXE (407) SEC (1508) Weighted IXE (407) SEC (395)	Pts with commercial or Medicare Advantage/Supplemental & Part D health insurance coverage who received ≥1 fill for IXE or SEC from	NA Pts with coexisting PsO: Unweighted IXE: 59.7 SEC: 45.0 Weighted	Unweighted IXE: 70.3 SEC: 73.2 Weighted IXE: 70.3 SEC: 67.4)	Unweighted IXE: 46.4 SEC: 41.0 Weighted IXE: 46.4 SEC: 46.3	Unweighted IXE: 51.6 SEC: 50.1 Weighted IXE: 51.6 SEC: 51.3	Prescription patterns Adherence Treatment persistence

				Dec 1, 2017, to Nov 30, 2019 (mixed)	IXE: 59.7 SEC: 58.9				
Erik et al. 2023[80]	Retrospective database analysis/ database (Japan)	24 mo	IXE (156) SEC (188) BRO (53) GUS (115) RIS (74) TIL (5) UST (53) ADA (264 BIM (5) CZP (108)	Pts with ≥ 1 medical claim for PsA preceding a claim for an approved bDMARD (NR)	NR	NR	NR	NR	Discontinuations Treatment switches
Glintborg et al. 2023[81]	Prospective cohort study/ registry (Nordic countries)	1 y	IXE (361) ADA (5659) ABT (300) APR (949) SEC (1951) TOF (506) UST (700)	Pts in a rheumatology registry who started any approved b/tsDMARD between Jan 2012 and Dec 2020 (NR)	NR	ADA: 44 (of 5659 treatment courses) b/tsDMARD: 79 (of 4767 treatment courses)	1st course IXE: 57 ADA: 48 ABT: 19 APR: 47 SEC: 47 TOF: 36 UST: 43 2nd/3rd course IXE: 41 ADA: 43 ABT: 40 APR: 36 SEC: 42 TOF: 34 UST: 38	1st course IXE: 50 ADA: 49 ABT: 57 APR: 53 SEC: 50 TOF: 50 UST: 46 2nd/3rd course: IXE: 51 ADA: 51 ABT: 53 APR: 54 SEC: 51 TOF: 54 UST: 50	DAPSA PtGA Prescription patterns Drug survival

							≥4th course IXE: 30 ADA: 39 ABT: 26 APR: 36 SEC: 34 TOF: 31 UST: 32	≥4th course IXE: 53 ADA: 52 ABT: 54 APR: 53 SEC: 53 TOF: 53 UST: 52	
axSpA									
Clinical effectiveness and treatment patterns									
Choquette et al. 2023[82]	Prospective cohort study/ single-center cohort (Canada)		Total (272) SEC (226 IXE (46)	Pts with axSpA or pSpA initiating IXE or SEC after Aug 2016 (NR)	NR	NR	51.6 SEC: 44 IXE: 46	51.6	PGA and PtGA HAQ-DI Treatment retention

ABT, abatacept; ACR, acitretin; ADA, adalimumab; AE, adverse event; APR, apremilast; axSpA, axial spondyloarthritis; BADBIR, British Association of Dermatologists Biologic and Immunomodulators Register; bDMARD, biological disease-modifying antirheumatic drug; BIM, bimekizumab; BL, baseline; BRO, brodalumab; BSA, body surface area; CER, certolizumab; CRP, C-reactive protein; CyA, cyclosporin A; CZP, certolizumab pegol; d, day(s); DANBIO, Danish Rheumatology Database; DAPSA, Disease Activity in Psoriatic Arthritis; DERMBIO; Denmark registry of patients treated with biologics for psoriasis; DLQI, Dermatology Life Quality Index; EMR, electronic medical records; EP, erythrodermic psoriasis; ETA, etanercept; FDA, US Food and Drug Administration; GOL, golimumab; GPP, generalized pustular psoriasis; GUS, guselkumab; HAQ-DI, Health Assessment Questionnaire-Disability Index; HCRU, healthcare resource utilization; IL, interleukin; INF, infliximab; inpt, inpatient; IQR, interquartile range; IXE, ixekizumab; JAKi, Janus kinase inhibitor; MET, methotrexate; mNAPSI, modified Nail

Psoriasis Severity Index; mo, month(s); NA, not applicable; NP, nail psoriasis; NR, not reported; outpt, outpatient; PASI, Psoriasis Area and Severity Index; PGA, Physicians Global Assessment; PsA, psoriatic arthritis; PsO, psoriasis; PsoHO: Psoriasis Study of Health Outcomes; pSpA, peripheral spondyloarthritis; PSSD, Psoriasis Symptoms and Signs Diary; PGA, Physician's Global Assessment; PtGA, Patient Global Assessment; pt(s), patient(s); PY, person-years; RIS, risankizumab; SEC, secukinumab; sPGA, static Physician Global Assessment; TB, tuberculosis; TIL, tildrakizumab; TNF, tumor necrosis factor; TNFi, TNF inhibitor; TOF, tofacitinib; tsDMARD, targeted synthetic disease-modifying antirheumatic drug; UK, United Kingdom; UPA, upadacitinib; USA, United States; UST, ustekinumab; wk, week(s); y, year(s).

Supplementary Table 5. Characteristics of non-comparative studies by main outcome categories evaluated***

Study ID	Study design and treatments			Population characteristics					
	Study design (country)	**Follow-up duration**	**Treatments (pt N)**	**Population (disease severity)**	**Coexisting PsA, %**	**Biologic experienced, %**	**Males, %**	**Mean age, y**	**Outcomes investigated**
PsO									
Clinical effectiveness									
Gottlieb et al. 2022[83]	Prospective observational non-interventional study/ database (USA)	12 wk (interim analysis)	N= 528 355 pts completed 12 wk follow-up	Pts aged ≥18 y enrolled in the US IXE Customer Support Program initiating IXE (NR)	NR	NR	NR	47.6	BSA PGA DLQI Itch NRS Skin pain NRS
Gottlieb et al. 2023[84]	Prospective cohort study/ database (USA)	24 wk	N = 523 at treatment initiation, 343 pts completed 24-wk follow up PsO (236) PsO+PsA (287)	Pts aged ≥18 y enrolled in the US IXE Customer Support Program, initiating IXE (moderate-to-severe plaque PsO)	54.9	Biologics used in the past 2 y: 48.6 PsO: 29.7 PsO+PsA: 64.1	36.5 PsO: 39.8 PsO+PsA: 33.8	47.5 PsO: 46.8 PsO+PsA: 48.1	BSA PGA DLQI Itch NRS Skin Pain NRS Prior treatments
Mukahal et al. 2023[85]	Prospective cohort study/ single-center cohort (Libya)	52 wk	IXE (57)	Pts aged ≥18 y with PASI score ≥12 treated with IXE between Jun 2020 and Jul 2021 (moderate-to-severe PsO)	NR	NR	56.1	NR	PASI score PASI75/90

Gottlieb et al. 2023[86]	Database analysis real-world effectiveness study/ database (USA)	24 wk	IXE (523)	Pts aged ≥18 y in the IXE Customer Support Program initiating IXE (mild, moderate, severe PsO)	Mild: 67 Moderate: 49 Severe: 48	Mild: 61 Moderate: 44 Severe: 39	Mild: 32 Moderate: 38 Severe: 41	Mild: 49.4 Moderate: 47.0 Severe: 45.7	BSA PGA DLQI Itch NRS Skin Pain NRS
Gottlieb et al. 2023[87]	Database analysis real-world effectiveness study/ database (USA)	12 wk	Target response (422) Acceptable response (294)	Pts aged ≥18 y in the IXE Customer Support Program initiating IXE (moderate-to-severe PsO)	Target response: 50 Acceptable response: 49	Target response: 42 Acceptable response: 42	Target response: 37 Acceptable response: 39	Target response: 46.7 Acceptable response: 46.1	BSA Previous treatments
Clinical effectiveness, and safety									
Kojanova et al. 2022[88]	Retrospective cohort study/ registry (Czech Republic)	48 mo	IXE (328)	Pts who initiated IXE followed up until Mar 2022 from BIOREP Registry (severe PsO)	NR	NR	NR	NR	PASI score PASI75/90/100 AEs Loss of effectiveness DLQI Treatment discontinuations
Chiu et al. 2023[89]	Retrospective cohort study/ single-center cohort (Taiwan)	83 mo	Total (116)	Pts with psoriatic diseases who had received IXE in an outpt clinic (NR)	63.8	81.9	73.3	51.2	PASI score PASI75/90/100 BSA AEs Injection site reactions
Clinical effectiveness, safety, and treatment patterns									

Demirel Öğüt et al. 2022[90]	Retrospective observational study/single-center cohort (Turkey)	48 wk	IXE (82)	Pts aged ≥18 y treated with IXE for ≥24 wk at a single hospital dermatology unit between Dec 2019 and Aug 2021 with PASI score ≥10 and failure with previous treatments or could not use conventional systemic treatments (moderate-to-severe chronic plaque PsO)	2.4	17.1	57.3	44.6	PASI score PASI75/90/100 AEs Lack of effectiveness Loss of effectiveness Prescription patterns Treatment persistence Treatment discontinuations
Gönülal et al. 2022[91]	Retrospective multicenter study/ multicenter cohort (Turkey)	48 wk	IXE (239)	Pts presenting to dermatology outpt clinics between Sep 2019 and May 2022, receiving IXE (moderate-to-severe plaque PsO)	NR	50.2	58.2	47.36	PASI75/90/100 AEs Lack of effectiveness Prescription patterns Treatment discontinuations
Huang et al. 2023[92]	Retrospective observational study/ multicenter	12 wk	IXE (62)	Pts treated with IXE (moderate-to severe plaque PsO)	NR	9.7	72.5	38.1	PASI scores PASI75/90/100 AEs DLQI

	cohort (China)								Previous treatments Treatment discontinuations
Lockshin et al. 2022[93]	Prospective cohort study/ multicenter cohort (North America)	6 mo	IXE (419)	Pts who switched to IXE after discontinuing another biologic therapy at or after enrolment into the registry between Mar 2016 and Sep 2020, pts with experience with non-IL-17i biologics were excluded if they also had a history of IL-17i exposure (moderate-to-severe)	53.7	10	51.6	51.2	PASI75/90/100 WPAI Previous treatments Treatment discontinuations
Hu et al. 2023[94] Hu et al. 2023[95]	Retrospective cohort study/ single-center cohort (China)	12 wk	IXE (182)	Pts initiating IXE (anti-IL-17s) were recruited (moderate-to-severe PsO))	Education group: 15.4 No-education group: 9.9	Education group: 14.3 No education group: 12.1	Education group: 70.3 No-education group: 76.9	Education group: 41.3 No-education group: 41.3	PASI75/90/100 AEs Infections DLQI Adherence
Jiang et al. 2023[96]	Prospective cohort study/	12 wk	IXE (511)	Pts aged ≥18 y with PsO at	40.0	11.1	69.7	Median 37	PASI75/90/100 DLQI

	multicenter cohort (China)			hospitals across China during Aug 31, 2020, to May 9, 2022, prescribed IXE in a routine clinical care setting (moderate-to-severe PsO)					AEs Previous therapy Discontinuations
Chiricozzi et al. 2023[97]	Retrospective cohort study/ multicenter cohort (Italy)	24 mo	IXE (198)	Pts aged ≥18 y with PsO treated with IXE monotherapy for ≥12 mo, with treatment starting between Jun 2017 and Sep 2019 (moderate-to-severe PsO)	4.55	31.3	70.2	50.0	PASI score PASI75/90/100 Loss of effectiveness DLQI Drug survival Discontinuations
Ying et al. 2023[98]	Prospective cohort study/ multicenter post-marketing surveillance study (China)	12 wk	IXE (663)	Pts aged ≥18 y with PsO prescribed IXE (moderate-to-severe plaque PsO)	NR	10.6	71.9	40.4	PASI score PASI50/75/90/100 BSA AEs Mortality Infections Injection site reactions DLQI
Burlando et al. 2023[99]	Retrospective cohort study/	3 y	IXE (108)	Pts aged ≥18 y with PsO	25.9	38	65.7	56.9	PASI score

	single-center cohort (Italy)			who started IXE between Jan 2017 and Dec 2021 (NR)					PASI75/90/100 AEs Prescription patterns Drug survival Discontinuations
Clinical effectiveness and economic outcomes									
Li et al. 2022[100]	Retrospective cohort study/ single-center cohort (China)	12 wk	IXE (66)	Pts aged ≥18 y treated with IXE from Nov 2019 to Jan 2021 (moderate-to-severe PsO)	12.1	30.3	83.3	41.0	PASI score PASI50/75/90/100 BSA\PGA AEs Direct costs DLQI Previous treatments
Shahriari et al. 2022[101]	Prospective cohort study/ registry (USA/Canada)	6 mo	IXE (136)	Pts aged ≥18 y who initiated a qualifying biologic or non-biologic systemic PsO treatment in the 12 mo before or at enrolment visit between Apr 15, 2016, and May 10, 2018 (NR)	44.9	83	52.9	50.8	PASI score BSA PGA WPAI EQ-5D DLQI VAS Previous treatments
Ye et al. 2022[102]	Prospective cohort study/ single-center	16 wk	N = 39 pts on IXE	Pts with PsO treated with IXE from Nov	NR	NR	NR	NR	PASI score PASI100 Direct costs

	cohort (China)			2019 to Dec 2020 (NR)					
Safety and treatment patterns									
Caldarola et al. 2023[103]	Retrospective cohort study/ multicenter cohort (Italy)	36 mo	IXE (306)	Pts aged ≥18 y who received ≥1 dose of IXE before Dec 2018 (moderate-to-severe PsO)	NR	56.86	66.34	53.87	PASI score AEs Lack of effectiveness Previous treatments Drug survival Treatment discontinuations
Juanes et al. 2023[104]	Retrospective cohort study/ single-center cohort (Spain)	5 y	IXE (84)	Pts with plaque PsO receiving IXE between Jun 15, 2017, and Mar 30, 2023 (NR)	NR	NR	NR	NR	AEs Drug survival
Treatment patterns									
Gulliver et al. 2022[105]	Retrospective database analysis/ database (Canada)	6 mo	IXE (2450)	Pts aged ≥18 y from the Canadian PSP (May 2016 to Jan 1, 2021) who initiated IXE (moderate-to-severe PsO)	NR	NR	NR	NR	Adherence Treatment persistence
Gulliver et al. 2023[106]	Retrospective database analysis/ database (Canada)	2 y	IXE (1891)	Pts aged ≥18 y initiating IXE and enrolled in the Canadian PSP (May 2016 to Mar	NR	36.1	61.4	52.3	Adherence (proportion of days covered) Treatment persistence

				2020) for ≥6 mo (moderate-to-severe PsO)					
Kojanova et al. 2022[107] Kojanova et al. 2022[108]	Retrospective cohort study/ registry (Czech Republic)	48 mo	IXE (328)	Pts initiating IXE therapy until Mar 2022 from BIOREP Registry (severe PsO)	42.1	70.2	55.8	26.2 (at diagnosis)	Previous treatments Drug survival Treatment switching Prescription patterns
Quality of Life									
Gottlieb et al. 2023[109]	Prospective cohort study/ database (USA)	24 wk	With nail involvement (140) Without nail involvement: (383)	Pts with PsO treated with IXE with or without nail involvement (NR)	NR	Biologic experienced in the previous 2 y With nail involvement: 54.3 Without nail involvement: 46.5	With nail involvement: 39.3 Without nail involvement: 35.5	With nail involvement: 47.1 Without nail involvement: 47.7	DLQI
Other									
Schots et al. 2023[110]	Prospective cohort study/ multicenter cohort (NR)	≥22 wk	Total (48)	Pts aged ≥18 y with PsO treated with IXE (NR)	NR	35.4	NR	NR	
PsA									
Clinical effectiveness									
Rohekar et al. 2023[111]	Retrospective database/ database (USA)	12.51 mo (mean IXE exposure duration)	Total (90)	Pts aged ≥18 y with active PsA receiving IXE enrolled in the US	NR	NR	NR	NR	Physician-reported outcomes

				database in 2022 (NR)					
Clinical effectiveness and treatment patterns									
Tillett et al. 2023[112]	Retrospective cohort study/ claims dataset + EMR (USA)	12 mo	IXE (1812)	Pts aged ≥18 y initiating IXE from Dec 1, 2017, through Jan 2021, who did not have a diagnosis code for ankylosing spondylitis in the baseline period (moderate-to-severe PsA)	PsO: 82.2	83.6	38.9	53.7	Physician-reported outcomes Pain VAS Previous therapy
Clinical effectiveness, safety and treatment patterns									
Joven et al. 2022[72] Joven et al. 2023[113]	Retrospective cohort study/ multicenter cohort (Spain)	≥24 wk	IXE (89)	Pts who started IXE between Jan 1, 2019, and Dec 31, 2020, with a minimum follow-up of 24 wk until treatment interruption/end of follow-up (NR)	Active PsO: 85.4	95.5	44.9	51.5	DAPSA AEs Loss of effectiveness Previous treatments Prescription patterns Treatment persistence Treatment discontinuations
Safety and treatment patterns									
Bellis et al. 2023[114]	Retrospective cohort study/	6 mo	IXE (76)	Pts treated with IXE who visited an	NA	71.1	28.9	57.1	AEs Previous treatments

	single-center cohort (Italy)			outpt clinic (NR)					Treatment discontinuations
Braña et al. 2023[115] Braña et al. 2023[116]	Retrospective observational study/single-center cohort (Spain)	2 y	IXE (72)	All adult pts who had received ≥1 dose of IXE from Jan 2019 to Dec 2021 (NR)	NA	Anti-TNF: 83.3 tsDMARDs: 33.3 Other biologics: 11.1	27.8	50	AEs Lack of effectiveness Loss of effectiveness Prescription patterns Drug survival Treatment discontinuations

AEs, adverse events; BIOREP, Czech Republic registry of patients with dermatological diseases on biological therapy; BSA, body surface area; DAPSA, Disease Activity in Psoriatic Arthritis; DLQI, Dermatology Life Quality Index; EMR, electronic medical records; IL, interleukin; IXE, ixekizumab; mo, month(s); NR, not reported; NRS, numerical rating scale; outpt, outpatient; PASI, Psoriasis Area and Severity Index; PGA, Physician's Global Assessment; PsA, psoriatic arthritis; PsO, psoriasis; PSP, Patient Support Programme; pts, patients; TNF, tumor necrosis factor; tsDMARDs, targeted synthetic disease-modifying antirheumatic drugs; USA, United States; VAS, visual analog scale; wk, week(s); WPAI, Work Productivity and Activity Impairment Questionnaire; y, year(s).

References

1. Costanzo A, Paul C, Carrascosa JM, et al. Initial report on the month 12 results from the Psoriasis Study of Health Outcomes (PSoHO) for patients with moderate-to-severe psoriasis treated with biologics in the real-world setting. *Australas J Dermatol*. 2023;64(S1):26.
2. Lynde C, Riedl E, Maul JT, et al. Comparative effectiveness of biologics across subgroups of patients with moderate-to-severe plaque psoriasis: results at week 12 from the PSoHO study in a real-world setting. *Adv Ther*. 2023;40(3):869–886. doi: 10.1007/s12325-022-02379-9.
3. Ting S, Peñas PF, Lowe AS. Efficacy of biologic therapies in moderate to severe psoriasis – A retrospective cohort study of PASI outcomes across two major tertiary hospitals. *Australas J Dermatol*. 2023;64(S1):15–30. doi: 10.1111/ajd.14037.
4. Burzi L, Mastorino L, Dapavo P, et al. Psoriasis of the scalp, genital area, and palmoplantar psoriasis: efficacy of modern biologics drugs in difficult-to-treat areas. 25th World Congress of Dermatology; July 3–8; 2023; Singapore.
5. Tichy M, Kojanova M, Velackova B, et al. Efficacy of switches within the class of IL-17 inhibitors: An analysis of data from the Czech nationwide registry of psoriatic patients receiving biological/targeted therapy (BIOREP). *Dermatol Ther*. 2022;35(10):e15772. doi: 10.1111/dth.15772.
6. Khattri S, Gooderham M, Reich A, et al., editors. The Psoriasis Study of Health Outcomes (PSoHO) in biologic-naïve and -experienced patients: a post-hoc analysis of patients receiving treatment according to US Labels. American Academy of Dermatology (AAD) March 17–20; 2023; Virtual/New Orleans, USA.
7. Timis T-L, Beni L, Mocan T, et al. Biologic therapies decrease disease severity and improve depression and anxiety symptoms in psoriasis patients. *Life (Basel)*. 2023;13(5):1219. doi: 10.3390/life13051219.
8. Loft N, Egeberg A, Isufi D, et al. Response to interleukin-17A inhibitors according to prior biologic exposures: a Danish nationwide study. *Acta Derm Venereol*. 2023;103:adv12616. doi: 10.2340/actadv.v103.12616.
9. Travaglini M, Maul JT, Kors C, et al. Effectiveness of biologics, patient-reported outcomes, and clinical photography in a subset of patients with moderate-to-severe psoriasis: week 12 results from the Psoriasis Study of Health Outcomes (PSoHO). *Clin Cosmet Investig Dermatol*. 2023;16:2971–2983. doi: 10.2147/CCID.S426972.
10. Reich A, Pinter A, Maul JT, et al. Speed of clinical improvement in the real-world setting from patient-reported Psoriasis Symptoms and Signs Diary: Secondary outcomes from the Psoriasis Study of Health Outcomes through 12 weeks. *J Eur Acad Dermatol Venereol*. 2023;37(9):1825–1840. doi: 10.1111/jdv.19161.
11. Egeberg A, Pinter A, Vender R, et al. 42592 Baseline characteristics and interim month 12 mNAPSI results in patients with moderate-to- severe plaque psoriasis and concomitant nail psoriasis treated with biologics in the Psoriasis Study of Health Outcomes (PSoHO). *J Am Acad Dermatol*. 2023;89(3 Suppl):AB127. doi: 10.1016/j.jaad.2023.07.509.
12. Piaserico S, Zaheri S, Khattri S, et al. Comparative effectiveness of biologics across clinically relevant comorbitdity subgroups with moderate-to-severe plaque psoriasis: results at week 12 from the PSoHO study in a real-world setting. EADV Congress; October 11–14; 2023; Berlin, Germany.

13. Smith SD, Newson R, Brnabic A, et al. Effectiveness of biologics in clinical practice in Australian patients: Week 12 primary outcomes from the international observational psoriasis study of health outcomes (PSoHO). *Australas J Dermatol*. 2023;64(S1):15–30. Doi: 10.1111/ajd.14037.

14. Piaserico S, Riedl E, Pavlovsky L, et al. Comparative effectiveness of biologics for patients with moderate-to-severe psoriasis and special area involvement: week 12 results from the observational Psoriasis Study of Health Outcomes (PSoHO). *Front Med (Lausanne)*. 2023;10:1185523. doi: 10.3389/fmed.2023.1185523.

15. Xiao Y, Wang Y, Hu H, et al. The long-term effectiveness of biologics in Chinese patients with psoriasis bybody regions: A retrospective real-life study. *J Invest Dermatol*. 2023;143(11 Suppl):S344. doi: 10.1016/j.jid.2023.09.078.

16. Esen M. The effect of IL17 and IL23 inhibitors on hematological parameters and C-reactive protein in psoriasis patients. *Cutan Ocul Toxicol*. 2024;43(1):38–45. Doi: 10.1080/15569527.2023.2275020.

17. Megna M, Potestio L, Camela E, et al. Ixekizumab and brodalumab indirect comparison in the treatment of moderate to severe psoriasis: Results from an Italian single-center retrospective study in a real-life setting. *Dermatol Ther*. 2022;35(9):e15667. doi: 10.1111/dth.15667.

18. Potestio L, Ruggiero A, Camela E, Megna M. Ixekizumab and brodalumab indirect comparison for the treatment of moderate-to-severe psoriasis: a single-center real-life retrospective study (abstract 2213). EADV Congress; October11–14; 2023; Berlin, Germany. Available from: https://eadv.org/wp-content/uploads/scientific-abstracts/EADV-congress-2023/Psoriasis.pdf.

19. Sermsaksasithorn P, Wongtada C, Chaaim V, et al. On and off-label uses of interleukin-17 inhibitors for patients with plaque-type psoriasis in Thailand: a real-world study. *J Dermatolog Treat*. 2022;33(7):2963–2974. doi: 10.1080/09546634.2022.2089328.

20. Kojanova M, Hugo J, Velackova B, et al. Efficacy, safety, and drug survival of patients with psoriasis treated with IL-17 inhibitors – brodalumab, ixekizumab, and secukinumab: real-world data from the Czech Republic BIOREP registry. *J Dermatolog Treat*. 2022;33(6):2827–2837. doi: 10.1080/09546634.2022.2082354.

21. Mastorino L, Dapavo P, Susca S, et al. Drug survival and clinical effectiveness of secukinumab, ixekizumab, brodalumab, guselkumab, risankizumab, tildrakizumab for psoriasis treatment. *J Dtsch Dermatol Ges*. 2024;22(1):34–42. doi: 10.1111/ddg.15251.

22. Mastorino L, Burzi L, Frigatti G, et al. Clinical effectiveness of IL-17 and IL-23 inhibitors on difficult-to-treat psoriasis areas (scalp, genital, and palmoplantar sites): a retrospective, observational, single-center, real-life study. *Expert Opin Biol Ther*. 2023;23(9):929–936. doi: 10.1080/14712598.2023.2236023.

23. Kuang Y, Li Y, Lv C, et al. Unmet medical needs and treatment preferences for systemic treatments in patients with moderate to severe psoriasis: a cross-sectional survey study in China (abstract PCR40). *Value Health*. 2023;26(12 Suppl):S456. doi: 10.1016/j.jval.2023.09.2479.

24. Ting S, Lowe P, Smith A, Fernández-Peñas P. Drug survival of biologics in psoriasis: A retrospective cohort study of outcomes at two major tertiary hospitals in Sydney, Australia. 25th World Congress of Dermatology; July 3–8; 2023; Singapore.

25. Akbulut TO, Ekinci AP, Engin B, et al. Efficacy of switching between ixekizumab and secukinumab on moderate-to-severe plaque psoriasis. 31st EADV Congress; September 7–12; 2022; Milan, Italy.

26. Castro-Ayarza J, Barbosa-Rengifo M, Franco-Franco M, et al. Biological therapy optimization in patients with psoriasis by reducing the dose or increasing the time interval, in a specialized centre in Colombia. *Revista Colombiana de Reumatología (English Edition)*. 2023;30 suppl 1:S65–S9. doi: 10.1016/j.rcreu.2023.02.012.

27. Mastorino L, Cariti C, Susca S, et al. Comparison between brodalumab, secukinumab and ixekizumab effectiveness and drug survival: A real-life experience on 638 patients with psoriasis. *Exp Dermatol*. 2023;32(9):1591–1594. doi: 10.1111/exd.14874.

28. Mastorino L, Quaglino P, Ribero S, Dapavo P. Comparison between brodalumab, secukinumab, and ixekizumab effectiveness: a real-life experience on 638 psoriatic patients. EADV Spring Symposium. May 18–20; 2023; Seville, Spain.

29. Pinter A, Eyerich K, Costanzo A, et al.. Association between disease duration and treatment response in patients with moderate-to-severe plaque psoriasis treated with biologics in a real-world setting: results at week 12 from the Psoriasis Study of Health Outcomes (PSoHO) [Abstract 2525]. EADV Congress; October 11–14; 2023; Berlin, Germany.

30. Torres T, Puig L, Vender R, et al. Drug survival of interleukin (IL)-17 and IL-23 inhibitors for the treatment of psoriasis: a retrospective multi-country, multicentric cohort study. *Am J Clin Dermatol*. 2022;23(6):891–904. doi: 10.1007/s40257-022-00722-y.

31. Megna M, Battista T, Noto M, et al. Injections site reactions and biologics for psoriasis: a questionnaire based real life study. *Clin Cosmet Investig Dermatol*. 2023;16:553–564. doi: 10.2147/CCID.S400679.

32. Yuan L, Li Y, Lin J, et al. Safety of biologics for psoriatic patients with latent tuberculosis. *Clin Cosmet Investig Dermatol*. 2023;16:2333–2336. doi: 10.2147/CCID.S426253.

33. Li Y, Lu JJ, Zhong XY, et al. Drug survival outcomes associated with the real-world use of ixekizumab, secukinumab, guselkumab, and adalimumab for the treatment of plaque psoriasis in China: A 52-week single-center retrospective study. *Clin Cosmet Investig Dermatol*. 2022;15:2245–2252. doi: 10.2147/CCID.S387759.

34. Yiu ZZN, Becher G, Kirby B, et al. Drug survival associated with effectiveness and safety of treatment with guselkumab, ixekizumab, secukinumab, ustekinumab, and adalimumab in patients with psoriasis. *JAMA Dermatol*. 2022;158(10):1131–1141. doi: 10.1001/jamadermatol.2022.2909.

35. Voisin A, Al-Ali A, Abduelmula A, Gooderham MJ. Reasons for the termination of interleukin-17 inhibitor medications in the treatment of plaque psoriasis: a real-world retrospective study. *J Cutan Med Surg*. 2023;27(1):67–69. doi: 10.1177/12034754221143084.

36. Yanase T, Tsuruta N, Yamaguchi K, et al. Survival rates of systemic interventions for psoriasis in the Western Japan Psoriasis Registry: A multicenter retrospective study. *J Dermatol*. 2023;50(6):753–765. doi: 10.1111/1346-8138.16737.

37. Torres T, Peris K, Spelman L, et al. Discontinuation rates of biologics in patients with psoriasis: 1 year (interim) follow-up of the Psoriasis Study of Health Outcomes (PSoHO). 25th World Congress of Dermatology; July 3–8; 2023; Singapore. Available from: https://www.wcd2023singapore-abs.org/documents/abstract-driven/psoriasis/discontinuation-rates-of-biologics-in-1691.pdf

38. Jin Y, Lee H, Lee MP, et al. Risk of hospitalization for serious infection after initiation of ustekinumab or other biologics in patients with psoriasis or psoriatic arthritis. *Arthritis Care Res (Hoboken)*. 2022;74(11):1792–1805. doi: 10.1002/acr.24630.

39. Nyholm N, Danø A, Schnack H, Colombo GL. The cost-effectiveness of anti-IL17 biologic therapies for moderate-to-severe plaque psoriasis treatment in Italy and Germany: a sequential treatment analysis. *Clinicoecon Outcomes Res*. 2023;15:607–619. doi: 10.2147/CEOR.S417922.

40. Blauvelt A, Shi N, Burge R, et al. Healthcare costs among patients with psoriasis treated with ixekizumab versus secukinumab in real-world settings over 24 months. *Pharmacoecon Open*. 2022;6(6):871–880. doi: 10.1007/s41669-022-00365-z.

41. Blauvelt A, Shi N, Murage MJ, et al. Healthcare resource utilization and costs among patients with psoriasis treated with ixekizumab or adalimumab over 2 years of follow-up in real-world settings. *J Med Econ*. 2022;25(1):741–749. doi: 10.1080/13696998.2022.2081417.

42. Novatski J, Syed S, Lovett K, et al. Biologic switching and associated pharmacy costs during the loading dose period in patients with psoriasis: Analysis of insurance claims from a real-world database. *JMCP*. 2022;28(10-a):S98–9.

43. Yang JJ, Pham AT, Maloney NJ, et al. Psoriasis drugs in the medicare population: dermatologists' spending and prescription patterns. *J Dermatolog Treat*. 2022;33(3):1758–1761. doi: 10.1080/09546634.2020.1864265.

44. Blauvelt A, Shi N, Somani N, et al. Comparison of real-world costs, healthcare resource utilization, and comorbidity-related costs between ixekizumab and secukinumab among biologic-experienced patients with psoriasis over 18 months in the USA. *Clin Drug Investig*. 2023;43(3):185–196. doi: 10.1007/s40261-022-01240-9.

45. Hu K, Zhang M, Yang J, et al. Should we customize the treatment with interleukin-17A inhibitors for moderate-to-severe psoriasis in the real-world setting? *J Eur Acad Dermatol Venereol*. 2023;37(2):e262–e263. doi: 10.1111/jdv.18678.

46. Bucur S, Ciurduc M, Savu A, et al. 164 Correlations between etiopathogenic factors and persistence of anti-IL-17A biologic therapies in patients with severe psoriasis vulgaris. *J Invest Dermatol*. 2022;142:S208. doi: 10.1016/j.jid.2022.09.174

47. Schots L, Soenen R, Blanquart B, et al. Blocking interleukin-17 in psoriasis: Real-world experience from the PsoPlus cohort. *J Eur Acad Dermatol Venereol*. 2023;37(4):698–710. doi: 10.1111/jdv.18827.

48. Curmin R, Guillo S, De Rycke Y, et al. Switches between biologics in patients with moderate-to-severe psoriasis: results from the French cohort PSOBIOTEQ. *J Eur Acad Dermatol Venereol*. 2022;36(11):2101–2112. doi: 10.1111/jdv.18409.

49. Yiu Z, Becher G, Kirby B, et al. O03: Effect modification of biologic survival by patient characteristics: a prospective cohort study from the British Association of Dermatologists Biologics and Immunomodulators Register. *Br J Dermatol*. 2022;187(S1):11–12. doi: 10.1111/bjd.21089.

50. Rasouliyan L, Althoff AG, Kumar V, et al. Trends in the use of biologics for treatment of plaque psoriasis in the real-world setting. ICPE; August 24–28; 2022; Copenhagen, Denmark.

51. Puig L, Soliman AM, Davis M, et al. Real-world switching and discontinuation patterns for interleukin-inhibitor treatments in patients with moderate to severe psoriasis in Japan. EADV Congress; September 7–10; 2022; Milan, Italy.

52. Pinter A, Soliman AM, Davis M, et al. Dose escalation of biologic treatment in patients with moderate to severe psoriasis in Japan [abstract]. EADV Congress; October 11–14; 2023; Berlin, Germany.

53. Oh S, Choi S, Yoon HS. Available alternative biologics and disease groups influence biologic drug survival in patients with psoriasis and psoriatic arthritis. *Ann Dermatol*. 2022;34(5):321–330. doi: 10.5021/ad.22.003.

54. Pina Vegas L, Penso L, Claudepierre P, Sbidian E. Long-term persistence of first-line biologics for patients with psoriasis and psoriatic arthritis in the French Health Insurance Database. *JAMA Dermatol*. 2022;158(5):513–522. doi: 10.1001/jamadermatol.2022.0364.

55. Thein D, Rosenø NAL, Maul JT, et al. Drug survival of adalimumab, secukinumab, and ustekinumab in psoriasis as determined by either dose escalation or drug discontinuation during the first 3 years of treatment - a nationwide cohort study. *J Invest Dermatol*. 2023;143(11):2211–2218.e4. doi: 10.1016/j.jid.2023.04.009.

56. Thai S, Zhuo J, Zhong Y, et al. Real-world treatment patterns and healthcare costs in patients with psoriasis taking systemic oral or biologic therapies. *J Dermatolog Treat*. 2023;34(1):2176708. doi: 10.1080/09546634.2023.2176708.

57. Perrone V, Losi S, Sabatino S, et al. Analysis of drug utilization in patients with psoriasis: a real-world retrospective study among the Italian population. *Psoriasis (Auckl)*. 2023;13:1–9. doi: 10.2147/PTT.S396003.

58. Wu J, Patel M, Li C, et al. 41279 Real-world switch rates of biologics and associated costs in patients with psoriasis. *J Am Acad Dermatol*. 2023;89(3 Suppl):AB81. Doi: 10.1016/j.jaad.2023.07.329.

59. Wu JJ, Patel M, Zeng F, et al. Real-world dose escalation of biologics for moderate-to-severe psoriasis in the United States. *J Dermatolog Treat*. 2023;34(1):2200869. doi: 10.1080/09546634.2023.2200869.

60. Ting S, Fernández-Peñas P, Lowe PM, Smith A. Drug survival of biologics in psoriasis in an Australian population: A retrospective 15-year study of patients' experiences. *Australas J Dermatol*. 2023;64(S1):

61. Fitzgerald T, Zhdanava M, Pilon D, et al. Long-term psoriasis control with guselkumab, adalimumab, secukinumab, or ixekizumab in the USA. *Dermatol Ther (Heidelb)*. 2023;13(4):1053–1068. doi: 10.1007/s13555-023-00910-6.

62. Fitzgerald T, Zhdanava M, Pilon D, et al. Response to the Letter to the Editor: Long-term psoriasis control with guselkumab, adalimumab, secukinumab, or ixekizumab in the USA. *Dermatol Ther (Heidelb)*. 2023;13(11):2917–2923. doi: 10.1007/s13555-023-01017-8.

63. Zhdanava M, Fitzgerald T, Pilon D, et al. Long term psoriasis control with guselkumab versus secukinumab and ixekizumab among bio-experienced patients: analysis of drug persistence in large claims database (abstract 43312). American Academy of Dermatology Annual Meeting; March 17–21; 2023; New Orleans, USA.

64. Fitzgerald T, Zhdanava M, Pilon D, et al. Long term psoriasis control with guselkumab versus secukinumab and ixekizumab among bio-naïve patients: analysis of drug persistence in large claims database (abstract 43038). American Academy of Dermatology Annual Meeting; March 17–21; 2023; New Orleans, USA.

65. Marcombes C, Penso L, Sbidian E. First-line persistence of biologics in psoriasis from a cohort based on French medico-administrative data. *J Invest Dermatol*. 2023;143(9):1819–1822.e3. doi: 10.1016/j.jid.2023.03.1660.

66. Wang C, Torisu-Itakura H, Hanada T, et al. Treatment persistence of interleukin-17 inhibitor class drugs among patients with psoriasis in Japan: a retrospective database study. *J Dermatolog Treat*. 2023;34(1):2229465. doi: 10.1080/09546634.2023.2229465.

67. Armstrong AW, Patel M, Li C, et al. Real-world switching patterns and associated characteristics in patients with psoriasis treated with biologics in the United States. *J Dermatol Treat*. 2023;34(1):2200870. doi: 10.1080/09546634.2023.2200870.

68. Pinter A, Soliman AM, Manz K, et al. Switching and discontinuation rates of biologics among psoriasis patients in Germany: A retrospective analysis of InGef claims database [abstract]. EADV Congress; October 11–14; 2023; Berlin, Germany.

69. Pinter A, Soliman AM, Manz K, et al. Dose escalation rates of biologics among patients with psoriasis in Germany: A retrospective analysis of InGef claims database [abstract]. EADV Congress; October 11–14; 2023; Berlin, Germany.

70. Yiu Z, Motedayen Aval L, Alabas O, et al. Drug survival of interleukin-23 p19 inhibitors compared to other biologics for psoriasis: a cohort study from the British Association of Dermatologists Biologics and Immunomodulators Register (BADBIR). EADV Congress; October11–14; 2023; Berlin, Germany.

71. Oh S-M, Kang K-W, Kang D-H, et al. Comparison of the disease survival of biologics for the treatment of moderate-to-severe psoriasis: real-world data. Inflammatory Skin Disease Summit; November 15–18; 2023; Vienna, Austria.

72. Joven B, Hernández Sánchez R, Pérez Pampín E, et al. Use of ixekizumab for psoriatic arthritis patients in real-world conditions. *Value Health*. 2022;25(12 Suppl):S21.

73. Joven B, Manteca CF, Rubio E, et al. Real-world persistence and treatment patterns in patients with psoriatic arthritis treated with anti-IL17 therapy in Spain: The PerfIL-17 Study. *Adv Ther*. 2023;40(12):5415–5431. doi: 10.1007/s12325-023-02693-w.

74. Hansen RL, Jørgensen TS, Egeberg A, Rosenø NAL, Skougaard M, Stisen ZR, Dreyer L, Kristensen LE. Adherence to therapy of ixekizumab and secukinumab in psoriatic arthritis patients using first- or second-line IL-17A inhibitor treatment: a Danish population-based cohort study. *Rheumatology (Oxford).* 2024 May 3;63(6):1593–1598. doi: 10.1093/rheumatology/kead434. PMID: 37647648.

75. Bastard L, Claudepierre P, Penso L, et al. Comparisons of the risk of serious infections associated with the different classes of targeted therapies used in psoriatic arthritis patients: a nationwide cohort study from the French Health Insurance Database (abstract 2566). ACR Convergence; November 10–15; 2023; San Diego, California, US.

76. Pina Vegas L, Hoisnard L, Bastard L, et al. Long-term persistence of second-line biologics in psoriatic arthritis patients with prior TNF inhibitor exposure: a nationwide cohort study from the French health insurance database (SNDS). *RMD Open*. 2022;8(2):e002681. doi: 10.1136/rmdopen-2022-002681.

77. Rasouliyan L, Kumar V, Althoff AG, et al. Trends in the use of biologics for treatment of psoriatic arthritis. *Value Health*; 2022;25(7 Suppl):S496. doi: 10.1016/j.jval.2022.04.1093.

78. Glintborg B, Giuseppe DD, Wallman JK, et al. POS0932 Uptake of newer biologic and targeted synthetic DMARDs in psoriatic arthritis, results from four Nordic biologic registries. *Ann Rheum Dis*. 2022;81(Suppl 1):766–767. 10.1136/annrheumdis-2022-eular.488

79. Pizzicato LN, Vadhariya A, Birt J, et al. Real-world treatment patterns and use of adjunctive pain and anti-inflammatory medications among patients with psoriatic arthritis treated with IL-17A inhibitors in the United States. *J Manag Care Spec Pharm*. 2023;29(1):24–35. doi: 10.18553/jmcp.2022.22144.

80. Erik L, Soliman A, Nunag D, et al. Real-world switching and discontinuation patterns for biologic disease-modifying antirheumatic drugs in patients with active psoriatic

arthritis in Japan [abstract 2246]. *Arthritis Rheumatol*. 2023;75(Suppl 9): Available from: https://acrabstracts.org/abstract/real-world-switching-and-discontinuation-patterns-for-biologic-disease-modifying-antirheumatic-drugs-in-patients-with-active-psoriatic-arthritis-in-japan/.

81. Glintborg B, Di Giuseppe D, Wallman JK, et al. Uptake and effectiveness of newer biologic and targeted synthetic disease-modifying antirheumatic drugs in psoriatic arthritis: results from five Nordic biologics registries. *Ann Rheum Dis*. 2023;82(6):820–828. doi: 10.1136/ard-2022-223650.

82. Choquette D, Sauvageau L, Ferdinand I, et al. Comparative use of secukinumab and ixekizumab in the real-life observational cohort RHUMADATATM. *J Rheumatol*. 2023;50(7 Suppl 1):7–100.

83. Gottlieb AB, Burge R, Malatestinic WN, et al. Real-world effectiveness of ixekizumab in patients with psoriasis from the US Ixekizumab Customer Support Program. EADV 31st Congress; September 7–10; 2022; Milan.

84. Gottlieb A, Burge R, Malatestinic W, et al. 43015 Ixekizumab real-world effectiveness at 24 weeks in patients with psoriasis: Data from the United States Taltz Customer Support Program. *J Am Acad Dermatol*. 2023;89(3 Suppl):AB185. doi: 10.1016/j.jaad.2023.07.740.

85. Mukahal A, Asma B, Nairooz B, et al. Efficacy and safety of ixekizumab, IL17 in the treatment of psoriasis in the Libyan patients. Skin Inflammation & Psoriasis International Network (SPINN) Congress; July 6–8; 2022; Paris, France.

86. Gottlieb A, Burge R, Malatestinic W, et al. Real-world effectiveness of ixekizumab in mild, moderate, and severe psoriasis: The patient perspective (poster). *SKIN J Cutan Med*. 2023;7(3):s202. doi: 10.25251/skin.7.supp.20.

87. Gottlieb A, Burge R, Malatestinic W, et al. Achievement of the National Psoriasis Foundation treatment treat-to-target goals in the US Ixekizumab Customer Support Program. *SKIN J Cutan Med*. 2023;7(3):s201. doi: 10.25251/skin.7.supp.201.

88. Kojanova M, Gkalpakiotis S, Fialova J, et al. Effectiveness and safety of ixekizumab therapy in patients with severe psoriasis – real-world data from the BIOREP registry EADV 31st Congress; September 7–10; 2022; Milan, Italy.

89. Chiu IH, Tsai TF. Risk factors of ixekizumab-induced injection site reactions in patients with psoriatic diseases: report from a single medical center. *Biomedicines*. 2023;11(6):1718. doi: 10.3390/biomedicines11061718.

90. Demirel Öğüt N, Koç Yıldırım S, Erbağcı E, Hapa FA. Ixekizumab treatment in patients with moderate-to-severe plaque psoriasis in a real-world clinical setting. *J Cosmet Dermatol*. 2022;21(11):6215–6224. doi: 10.1111/jocd.15217.

91. Gönülal M, Altunay İ K, Doğan S, et al. Ixekizumab for the treatment of the patients with moderate to severe plaque psoriasis: Clinical data from a real-world experience. *Dermatol Ther*. 2022;35(12):e15955. doi: 10.1111/dth.15955.

92. Huang H, Chen M, Wu W, et al. Efficacy and safety of ixekizumab in Chinese patients with plaque psoriasis. *Chin Med J (Engl)*. 2023;136(3):360–361. doi: 10.1097/CM9.0000000000002390.

93. Lockshin B, Harrison RW, McLean RR, et al. Outcomes in ixekizumab patients following exposure to secukinumab and other biologics in the CorEvitas Psoriasis Registry. *Dermatol Ther (Heidelb)*. 2022;12(12):2797–2815. doi: 10.1007/s13555-022-00834-7.

94. Hu K, Shen M, Zhang M, Kuang Y. Educational service correlates with greater improvement and adherence in psoriasis patients responding to ixekizumab. *J Dtsch Dermatol Ges*. 2023;21(8):900–902. doi: 10.1111/ddg.15121

95. Hu K, Kuang Y, Zhang M. 618 Educational service correlates with greater improvement and adherence in psoriasis patients responding to ixekizumab in a real-world setting. *J Investig Dermatol*. 2023;143(5):S106.

96. Jiang Y, Li Y, Huang D, et al. Quality of life benefit and clinical predictors of complete skin clearance in psoriasis: a multicenter, prospective, real-world study. *Dermatology*. 2023;239(5):802–810. doi: 10.1159/000531420.

97. Chiricozzi A, Megna M, Giunta A, et al. Ixekizumab is effective in the long-term management in moderate-to-severe plaque psoriasis: results from an Italian retrospective cohort study (the LOTIXE study). *J Dermatolog Treat*. 2023;34(1):2246606. doi: 10.1080/09546634.2023.2246606.

98. Ying L, Suyun J, Yanhua L, et al. Safety and efficacy of ixekizumab in Chinese Adults with moderate-to-severe plaque psoriasis: a prospective, multicenter, observational study. *Adv Ther*. 2023;40(12):5464–5474. doi: 10.1007/s12325-023-02672-1.

99. Burlando M, Salvi I, Castelli R, et al. Long-term clinical efficacy and safety of ixekizumab for psoriatic patients: a single-center experience. *Eur Rev Med Pharmacol Sci*. 2023;27(9):4060–4064. doi: 10.26355/eurrev_202305_32312.

100. Li Y, Yu Y, Wang Y, et al. Ixekizumab four-week dosing is comparable to two-week dosing in psoriasis patients and reduces treatment costs: experience in a real-world setting over a 12-week period. *Eur J Dermatol*. 2022;32(5):618–622. doi: 10.1684/ejd.2022.4330.

101. Shahriari M, Harrison RW, Burge R, et al. Disease response and patient-reported outcomes among initiators of ixekizumab. *J Dermatolog Treat*. 2022;33(3):1538–1546. doi: 10.1080/09546634.2020.1853023.

102. Ye LR, Yan BX, Chen XY, et al. Extended dosing intervals of ixekizumab for psoriasis: A single-center, uncontrolled, prospective study. *J Am Acad Dermatol*. 2022;86(6):1348–1350. doi: 10.1016/j.jaad.2021.04.093.

103. Caldarola G, Chiricozzi A, Megna M, et al. Real-life experience with ixekizumab in plaque psoriasis: a multi-center, retrospective, 3-year study. *Expert Opin Biol Ther*. 2023;23(4):365–370. doi: 10.1080/14712598.2023.2193288.

104. Juanes JS, Garcia SR, Carrero J, et al. Long-term clinical efficacy and safety of ixekizumab for psoriatic patients: a single-center experience (abstract 4393). EADV Congress; October 11–14; 2023; Berlin, Germany.

105. Gulliver W, Gooderham M, Reed C. 34304 Persistence and adherence to ixekizumab treatment in patients with moderate-to-severe psoriasis before and during COVID-19 pandemic: Results from the Canadian Patient Support Program. *J Am Acad Dermatol*. 2022;87(3):AB91. doi: 10.1016/j.jaad.2022.06.399.

106. Gulliver W, Gooderham MJ, Zhu B, et al. Treatment persistence of ixekizumab in adults with moderate-to-severe plaque psoriasis participating in the Canadian Patient Support Program. *Dermatol Ther (Heidelb)*. 2023;13(1):235–244. doi: 10.1007/s13555-022-00853-4.

107. Kojanova M, Velackova B, Cetkovska P, et al. Characteristics of patients with psoriasis initiating ixekizumab therapy - real-world data from the BIOREP registry. EADV Congress; September 7–10; 2022; Milan, Italy.

108. Kojanova M, Gkalpakiotis S, Fialova J, et al. Effectiveness and safety of ixekizumab therapy in patients with severe psoriasis - Real-world data from the BIOREP registry EADV 31st Congress; September 7–10; 2022; Milan, Italy.

109. Gottlieb AB, Lockshin B, Burge R, et al. Real-world patient satisfaction and quality of life among ixekizumab treated patients with and without nail psoriasis (abstract 574). EADV Congress; October 11–14; 2023; Berlin, Germany.

110. Schots L, Soenen R, Thomas D, et al. Ixekizumab trough concentrations in psoriasis: paving the way towards personalized therapy - a cohort study. EADV Congress; October 11–14; 2023; Berlin, Germany.

111. Rohekar S, Vadhariya A, Janos B, et al. Clinical outcomes and physician-patient alignment in patients with psoriatic arthritis receiving ixekizumab. *J Rheumatol*. 2023;50:74.

112. Tillett W, Birt J, Cavanaugh C, et al. Changes in musculoskeletal disease activity and patient-reported outcomes in patients with psoriatic arthritis treated with ixekizumab: results from a real-world US cohort. *Front Med (Lausanne)*. 2023;10:1184028. doi: 10.3389/fmed.2023.1184028.

113. Joven B, Hernández Sánchez R, Pérez-Pampín E, et al. Persistence and use of ixekizumab in patients with psoriatic arthritis in real-world practice in Spain. The PRO-STIP Study. *Rheumatol Ther*. 2023;10(5):1319–1333. doi: 10.1007/s40744-023-00584-8..

114. Bellis E, Donzella D, Crepaldi G, et al. AB1120 Real-life efficacy and safety of ixekizumab in a cohort of patients with psoriatic arthritis: a single-center retrospective study. *Ann Rheum Dis*. 2023;82(Suppl 1):1790. doi: 10.1136/annrheumdis-2023-eular.4883.

115. Braña I, Pardo E, Burger S, et al. Treatment retention and safety of ixekizumab in psoriatic arthritis: a real life single-center experience. *J Clin Med*. 2023;12(2):467. doi: 10.3390/jcm12020467.

116. Braña I, Burger S, González Del Pozo P, et al. AB1109 Treatment retention and safety of ixekizumab in a population with psoriatic arthritis refractory to biologic and targeted synthetic DMARDs. *Ann Rheum Dis*. 2023;82(Suppl 1):1783.