

# Psoriatic Arthritis: Disease State



## Module 3

# Diagnosis, Classification, and Risk Factors of PsA

# How Is PsA Diagnosed?

# Diagnosis of PsA



There are no diagnostic tests; most often, it is a clinical diagnosis<sup>1</sup>



Joints are assessed in a manner similar to that in rheumatoid arthritis<sup>2</sup>



Most patients do not demonstrate the presence of serological markers (ie, are seronegative)<sup>1</sup>



In clinical trials, the CASPAR criteria may be used to classify PsA<sup>1</sup>



Detailed patient history, physical examination, laboratory findings, and imaging results are highly important<sup>1</sup>



Imaging studies (ultrasonography and MRI) allow more precise visualization of joint damage and tissue inflammation<sup>1</sup>

CASPAR=Classification Criteria for Psoriatic Arthritis; MRI=Magnetic Resonance Imaging; PsA=Psoriatic Arthritis.  
1. FitzGerald O, et al. *Nat Rev Dis Primers*. 2021;7(1):59. 2. Rida MA, Chandran V. *Clin Immunol*. 2020;214:108390.

# Differential Diagnosis of PsA

## Clinical, Laboratory, and Radiographic Features That Distinguish PsA From RA and OA<sup>1,2</sup>

Feature	PsA	RA	OA
Inflammatory arthritis	Very common	Very common	Occasional
Peripheral involvement	Very common	Very common	Very common
Axial involvement (sacroiliac joint <sup>a</sup> , spine)	Common	No	No
Symmetrical involvement	Occasional	Common	Common
DIP joint involvement	Common	Rare	Common
Enthesitis	Common	Rare	No
Dactylitis	Common	No	No
Bone erosion <sup>a</sup>	Common	Very common	Occasional <sup>b</sup>
New bone formation <sup>a</sup>	Common	Rare	Common
Skin involvement	Very common	Rare	Rare
RF positive	Occasional	Very common	Rare
aCCP positive	Rare	Very common	Rare
Nail dystrophy	Very common	No	No

<sup>a</sup>In disease of >2 years duration; <sup>b</sup>Inflammatory OA may manifest as focal erosion and new bone formation. Very common=60–90%; Common=30–60%; Occasional=10–30%; Rare <10%; No=Not found.

aCCP=Anti-cyclic Citrullinated Peptide; DIP=Distal Interphalangeal; OA=Osteoarthritis; PsA=Psoriatic Arthritis; RA=Rheumatoid Arthritis; RF=Rheumatoid Factor.

1. FitzGerald O, et al. *Nat Rev Dis Primers*. 2021;7(1):59. 2. Rida MA, Chandran V. *Clin Immunol*. 2020;214:108390

# CASPAR: Classification Criteria for Psoriatic Arthritis

- To be classified as having PsA, a patient should have inflammatory articular disease (joint, spine, or enthesal) with a score of  $\geq 3$  points from the 5 categories listed in the following table<sup>1,2</sup>

Criterion <sup>1,2</sup>	Description <sup>1</sup>
<b>1. Evidence of psoriasis (one of a, b, or c; a maximum of 2 points for this criterion)</b>	
a) Current psoriasis <sup>a</sup> (2 points)	Psoriatic skin or scalp disease present currently, as is judged by a rheumatologist or dermatologist
b) Personal history of psoriasis (1 point)	A history of psoriasis obtained from the patient, family physician, dermatologist, rheumatologist, or other qualified healthcare professional
c) Family history of psoriasis (1 point)	A history of psoriasis in a first- or second-degree relative per the patient
<b>2. Psoriatic nail dystrophy (1 point)</b>	Typical psoriatic nail dystrophy, including onycholysis, pitting, and hyperkeratosis, as observed during current physical examination
<b>3. Negative test result for RF (1 point)</b>	By any method except latex, but preferably by ELISA or nephelometry, according to the local laboratory reference range
<b>4. Dactylitis (one of a, b; 1 point)</b>	
a) Current	Swelling of an entire digit
b) History	A history of dactylitis recorded by a rheumatologist
<b>5. Radiologic evidence of juxta-articular new bone formation (1 point)</b>	Ill-defined ossifications near joint margins (excluding osteophyte formation) on plain X-ray films of hand or foot

<sup>a</sup>Current psoriasis is assigned a score of 2, and all other items a score of 1.

CASPAR=Classification Criteria for Psoriatic Arthritis; ELISA=Enzyme-Linked Immunosorbent Assay; PsA=Psoriatic Arthritis; RF=Rheumatoid Factor.

1. Taylor W, et al. *Arthritis Rheum.* 2006;54(8):2665-2673. 2. Raychaudhuri SP, et al. *J Autoimmun.* 2017;76:21-37.

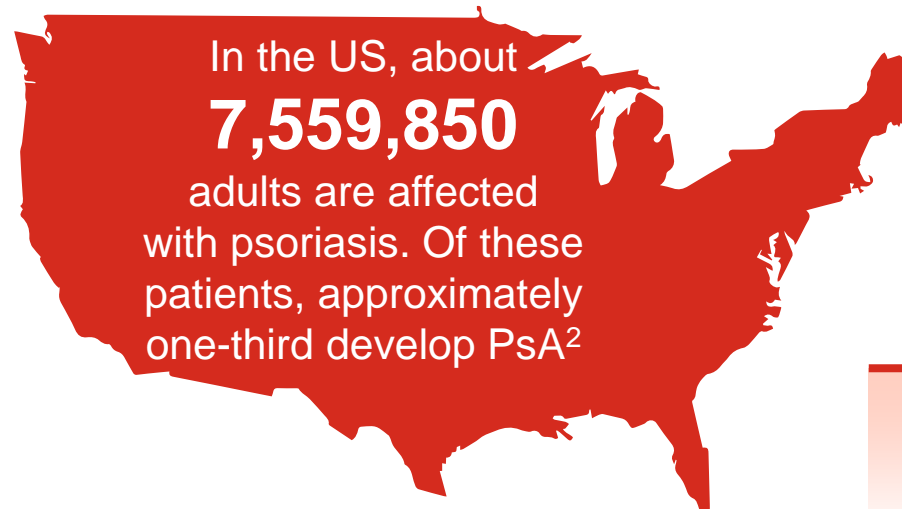
# Who Develops PsA, and What Are the Risk Factors for the Disease?

# Incidence and Prevalence of PsA

- In the United States, the overall incidence of PsA in patients with newly diagnosed PsO is 2.9 (95% CI, 2.9-3.0) events per 100 PY<sup>1</sup>
- The prevalence of PsA in patients with<sup>1</sup>
  - Mild PsO was 2.1 (95% CI, 2.1-2.1) events per 100 PY
  - Moderate PsO was 9.9 (95% CI, 9.5-10.4) events per 100 PY
  - Severe PsO was 17.6 (95% CI, 16.9-18.3) events per 100 PY
- About 20-30% of patients with psoriasis have PsA, and the prevalence estimates range widely, from 7% to 40%<sup>1</sup>



In the United Kingdom, PsA may affect 0.19% people. In patients with psoriasis, this prevalence increases to ~10%<sup>3</sup>



In the US, about  
**7,559,850**  
adults are affected  
with psoriasis. Of these  
patients, approximately  
one-third develop PsA<sup>2</sup>



In Japan, among 429,679 patients with psoriasis, 1.9% had PsA<sup>4</sup>

CI=Confidence Interval; PsA=Psoriatic Arthritis; PsO=Psoriasis; PY=Patient Years; US=United States.

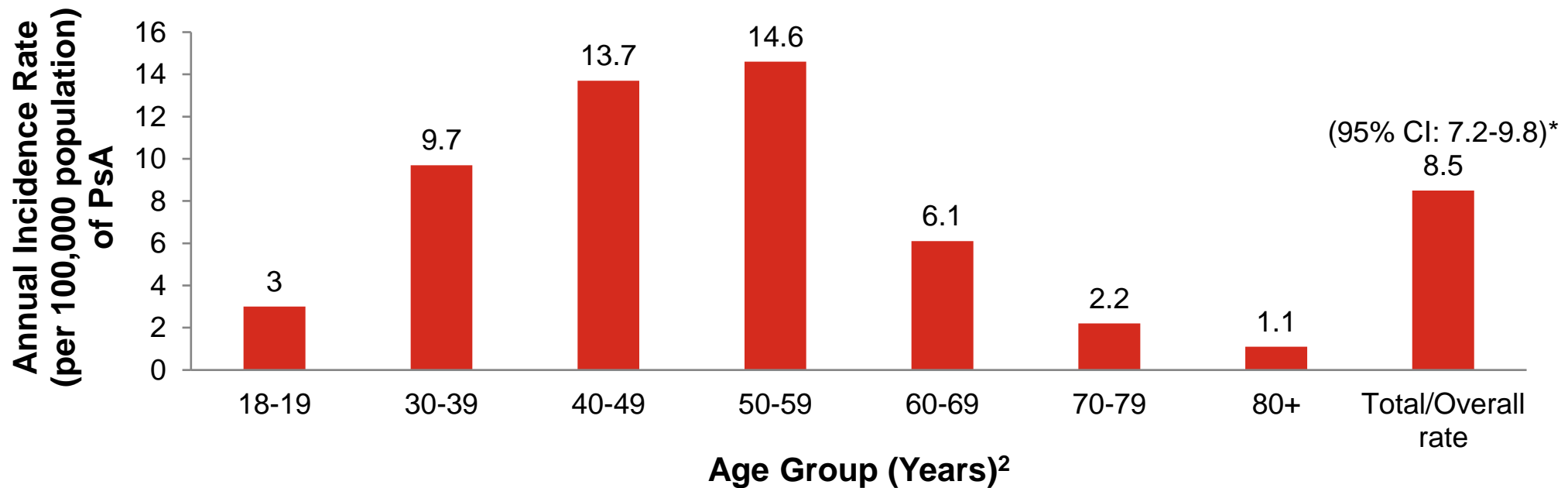
1. Merola JF, et al. *J Am Acad Dermatol.* 2022;86(4):748-757. 2. Armstrong AW, et al. *JAMA Dermatol.* 2021;157(8):940-946. 3. Dures E, et al. *Patient.* 2017;10(4):455-462. 4. Inui K, et al. *Modern Rheumatology.* 2021;31(6):1179-1191.



# Age at Onset

- The onset of PsA usually occurs in patients in their 30s and 40s (highest incidence is noted in those aged 40-59 years), and the prevalence is almost equal in men and women<sup>1,2</sup>
- Median age at diagnosis is 44.8 years (interquartile range: 34.7-55.8 years)<sup>3</sup>

**Annual incidence rate of PsA by age in Olmsted County, in the US state of Minnesota<sup>2</sup>**



\*Age- and sex-adjusted to the 2010 White population in the US.

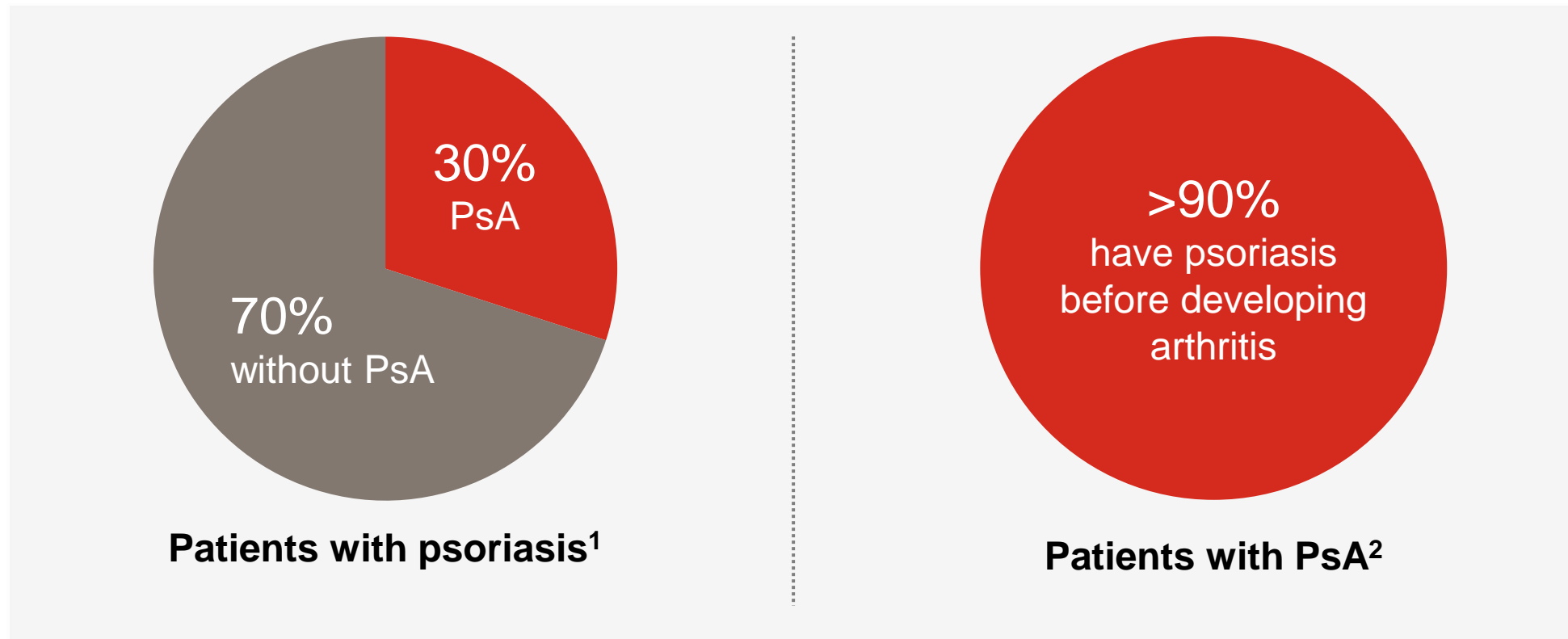
CI=Confidence Interval; PsA=Psoriatic Arthritis.

1. Tiwari V, Brent LH. Psoriatic Arthritis. In: StatPearls [Internet]. Treasure Island, FL: StatPearls Publishing; 2022. <https://www.ncbi.nlm.nih.gov/books/NBK547710/> (Accessed September 13, 2022).

2. Karmacharya P, et al. *Arthritis Rheumatol.* 2021;73(10):1878-1885. 3. Ogdie A, et al. *Rheumatology (Oxford).* 2013;52(3):568-575.

# Psoriasis and PsA

- Although the association between psoriasis and arthritis was first described in 1818, PsA was officially recognized as a distinct disorder by the American Rheumatism Association only in 1964<sup>1</sup>

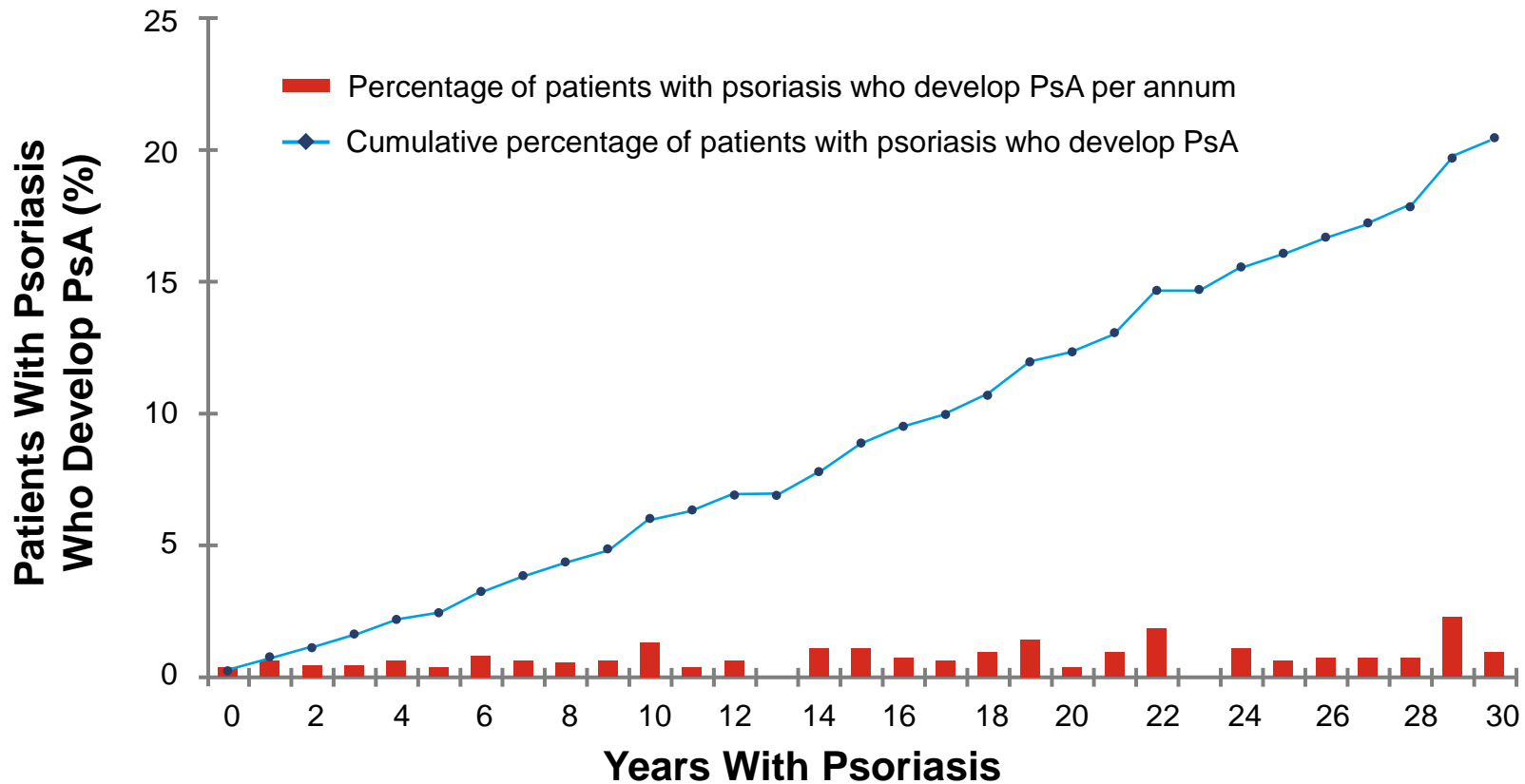


PsA=Psoriatic Arthritis.

1. Dogra S, Mahajan R. *Indian Dermatol Online J.* 2016;7(6):471-480. 2. Pennington SR, et al. *Front Med (Lausanne).* 2021;8:723944.

# Development of PsA in Relation to Psoriasis

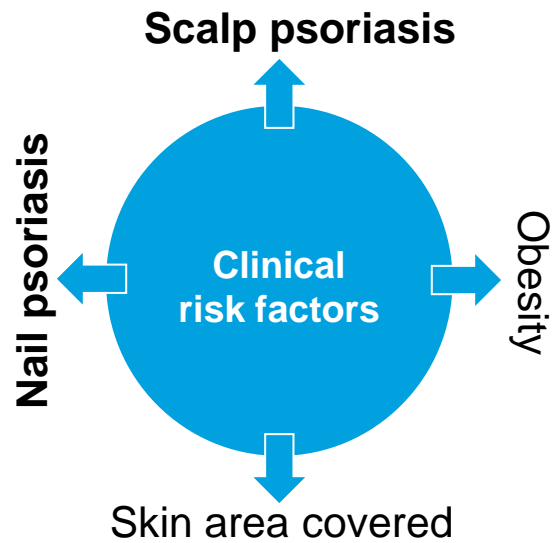
## Incidence and cumulative prevalence of PsA over time in population of patients with psoriasis



- During the 30 years of examination, incidence of PsA in the population of patients with psoriasis remained relatively constant, largely below 1% per year (74 per 1000 person-years)
- Among patients with a 30-year history of psoriasis, the prevalence of PsA increased steadily with disease duration reaching 20.5%

# Clinical Risk Factors for PsA

- Risk factors for PsA development include involvement of nail and scalp psoriasis



Nail Psoriasis

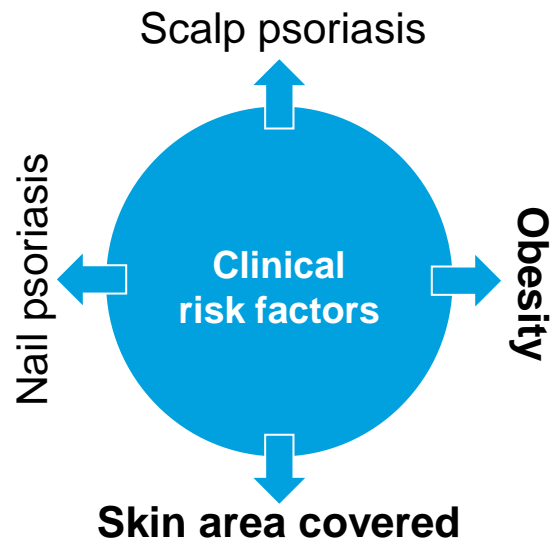


Scalp Psoriasis

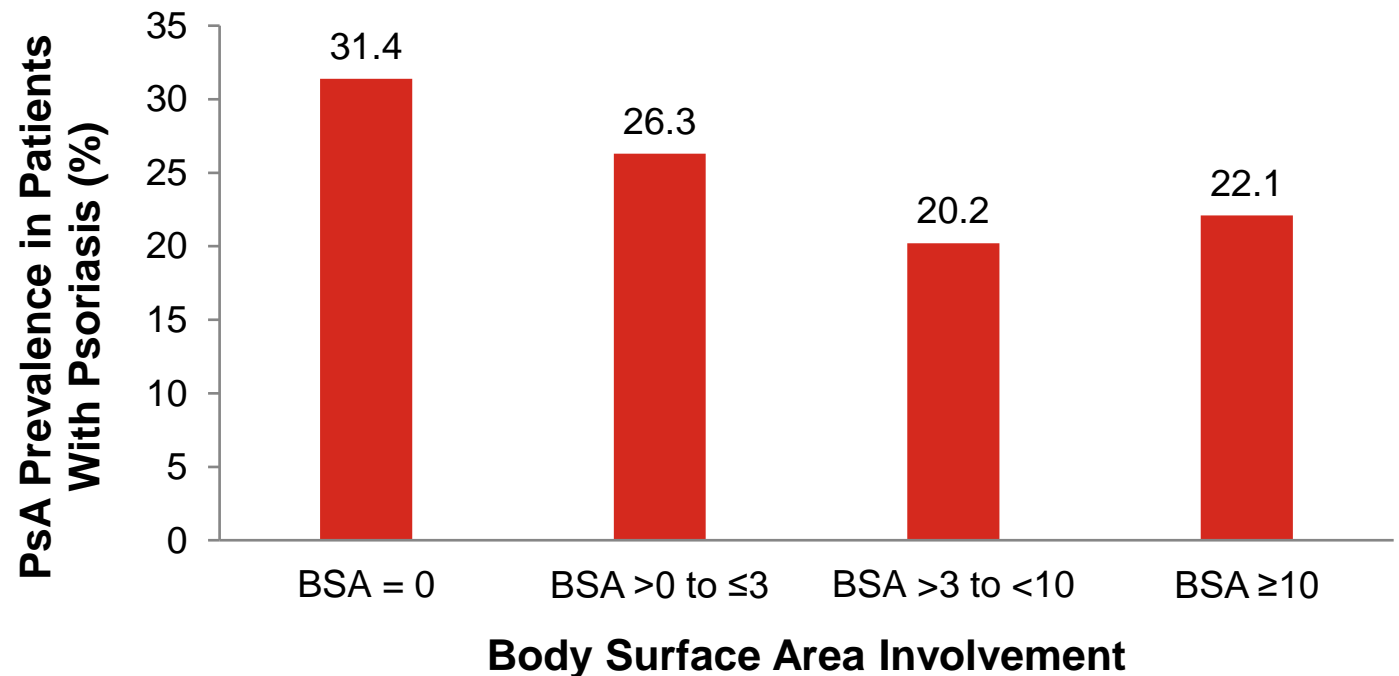


# Clinical Risk Factors for PsA

- Greater involvement of skin and obesity in patients with psoriasis increases the risk for PsA<sup>1</sup>
- Obesity is more common in patients with psoriasis (36.5% vs. 22%; OR 2.1, 95% CI: 1.5-2.8,  $p < .01$ ) and PsA (27.6% vs. 22%; OR 1.4, 95% CI: 1.0-1.9,  $p < .05$ ) compared to non-inflammatory population<sup>2</sup>



**Prevalence of PsA in Patients With Psoriasis<sup>3</sup>**

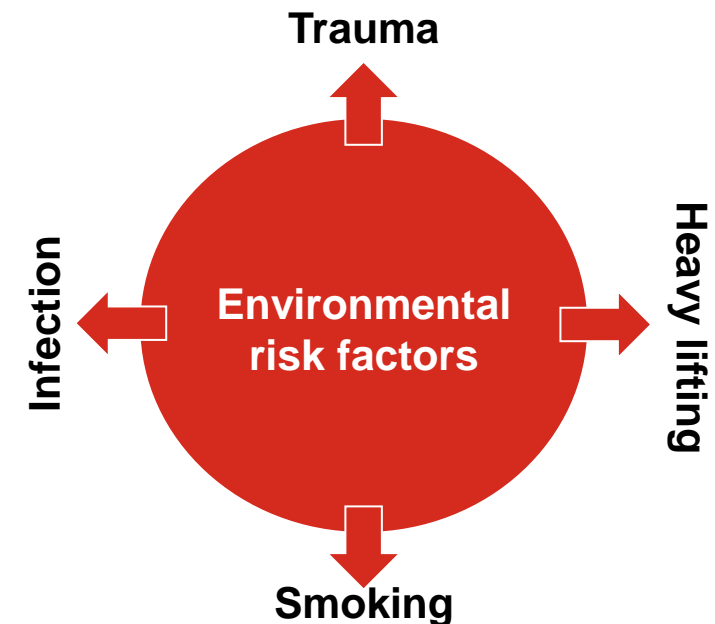


BSA=Body Surface Area; CI=Confidence Interval; OR=Odds Ratio; PsA=Psoriatic Arthritis.

1. Ogdie A, Gelfand JM. *Curr Rheumatol Rep.* 2015;17(10):64. 2. Queiro R, et al. *Medicine (Baltimore).* 2019;98(28):e16400. 3. Tillett W, et al. *Rheumatol Ther.* 2020;7(3):617-637.

# Environmental Risk Factors for PsA

- Infection, injury, smoking, and trauma may also increase the risk for development of PsA in patients with psoriasis<sup>1,2</sup>
- The following factors are associated with the onset of PsA
  - Infection<sup>1</sup>
  - Injury and heavy lifting<sup>1</sup>
  - Smoking (increases the risk and leads to worse clinical outcomes)<sup>1</sup>
  - Recent trauma (observed IR: 23.8 [95% CI: 22.3-25.3] per 10,000 patient-years)

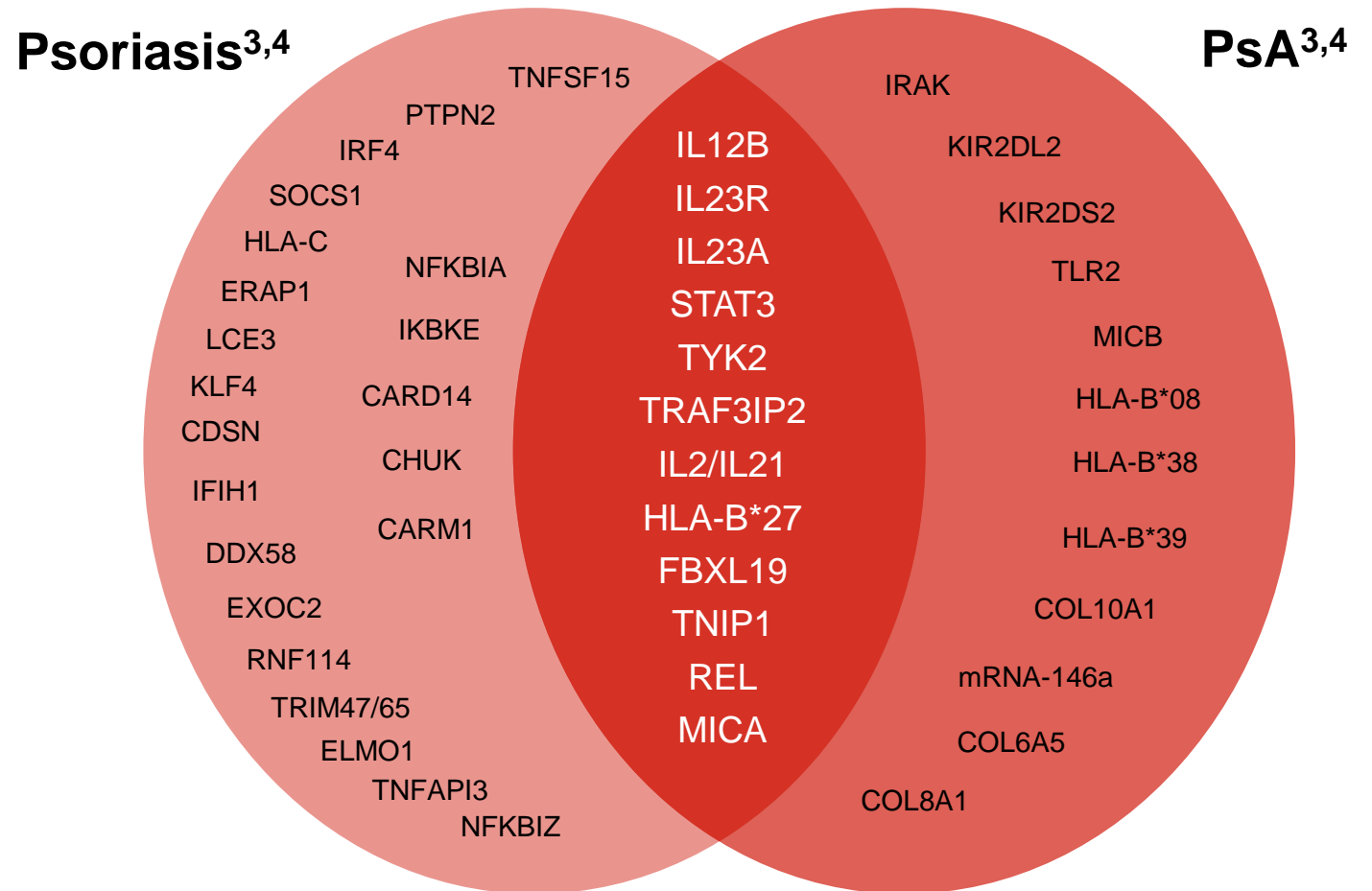


CI=Confidence Interval; IR=Incidence Rate; PsA=Psoriatic Arthritis.

1. Ogdie A, Gelfand JM. *Curr Rheumatol Rep.* 2015;17(10):64. 2. Thorarensen SM, et al. *Ann Rheum Dis.* 2017;76(3):521-525.

# Genetic Risk Factors

- PsA prevalence is 49 times more likely among first-degree relatives of patients with PsA than that in the general population<sup>1</sup>
- Class I HLA genes are highly associated with PsA and account for ~30% of the genetic susceptibility<sup>2</sup>

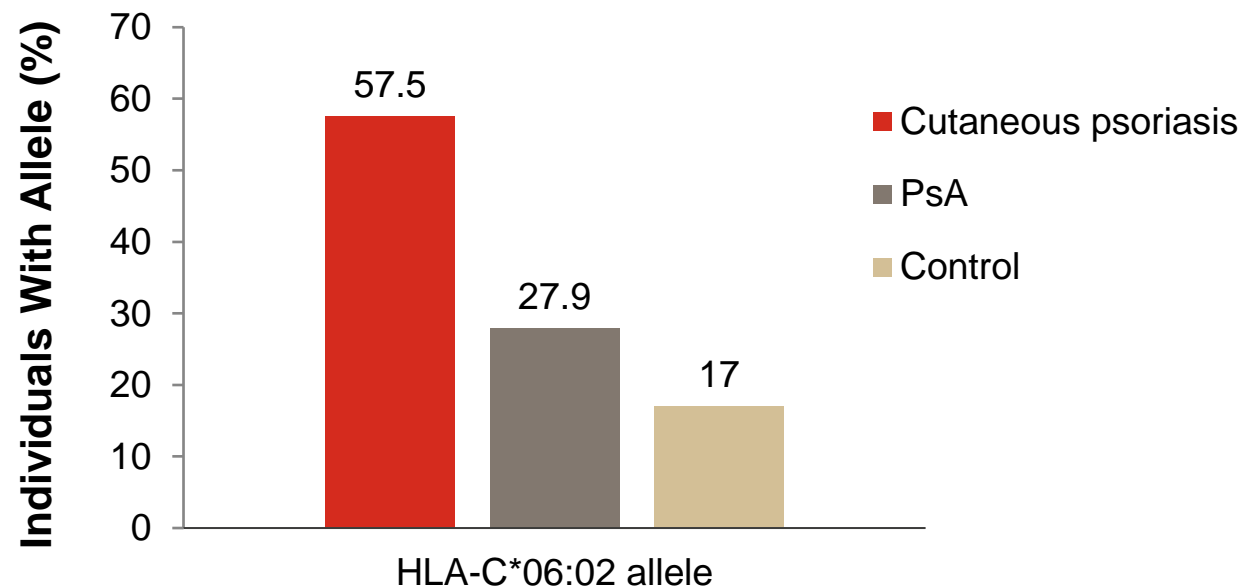


HLA=Human Leukocyte Antigen; PsA=Psoriatic Arthritis.

1. Giannelli A. *Rheumatol Ther.* 2019;6(1):5-21. 2. de Vlam K, et al. *Acta Derm Venereol.* 2014;94(6):627-634. 3. Dand N, et al. *Acta Derm Venereol.* 2020;100(3):adv00030. 4. Carvalho AL, Hedrich CM. *Front Mol Biosci.* 2021;8:662047.

# Genetic Risk Factors

- PsA appears to be genetically distinct from psoriasis
- Although certain genes are shared between them, *HLA-C\*06:02*, for example, is less common among people with PsA



HLA=Human Leukocyte Antigen; PsA=Psoriatic Arthritis.  
FitzGerald O, et al. *Arthritis Res Ther.* 2015;17:115.



# Conclusions



There are no diagnostic tests for PsA, and most patients are seronegative. PsA is often a clinical diagnosis based on detailed patient history, physical examination, laboratory findings, and imaging results.<sup>1</sup>

Clinical, laboratory, and radiographic features that distinguish PsA from RA and OA include, but are not limited to, axial involvement, dactylitis, enthesitis, and nail dystrophy.<sup>1,2</sup>

Roughly 20%-30% of patients with psoriasis will have PsA,<sup>3</sup> with the onset of PsA usually occurring in a patient's 30s and 40s.<sup>4,5</sup>

Risk factors for PsA development include, but are not limited to, the presence of nail psoriasis, scalp psoriasis, PsO severity, and obesity.<sup>6</sup>

OA=Osteoarthritis; PsA=Psoriatic Arthritis; RA=Rheumatoid Arthritis.

1. FitzGerald O, et al. *Nat Rev Dis Primers*. 2021;7(1):59. 2. Rida MA, Chandran V. *Clin Immunol*. 2020;214:108390. 3. Merola JF, et al. *J Am Acad Dermatol*. 2022;86(4):748-757. 4. Tiwari V, Brent LH. Psoriatic Arthritis. In: *StatPearls* [Internet]. Treasure Island, FL: StatPearls Publishing; 2022. <https://www.ncbi.nlm.nih.gov/books/NBK547710/> (Accessed September 13, 2022). 5. Karmacharya P, et al. *Arthritis Rheumatol*. 2021;73(10):1878-1885. 6. Ogdie A, Gelfand JM. *Curr Rheumatol Rep*. 2015;17(10):64.

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