Treatment Options, Comparative Effectiveness, and Coordinated Care: A Psoriatic Disease Update for Managed Care and Specialty Pharmacy

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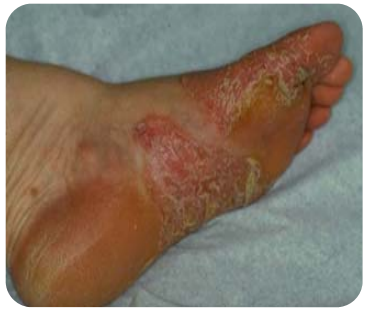
AMCP Academy of Managed Care Pharmacy®

Held in conjunction with AMCP Managed Care & Specialty Pharmacy Annual Meeting 2017.

Educational Objectives

- Assess current and emerging therapies for the treatment of psoriasis and psoriatic arthritis and cite their clinical trial data
- Review the comparative effectiveness research (CER) framework and discuss application of CER findings to benefit design and clinical decision making for patients with psoriatic disease
- Identify barriers to adherence and formulate strategies to overcome them
- Integrate interventions to coordinate health plan and affiliated provider's efforts in the health care reform era that will lead to better outcomes for patients with psoriasis and psoriatic arthritis

The Expanding Psoriasis Treatment Armamentarium and Evolving Clinical Guidelines



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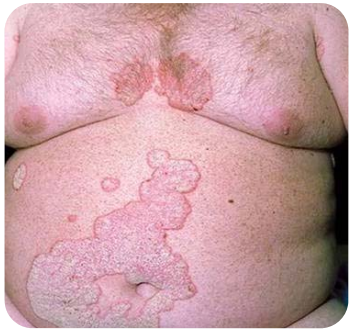


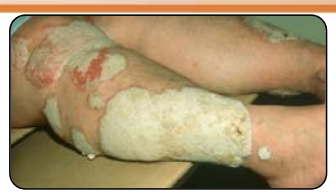
Psoriasis: A Chronic Multisystem Immune-Medicated Disease

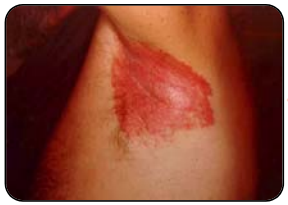
- Affects ~ 7.5 million Americans (2.2% of the population)[1]
- Age of onset occurs in two peaks: ages 20-30 and ages 50-60, but can be seen at any age[1]
- There is a strong genetic component (40 + genes) with approximately 30% of patients having a first-degree relative with the disease
- Waxes and wanes during a patient's lifetime, is often modified by treatment initiation and cessation and has few spontaneous remissions
- Up to 30% of individuals with psoriasis also develop psoriatic arthritis[1]
- Accompanied by significant clinical, economic and social burden of due to[1-3]
  - Direct costs associated with medical care and treatments
  - Lost productivity at work/school
  - Reduced quality of life

1. National Psoriasis Foundation. https://www.psoriasis.org/sites/default/files/psoriasis_fact_sheet.pdf. Accessed February 2017.
2. Brezinski EA, et al. *JAMA Dermatol*. 2015;151:651-658.
3. Vanderpuye-Orgle J, et al. *J Am Acad Dermatol.* 2015;72:961-967.

Psoriasis Classification is Based on Morphology

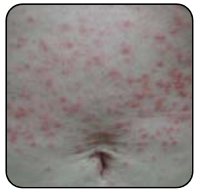
Plaque: scaly, erythematous patches, papules, and plaques that are sometimes pruritic

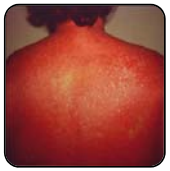




Inverse/Flexural: lesions are located in the skin folds

Guttate: presents with drop lesions, 1-10mm salmon-pink papules with a fine scale



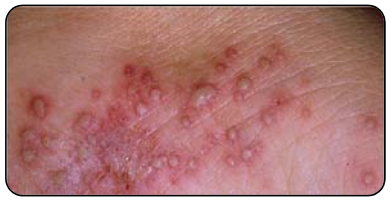


Erythrodermic: generalized erythema covering nearly the entire body surface area with varying degrees of scaling

Pustular: clinically apparent pustules

-Localized palms and soles

-Generalized

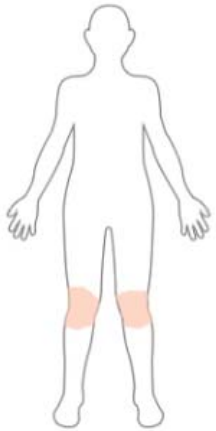


National Psoriasis Foundation. https://www.psoriasis.org/sites/default/files/psoriasis_fact_sheet.pdf. Accessed February 2017.

Plaque Psoriasis is the Most Common Form Affecting 80-90% of Patients

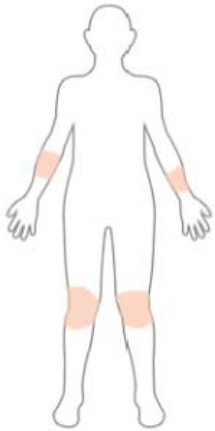
- Approximately 80% of patients with plaque psoriasis have mild to moderate disease –localized or scattered lesions covering less than 5% of the body surface area (BSA)

- 20% have moderate to severe disease affecting more than 5% of the BSA or affecting crucial body areas such as the hands, feet, face, or genitals



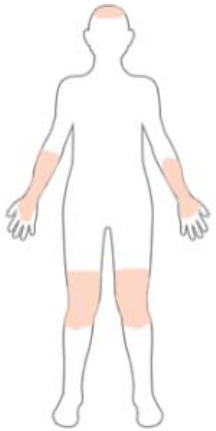
MILD

Mile psoriasis covers less than 3 percent of the body.



MODERATE

Moderate psoriasis covers between 3 and 10 percent of the body.



SEVERE

If psoriasis covers more than 10 percent of your body, it is severe.

National Psoriasis Foundation. https://www.psoriasis.org/about-psoriasis#severity Accessed February 2017; AAD. https://www.aad.org/media/stats/conditions/psoriasis Accessed February 2017.

Assessment and Classification of Psoriatic Disease Severity

Assessments

- Percentage of skin area involved
- Lesion characteristics including erythema, scaling, induration
- Location/distribution of lesions (eg, hands, feet, face, genitals)
- Impact on psychological factors and quality of life

→ **Body Surface Area (BSA)**

→ **Psoriasis Area and Severity Index (PASI)**

→ **Dermatology Life Quality Index (DLQI)**
Itch Severity Score (ISS)

Classification of Severity

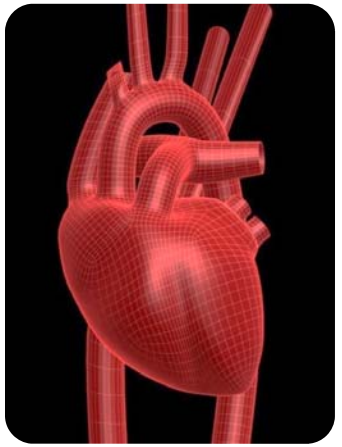
Body Surface Area (BSA)
- Mild disease: <3% BSA
- Moderate disease: 3%–10% BSA
- Severe disease: >10% BSA

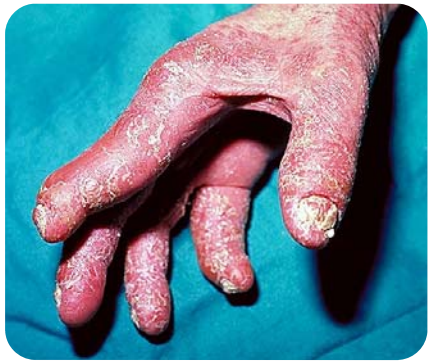
Psoriasis Area and Severity Index (PASI) / Dermatology Life Quality Index (DLQI)
- Mild-to-moderate disease: BSA ≤ 10 and PASI ≤ 10 and DLQI ≤ 10
- Moderate-to-severe disease: (BSA >10 or PASI >10) and DLQI >10

Armstrong AW, et al. *JAMA Dermatol.* 2013;149:1180-1185; Menter A, et al. *J Am Acad Dermatol*. 2008;58:826-250; Spuls PI, et al. *J Invest Dermatol*. 2010;130:933-943; Both H, et al. *J Invest Dermatol*. 2007;127:2726-2739; Mrowietz U, et al. *Arch Dermatol Res*. 2011;303:1-10; Majeski CJ, et al. *Br J Dermatol*. 2007;156:667-673.

Comorbidities Associated with Psoriasis

- Obesity/metabolic syndrome
- Psoriatic arthritis
- Autoimmune diseases
- Psychiatric diseases
- Cardiovascular disease
- Sleep apnea



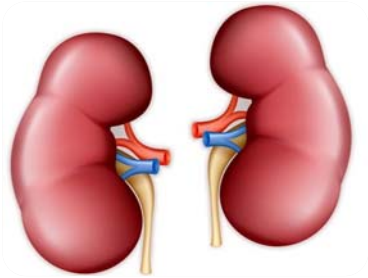


All statistically validated

Santos Paim de Oliveira MF, et al. *An Bras Dermatol*. 2015;90:9-20.

Comorbidities Associated with Psoriasis (cont'd)

- Renal disease
- Personal behaviors (eg, smoking)
- Cancer / Lymphoma
- Nonalcoholic steatohepatitis (NASH)
- Chronic obstructive pulmonary disease (COPD)
- Increased mortality

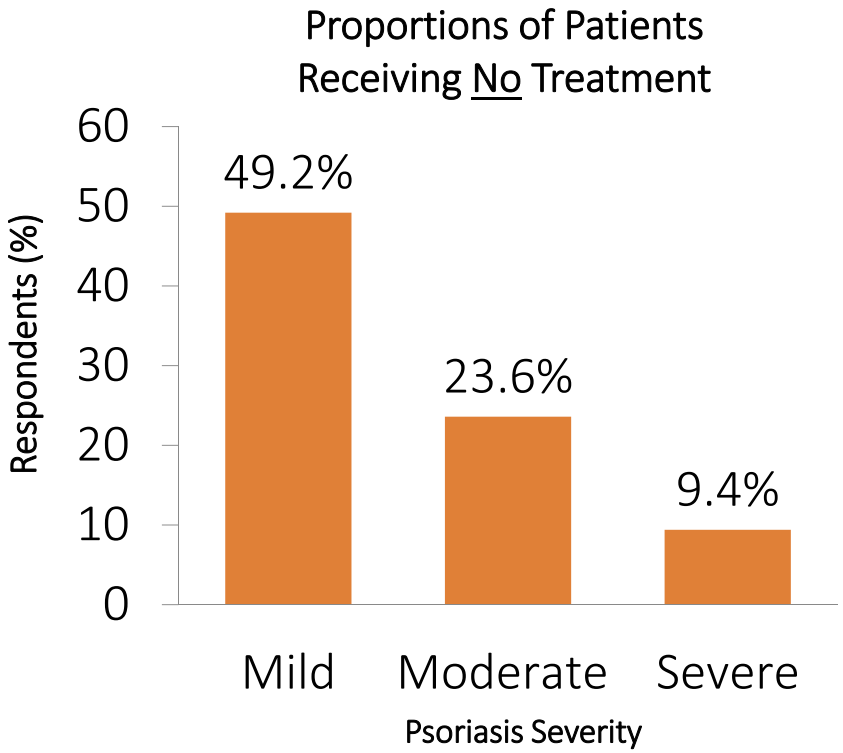


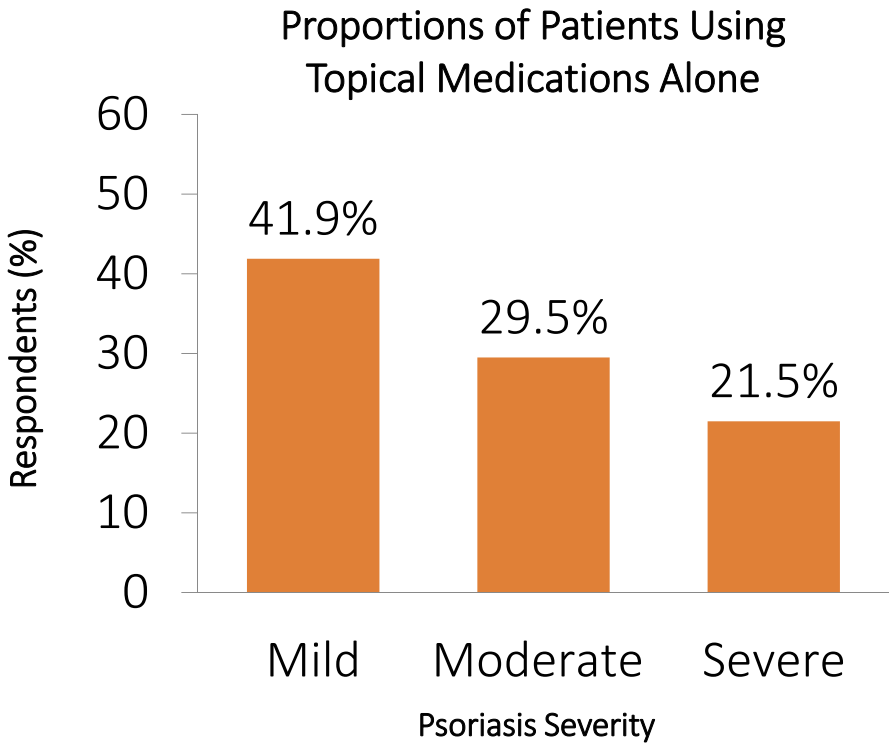
All statistically validated

Santos Paim de Oliveira MF, et al. *An Bras Dermatol*. 2015;90:9-20.

Psoriasis Remains Significantly Undertreated

Data from the National Psoriasis Foundation National Survey

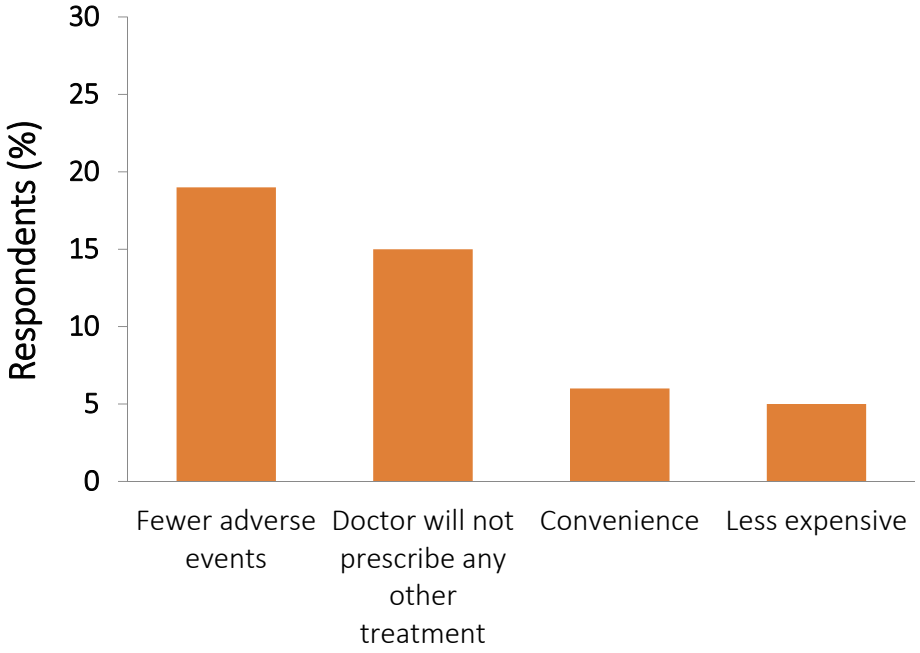




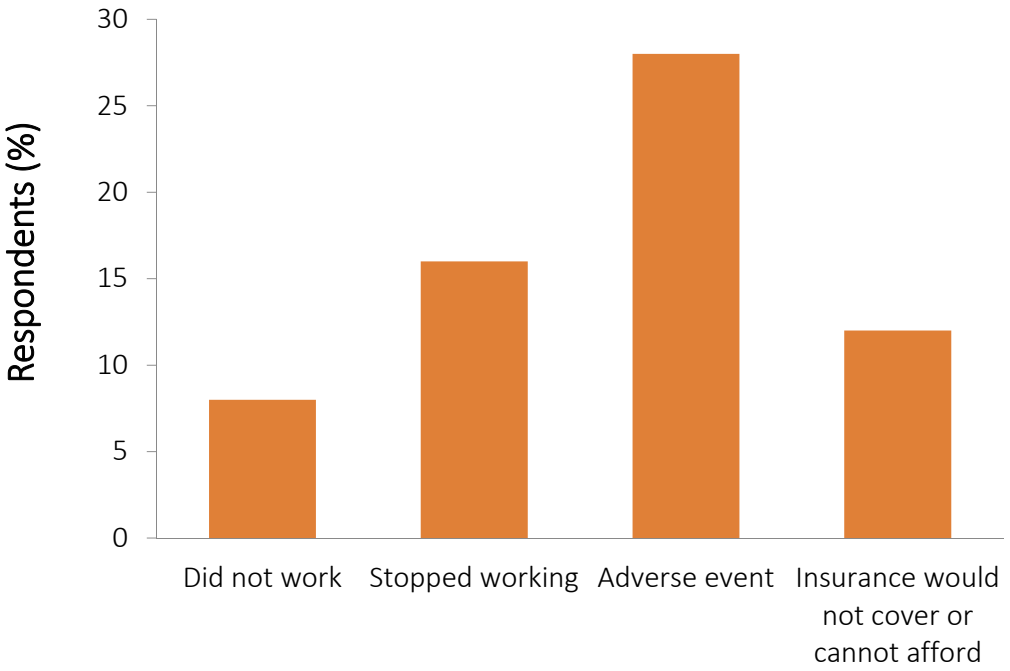
Armstrong AW, et al. *JAMA Dermatol*. 2013;149:1180-1185.

Psoriasis Remains Significantly Undertreated (cont'd)

Patients' Self-Reported Reasons for Receiving Topical Medications for Their Psoriasis

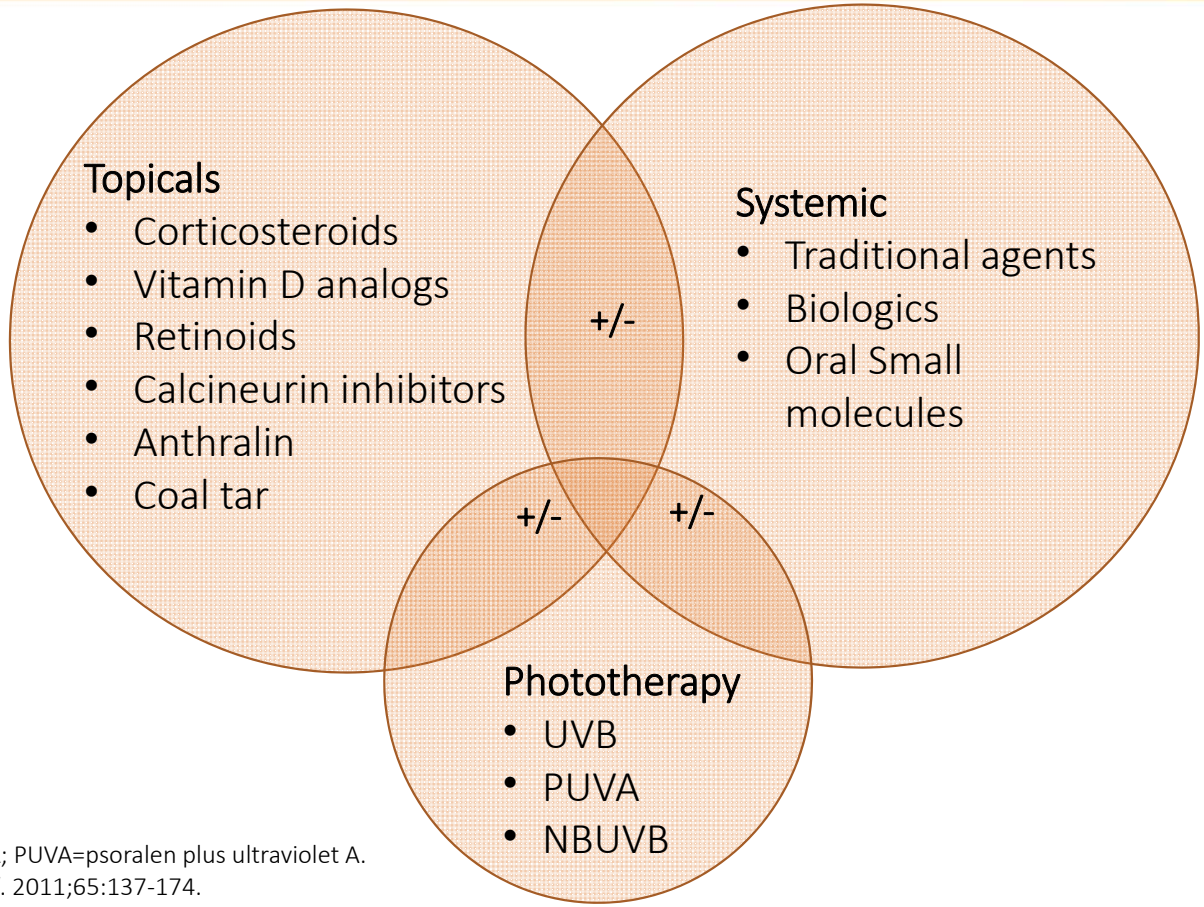


Top Reasons for Discontinuation of a Biologic Medication



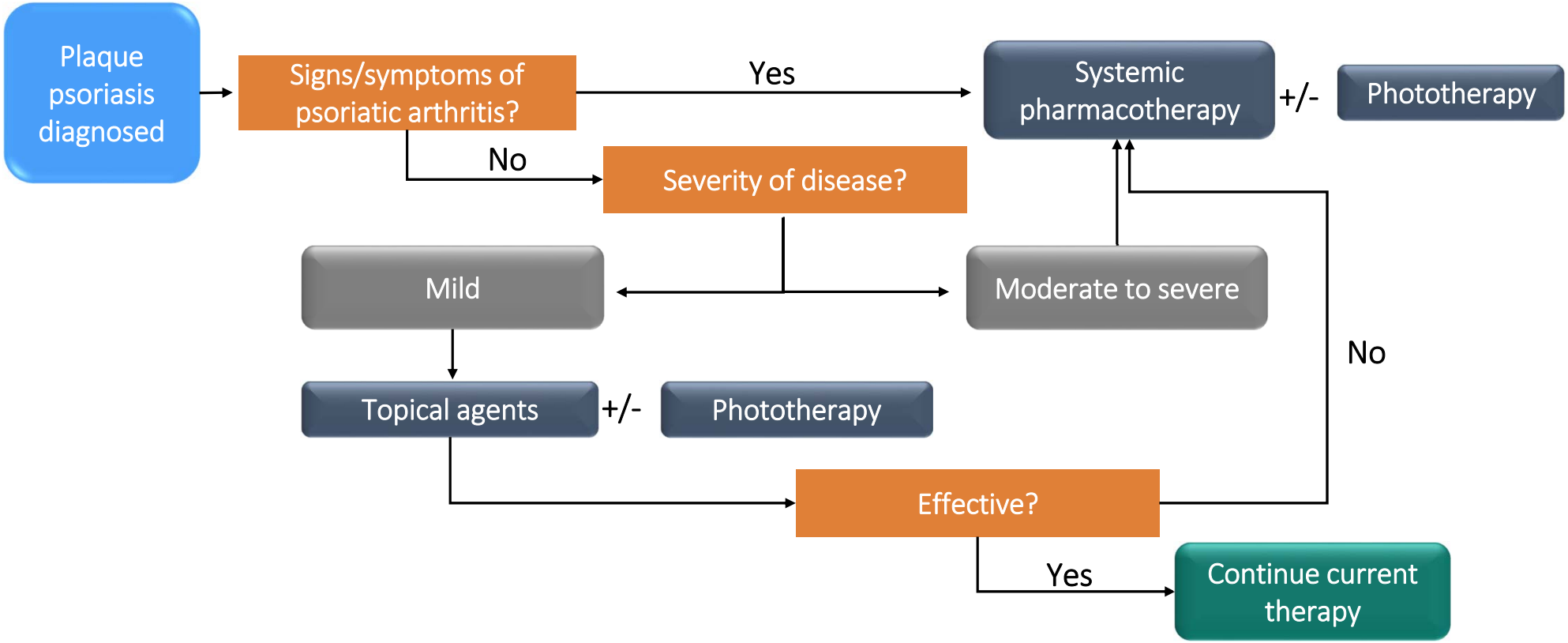
Armstrong AW, et al. *JAMA Dermatol*. 2013;149:1180-1185.

Psoriasis Treatment Modalities



UVB=ultraviolet B; UVA=ultraviolet A; PUVA=psoralen plus ultraviolet A.
Menter A, et al. *J Am Acad Dermatol*. 2011;65:137-174.

Disease Severity Guides Treatment Selection



Menter A, et al. *J Am Acad Dermatol*. 2008;58:826-250; Menter A, et al. *J Am Acad Dermatol*. 2009;60:643-659; Menter A, et al. *J Am Acad Dermatol*. 2010;62:114-135.

Traditional Systemic Treatment Options

Agent	Description/mechanism
Acitretin	• Vitamin A derivative (retinoid) • Immunomodulatory and anti-inflammatory activity • Modulates epidermal proliferation and differentiation
Cyclosporine	• Blocks inflammatory cytokine production and T-cell activation
Methotrexate	• Competitive inhibitor of dihydrofolate reductase • Interferes with nucleic acid synthesis inhibiting lymphoid proliferation

Menter A, et al. *J Am Acad Dermatol*. 2009;61:451-485.

Biologics and Small Molecules: Therapeutic Targets

TNF-α	IL-12/IL-23	IL-17A	PDE-4
Adalimumab	Ustekinumab	Secukinumab	Apremilast
Certolizumab pegol*		Ixekizumab	
Etanercept		Brodalumab	
Golimumab*			
Infliximab			
Biosimilars			

*Approved for psoriatic arthritis; not approved for plaque psoriasis. All other agents listed are approved in both plaque psoriasis and psoriatic arthritis, except for ixekizumab, which is currently FDA-approved for plaque psoriasis only. PDE-4=phosphodiesterase

Menter A, et al. *J Am Acad Dermatol*. 2008;58:826-250; Cimzia [package insert]. Smyrna, GA: UCB, Inc., 2017; Simponi [package insert]. Horsham, PA: Janssen Biotech, Inc.; 2017; Stelara [package insert]. Horsham, PA: Janssen Biotech, Inc.; 2016; Taltz [package insert]. Indianapolis, IN: Eli Lilly and Company; 2017; Cosentyx [package insert]. East Hanover, NJ: Novartis Pharmaceutical Corp; 2016; Otezla [package insert]. Summit, NJ: Celgene Corp; 2015.

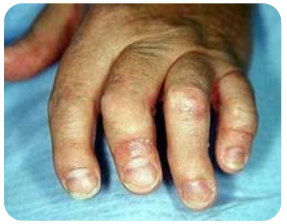
Biologics and Small Molecules in Late-Stage Development: Plaque Psoriasis

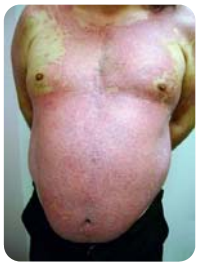
Agent	Description/Mechanism	Status
Guselkumab	• Fully human IgG1λ monoclonal antibody • Targets the p19 subunit of IL-23	Phase 3
IMO-8400	• TLR7, TLR8 and TLR9 inhibitor	Phase 2
Namilumab	• GM-CSF receptor antagonist	Phase 2
Ponesimod	• S1P1 receptor inhibition	Phase 2
Tildrakizumab	• Humanized IgG1κ monoclonal antibody • Targets the p19 subunit of IL-23	Phase 3
Tofacitinib	• Small molecule inhibitor of Janus kinase (JAK)1 and JAK3 signaling pathway	Phase 3 completed
Risankizumab (BI 655066)	• High-affinity monoclonal antibody • Targets the p19 subunit of IL-23	Phase 3
Piclidenoson (CF101)	• Small molecule A_3 adenosine receptor antagonist • Downregulates the nuclear factor-κB signaling pathway	Phase 3

Greb JE, et al. *Nat Rev Dis Primers*. 2016;2:16082.

Achieving Treatment Targets: Recommendations of an Expert Panel

- Panel of 25 psoriasis experts convened by the National Psoriasis Foundation
- **Purpose:** Establish psoriasis treatment goals to
  - Improve patient outcomes
  - Reduce disease burden
  - Inform treatment decision making





Armstrong AW. *J Am Acad Dematol.* 2017;76:290-298.

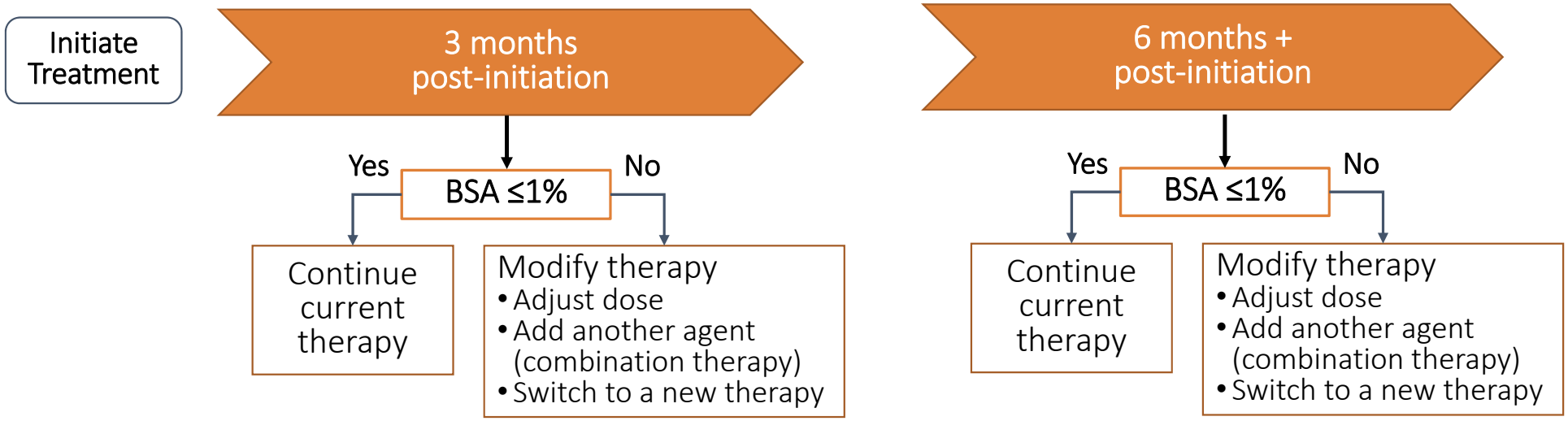
Establishing Treatment Goals is Important to Achieve and Maintain Treatment Success

- Goal of psoriasis treatment is to achieve complete skin clearance using the most effective and safe treatment at a reasonable cost
- Goal-oriented treatment strategies:
  - Establish clear treatment goals during the initial discussion of psoriasis therapy
  - Regularly evaluate treatment response
  - Modify therapy when the results are insufficient
- Include patients in the treatment decision-making process
- Consider patient preferences when developing a treatment plan

Armstrong AW. *J Am Acad Dematol.* 2017;76:290-298.
Schaarschmidt ML, et al. *Arch Dermatol*. 2011;147:1285-1294.
Brezinski E, Armstrong AW. *Semin Cutan Med Surg*. 2014;33:91-97.

Psoriasis Treatment Recommendations

- Evaluate the patient response 3 months after starting a new therapy
  - Target response at 3 months post-initiation is BSA ≤1%
  - Acceptable response at 3 months post-initiation is BSA ≤3% or BSA improvement >75% from baseline
- Evaluate every 6 months
  - Target response at every 6 months maintenance evaluation is BSA ≤1%



Armstrong AW. *J Am Acad Dematol.* 2017;76:290-298.

Strategies to Optimize Systemic Therapy: Combination Therapy

Potential Indications for Systemic Combination Therapy

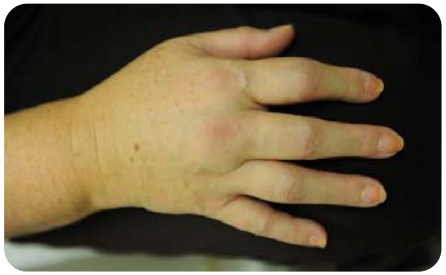
- Inadequate efficacy of monotherapies
- Tolerability concerns
- Complications or comorbidities (eg, psoriatic arthritis, cardiovascular disease)
- Bridging treatment in patients switching therapies
- Potential for intermittent or continuous use during long-term treatment for relapsing disease
- Tailoring therapy to meet individual patients' needs
- Antibody development to biologic agent

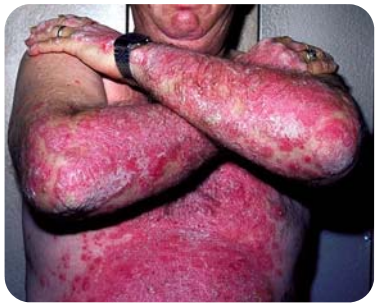
Evidence and Recommendations for Combination Therapy

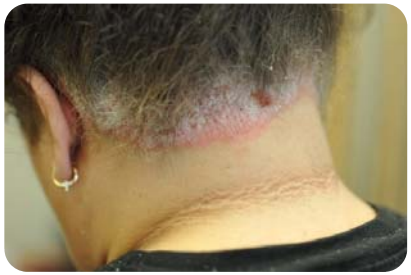
- Experience with combination therapy is greater for psoriatic and rheumatoid arthritis than psoriasis
- Methotrexate or acitretin can be added to a biologic monotherapy
  - A TNF inhibitor + methotrexate (5–15 mg/week) is safe and increases long-term efficacy
  - Data on combining traditional systemic therapies with non-TNF biologics are limited
- Combined use of cyclosporine and a biologic raises safety concerns
- Optimal safety monitoring for combination therapy has not been determined
- Monitoring interval should be defined by the agent with the most stringent monitoring criteria

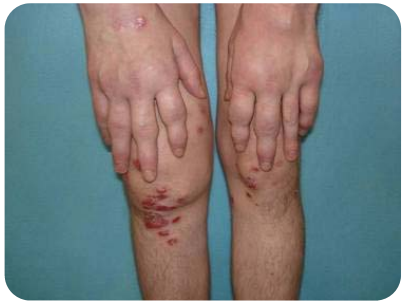
Cather JC, Crowley JJ. *Am J Clin Dermatol*. 2014;15:467-478; Mrowietz U, et al. *J Eur Acad Dermatol Venereol.* 2014;28:438-453.

Managing Patients with Psoriatic Disease



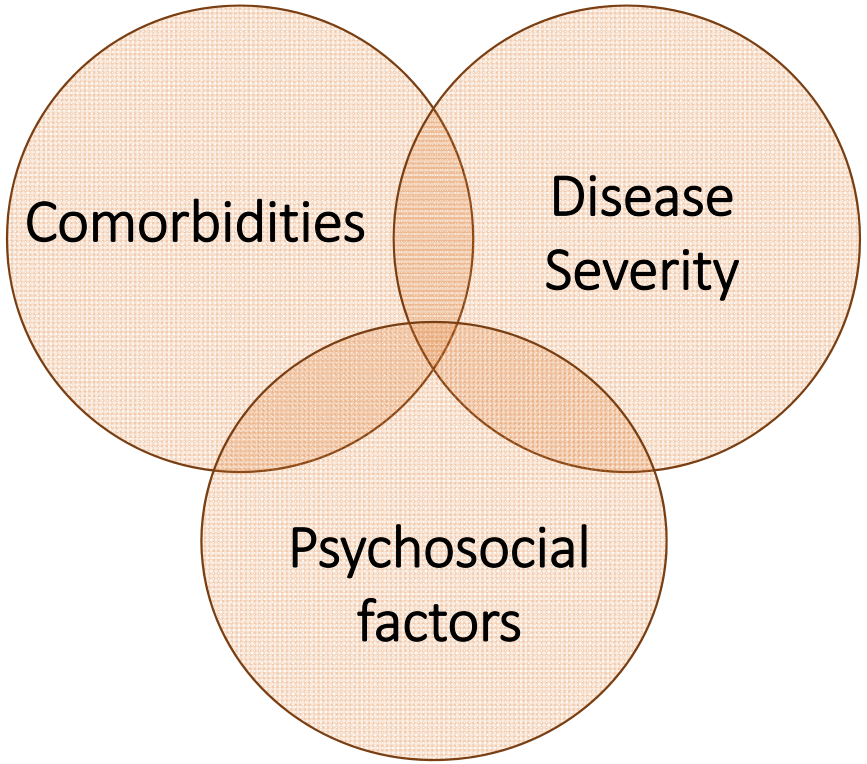






Factors Involved in the Treatment Decision

- Design treatment to meet each patient's individual needs



Psoriasis and Cardiovascular Disease

Psoriasis is associated with an increased risk of major cardiovascular events

Psoriasis by severity	Cardiovascular Outcome		
	Myocardial infarction	Stroke	Mortality
Mild, RR (95% CI)	1.29 (1.02, 1.63)	1.12 (1.08, 1.16)	NS
Severe, RR (95% CI)	1.70 (1.32, 2.18)	1.56 (1.32, 1.84)	1.39 (1.11, 1.74)

- Estimated excess of 11,500 (95% CI, 1169 to 24,407) major adverse cardiovascular events in the United States each year
- Chronic and uncontrolled inflammation from psoriatic disease may be related to endothelial dysfunction that increases cardiovascular risk
- Systemic therapies for psoriasis (eg, methotrexate and TNF inhibitors) have been associated with reductions in cardiovascular events
- 4-year shorter life span in patients with moderate to severe psoriasis.

RR=relative risk; CI-confidence interval; NS=not significant

Armstrong EJ, et al. *J Am Heart Assoc*. 2013;2:e000062. Strober BE, et al. *Dermatol Ther*. 2012;2:1. Wu JJ, et al. *Arch Dermatol*. 2012;148:1244-1250; Ahlehoff O, et al. *J Eur Acad Dermatol Venereol*. 2015;29:1128-1134; Hugh J, et al. *J Am Acad Dermatol*. 2014;70:168-177.

Comparison of Coronary Artery Calcium Scores Between Patients with Psoriasis and Type 2 Diabetes

JAMA Dermatol. 2016 Nov 1;152(11):1244-1253.
doi: 10.1001/jamadermatol.2016.2907

Mansouri B, Kivelevitch D, Natarajan B, Joshi AA, Ryan C, Benjegerdes K, Schussler JM, Rader DJ, Reilly MP, Menter A, Mehta NN

Patients from:

- Baylor Dallas Psoriasis Clinic (Menter)
- NIH (Mehta)

Comparison of Coronary Artery Calcium Scores Between Patients with Psoriasis and Type 2 Diabetes

- Importance
  - Psoriasis is associated with an increased risk of cardiovascular diseases
  - Subclinical atherosclerosis in patients with moderate to severe psoriasis has not been compared with other conditions such as type 2 diabetes which is associated with increased cardiovascular risk and a much more rigorous cardiovascular disease screening
- Objective
  - Assess the burden of asymptomatic coronary atherosclerosis measured by coronary artery calcium score in patients with moderate to severe psoriasis compared with patients with type 2 diabetes and healthy controls
- Main outcome and measurement
  - Coronary artery calcium measured by Agatston score

Mansouri B, et al. *JAMA Dermatol*. 2016;152:1244-1253.

Comparison of Coronary Artery Calcium Scores Between Patients with Psoriasis and Type 2 Diabetes

- Design, Setting, and Participants
  - Three single-center, cross-sectional studies
  - Enrolled patients with moderate to severe psoriasis without type 2 diabetes
  - Patients recruited from the Baylor Psoriasis specialty clinic outpatient clinics (July 1, 2009 - June 20, 2011)
  - Age and sex-matched healthy controls without psoriasis, type 2 diabetes, or other inflammatory diseases

Mansouri B, et al. *JAMA Dermatol*. 2016;152:1244-1253.

Comparison of Coronary Artery Calcium Scores Between Patients with Psoriasis and Type 2 Diabetes

- **Results**
  - A total of 387 individuals participated in the study
  - Mean (SD) age was 51 (7.7), 52 (8.0), and 52 (8.0) years in the psoriasis, type 2 diabetes, and healthy control cohorts, respectively
  - Patients with psoriasis had low cardiovascular risk measured by the Framingham Risk Score but had high prevalence of cardiovascular and cardiometabolic risk factors, similar to patients with type 2 diabetes

Mansouri B, et al. *JAMA Dermatol*. 2016;152:1244-1253.

Comparison of Coronary Artery Calcium Scores Between Patients with Psoriasis and Type 2 Diabetes

- **Results (cont'd)**
  - In a fully adjusted model, psoriasis was associated with coronary artery calcium similar to the association in type 2 diabetes
  - Likelihood ratio testing revealed incremental value for psoriasis in a fully adjusted model in predicting coronary artery calcium
  - Psoriasis was independently associated with the presence of any coronary artery calcium (odds ratio, 2.35; 95% CI, 1.12-4.94) in fully adjusted models, whereas the association of coronary artery calcium with type 2 diabetes was no longer significant after adding body mass index to the model (odds ratio, 2.18; 95% CI, 0.75-6.35)

Mansouri B, et al. *JAMA Dermatol*. 2016;152:1244-1253.

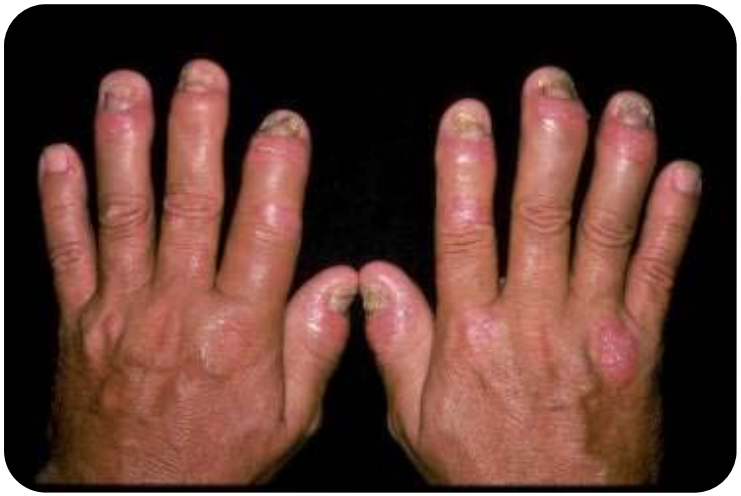
Comparison of Coronary Artery Calcium Scores Between Patients with Psoriasis and Type 2 Diabetes

- **Conclusions and Relevance**
  - Patients with psoriasis have increased coronary artery calcium by mean total Agatston scores, similar to that of patients with type 2 diabetes, suggesting that patients with psoriasis harbor high rates of subclinical atherosclerosis beyond adjustment for body mass index
  - Major educational efforts for patients and physicians should be undertaken to reduce the burden cardiovascular disease in patients with psoriasis
- **Meaning**
  - These findings strongly support screening for cardiovascular risk factors systematically in patients with moderate to severe psoriasis

Mansouri B, et al. *JAMA Dermatol*. 2016;152:1244-1253.

Skin Disease Precedes Joint Involvement in Patients with Psoriasis by Up to 10 Years

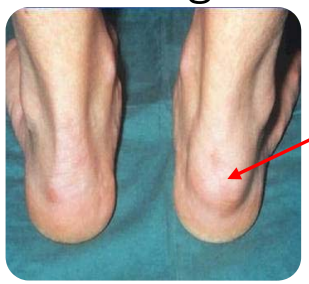
- 30% of patients with psoriasis are likely to develop psoriatic arthritis (PsA)
- Skin disease precedes joint disease in 84% of patients
- Severity of skin disease and the severity/course of PsA do not correlate with each other
- Therapies effective for psoriasis may not be effective for PsA
- 60% of patients with PSA progress to permanent joint destruction if left untreated.

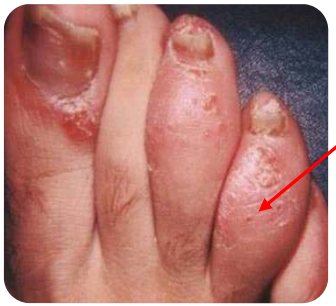


Mease PJ, Armstrong AW. *Drugs.* 2014;74:423–441.
Gottlieb A, et al. *J Am Acad Dermatol*. 2008;58:851-864.

Coordination of Care: Management of Joint Disease in Patients with Psoriasis

- Early detection and appropriate treatment of psoriatic arthritis (PsA) will reduce long-term disability and minimize the need for health care resources
- Dermatologists play an important role in screening and diagnosing patients with early PsA
  - Conduct routine screening for PsA in psoriasis patients
  - Assess severity and risk of progression
  - Initiate treatment that controls both skin and joint disease
- For patients with severe or complicated symptoms, dermatologists and rheumatologists must collaborate to adequately manage both skin and joint psoriatic involvement over the long term

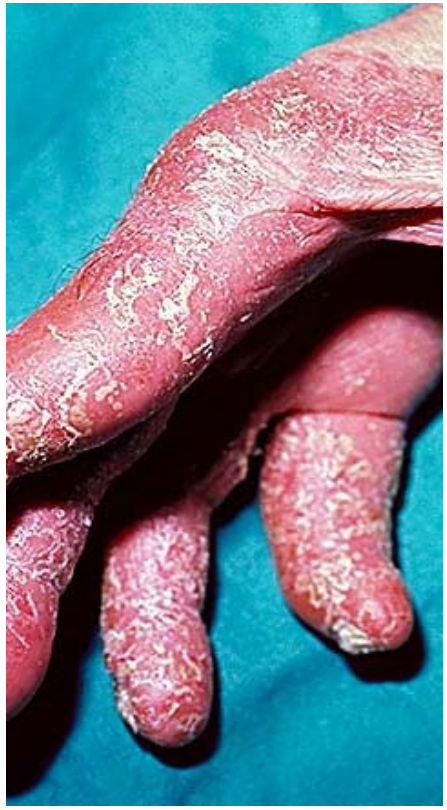




Mease PJ, Armstrong AW. *Drugs.* 2014;74:423–441.

Summary

- Psoriasis is a multisystem inflammatory disorder with significant cardiovascular risk factors
- Establishing treatment goals can help improve patient outcomes, reduce disease burden, and inform treatment decision making
- The ultimate treatment goal is complete skin clearance
- Multiple disease and patient factors, including comorbidities, influence the degree of success realized by patients receiving psoriasis treatment
- Optimal treatment depends on accurate assessment of disease severity and consideration of patient-specific factors that may affect treatment decisions



The Expanding Psoriatic Arthritis Treatment Armamentarium and Evolving Clinical Guidelines

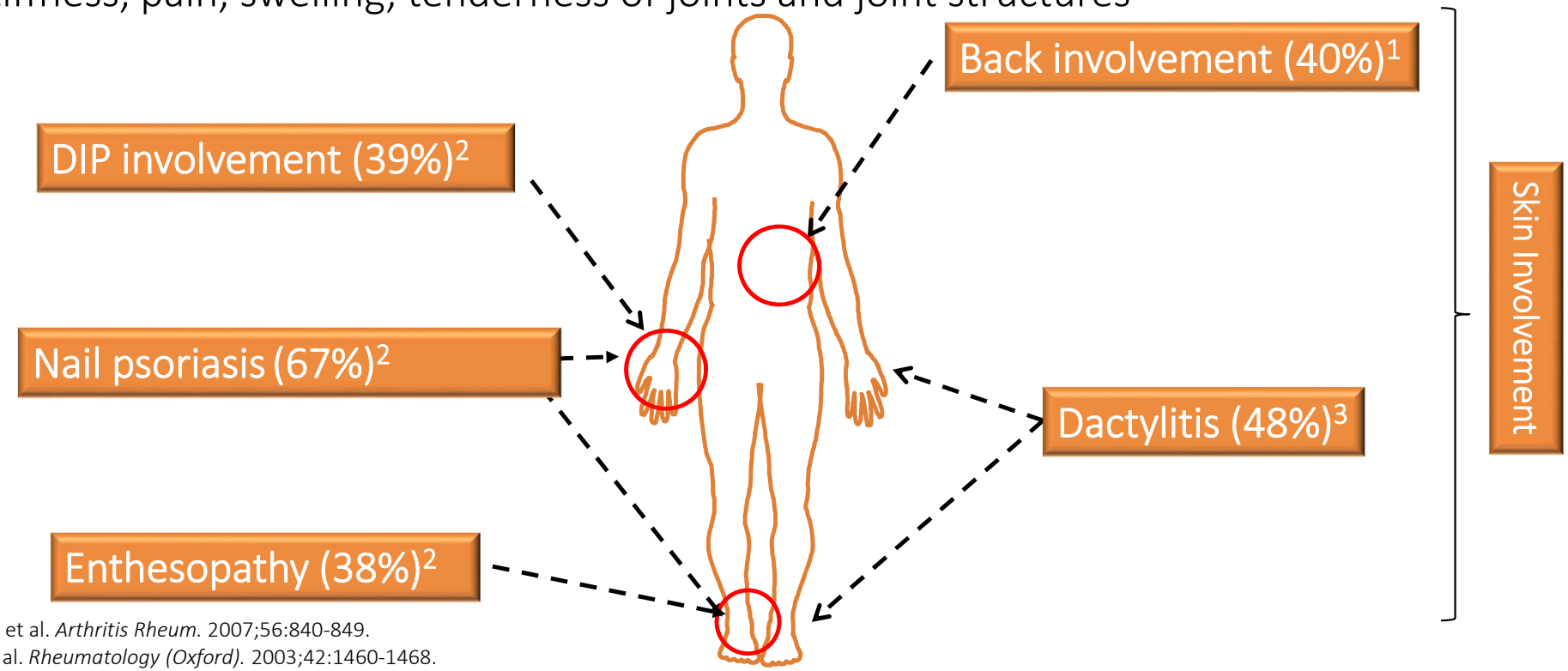
Robin K. Dore, MD
Clinical Professor
UCLA David Geffen School of Medicine
Los Angeles, CA

Learning Objective

- Assess current and emerging therapies for the treatment of psoriasis and psoriatic arthritis and cite their clinical trial data

Psoriatic Arthritis is a Complex and Disabling Disease

- Psoriatic arthritis (PsA) is an inflammatory seronegative spondyloarthropathy characterized by stiffness, pain, swelling, tenderness of joints and joint structures



1. Husted JA, et al. *Arthritis Rheum.* 2007;56:840-849.
2. Kane D, et al. *Rheumatology (Oxford).* 2003;42:1460-1468.
3. Brockbank JE, et al. *Ann Rheum Dis.* 2005;64:188-190.

DIP=distal interphalangeal predominant

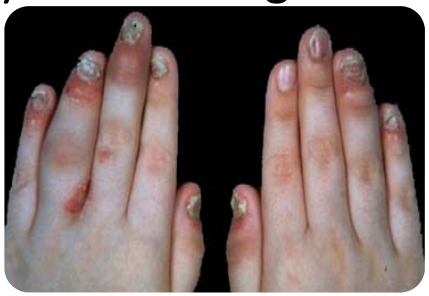
Psoriatic Arthritis Poses a Significant Clinical and Economic Burden

- Historically considered to be a “mild” disease[1]
  - 40%-60% exhibit evidence of radiographic joint damage[2]
- Joint damage contributes to[2]
  - Reduced articular function
  - Higher mortality
  - Impaired ability to work and form/maintain social relationships
  - Poor quality of life
- Average annual direct and indirect cost associated with psoriatic arthritis ranged from ~$8,367 to $18,110[3]
  - Hospitalizations accounted for almost 60% of direct costs
  - Disability and lost productivity accounted for the majority of indirect costs

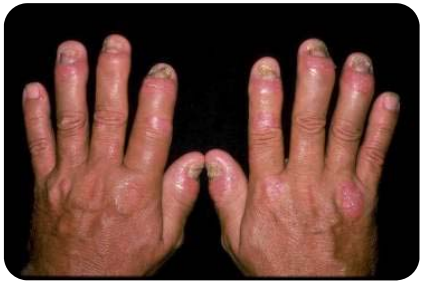
1. Ory PA, et al. *Ann Rheum Dis* 2005;64(Suppl II):ii55–ii57.
2. Menter A, Korman NJ, Elmets CA, et al. J Am Acad Dermatol. 2011;65(1):137-74.
3. Lee S, et al. *Pharmacy and Therapeutics.* 2010;35:680-689.

Psoriatic Arthritis Has a Diverse Clinical Presentation

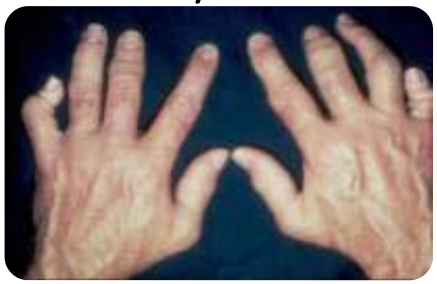
Asymmetric Oligoarthritis



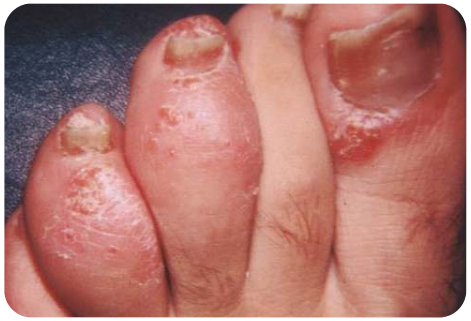
DIP Synovitis



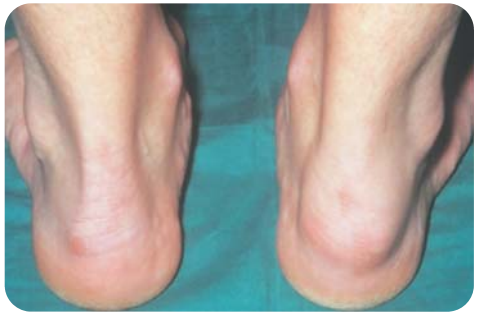
PIP Synovitis



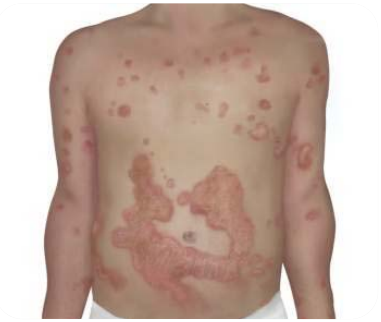
Dactylitis



Enthesitis



Psoriasis Plaques



DIP=distal interphalangeal predominant;
PIP=proximal interphalangeal joint

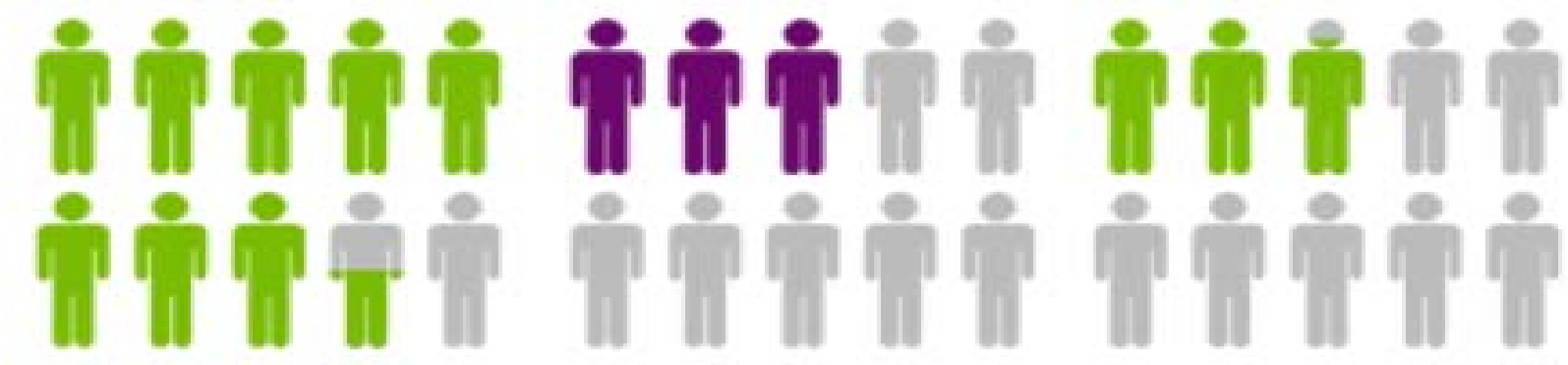
Primary Features of Psoriatic Arthritis

Clinical	Laboratory	Radiographic
• Psoriasis of skin and nails • Peripheral arthritis • Distal interphalangeal (DIP) involvement • Enthesopathy • Dactylics • Spine disease	• Rheumatoid factor (RF) and anti-citrullinated protein antibody (ACPA) negative* • Elevated acute phase reactants†	• Erosions and bony resorption • Joint space narrowing and new bone growth at the entheses • Syndesmophytes‡ • Sacroileitis‡

*Low levels of RF and ACPA e found in 5% to 16% of patients
†To a lesser degree than in RA
‡Spinal disease occurs in 40% to 70% of PsA patients

Helliwell PS, Taylor WJ. *Ann Rheum Dis*. 2005;64(2:ii)3-8.

Psoriatic Arthritis May Occur With or Without Skin Involvement



~85% of patients with psoriatic arthritis were first diagnosed with psoriasis[1]

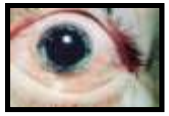
Psoriatic arthritis may develop in up to 30% of patients with psoriasis[2]

Undiagnosed psoriatic arthritis was reported in 29% of psoriasis patients seen in a single-center study[3]

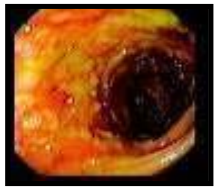
1. Gottlieb AB, et al. *J Am Acad Dermatol*. 2008;58:851-864.
2. National Psoriasis Foundation. About psoriatic arthritis. https://www.psoriasis.org/about-psoriatic-arthritis. Accessed February 2017.
3. Haroon M, et al. *Ann Rheum Dis.* 2013;72:736–740.

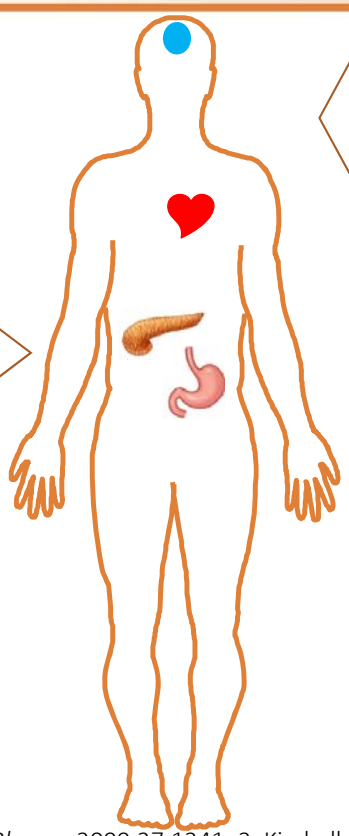
Common Comorbidities Observed in Psoriatic Arthritis Patients

Ocular inflammation[1] (iritis/uveitis/ episcleritis)



Inflammatory bowel disease[2]



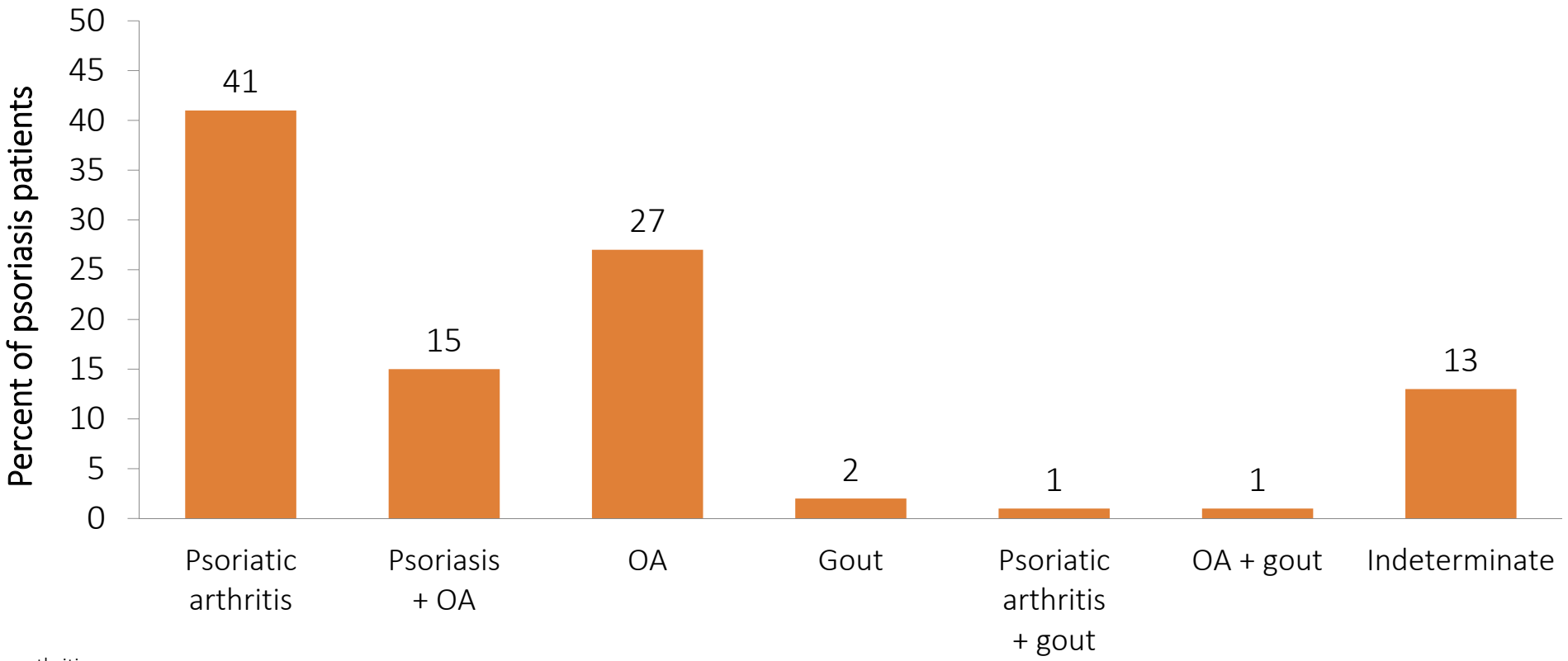


Psychosocial burden[3-5]
- **Depression**
- **Suicidal ideation**
- **Substance use**

Increased risk of CVD[6-8]
- **Hyperlipidemia**
- **Hypertension**
- **Insulin resistance**
- **Diabetes**
- **Obesity**

1. Qieiro R, et al. *Semin Arth Rheum*. 2002;31:264; 2. Scarpa R, et al. *J Rheum*. 2000;27:1241; 3. Kimball AB, et al. *Am J Clin Dermatol*. 2005;6:383-392; 4. Naldi L, et al. *Br J Dermatol*. 1992;127:212-217; 5. Mrowietz U, et al. *Arch Dermatol Res*. 2006;298:309-319 6. Mallbris L, et al. *Curr Rheum Rep*. 2006;8:355; 7. Neimann AL, et al. *J Am Acad Derm*. 2006;55:829; 8. Tam LS, et al. *Rheumatology (Oxford)*. 2008;47:718-23.

A Diagnosis of Psoriatic Arthritis in Patients with Skin Involvement Can be Challenging



OA=osteoarthritis

Mody E, et al. *Br J Dermatol*. 2007;157:1050-1051.

Screening Patients for Psoriatic Arthritis

Symptom Recognition

- General symptoms
  - Fatigue
  - Morning stiffness >30 min
- Joint symptoms
  - Reduced range of motion
  - Stiffness, pain, throbbing, swelling and tenderness in one or more joints
  - Swollen fingers and toes

Screening Tools

- Psoriasis Epidemiology Screening Tool (PEST)[1]
- Toronto Psoriasis Arthritis Screen (ToPAS)[2]
- Psoriatic Arthritis Screening Evaluation tool (PASE)[2]
- Psoriatic Arthritis Screening Questionnaire (PASQ)[3]
- Early Arthritis for Psoriatic patients (EARP)[4]

1. Ibrahim GH, et al. *Clin Exp Rheumatol*. 2009;27:469-474.
2. Gladman DD, et al. *Ann Rheum Dis*. 2009;68:497-501.
3. Dominguez PL, et al. *Arch Dermatol Res*. 2009;301:573-579.
4. Khraishi M, et al. *Psoriasis Forum*. 2010;16:9-16.
5. Tinnazi I, et al. *Rheumatology (Oxford).* 2012;51:2058-2063.

Assessment of Psoriatic Arthritis Severity

PsA Manifestation	Mild	Moderate	Severe
Peripheral arthritis	• <5 joints involved • No damage on X-ray • No loss of function • QoL-minimal impact • Patient evaluation mild	• ≥5 joints involved • Damage on X-ray • Inadequate response to Rx • Moderate loss of function • Moderate impact on QoL • Patient evaluation moderate	• ≥5 joints involved • Severe damage on X-ray • Inadequate response to mild-moderate Rx • Severe loss of function • Severe impact on QoL • Patient evaluation severe
Skin disease	• BSA <5 • PASI <5 • Asymptomatic	• Non-response to topicals • DLQI, PASI <10	• BSA >10 • DLQI >10 • PASI >10
Spinal disease	• Mild pain • No loss of function	• Loss of function or BASDAI >4	• Failure of response
Enthesitis	• 1–2 sites • No loss of function	• >2 sites or loss of function	• Loss of function or >2 sites and failure of response
Dactylitis	• Pain absent to mild • Normal function	• Erosive disease or loss of function	• Failure of response

QoL=quality of life; BSA=body surface area; PASI=psoriasis area severity index; Rx=prescription; DLQI=dermatology life quality index; BADSI= Bath ankylosing spondyarthropathy disease activity index

Richlin CT, et al. *Ann Rheum Dis*. 2009;68:1387-1394.

Goals of Treatment

- Treatment goals include[1]
  - Relieve or reduce joint pain
  - Reduce joint inflammation
  - Reduce swelling and tenderness
  - Prevent or delay joint damage
  - Improve function in daily activities
- Early diagnosis and treatment is associated with remission of symptoms[1]
- Early and sustained remission can result in long-term improvements in physical function, health-related quality of life, work productivity, and reduction in health care utilization[2]

1. Smolen JS, et al. *Ann Rheum Dis*. 2014;73:6-16.
2. Kavanaugh A, et al. *Ann Rheum Dis*. 2011;70(Suppl3):238.

Treatment Principles: Early Intervention and Tight Control

- Early intervention with protocol-driven therapies combined with a treat-to-target approach can control inflammation and minimize disease activity
- Treatment should be aimed at reaching the target of remission or minimal/low disease activity
- Availability of drugs that can slow down or prevent joint damage reinforces the importance of early diagnosis and treatment
- Regular monitoring is required to appropriately adjust therapy to maintain tight control and improve outcomes

Coates LC, et al. *Lancet*. 2015;386:2489-2498.
Gossec L, et al. *Ann Rheum Dis*. 2016;75:499-510.

GRAPPA Treatment Recommendations for Psoriatic Arthritis

Group for Research and Assessment of Psoriasis and Psoriatic Arthritis (GRAPPA) Treatment Guidelines

Establish diagnosis of PsA

Peripheral arthritis

Initiate therapy:
NSAIDs
IA steroids
DMARDs (MTX, CsA, SSZ, LEF)
Biologics (anti-TNFs):

Skin and nail disease

Initiate therapy:
Topicals
PUVA/UVB
Systemics (MTX, CsA, etc.)
Biologics (anti-TNFs)

Axial disease

Initiate therapy:
NSAID
Physiotherapy
Biologics (anti-TNFs)

Dactylitis

Initiate therapy:
NSAID
Injection
Biologics (anti-TNFs)

Enthesitis

Initiate therapy:
NSAID
Physiotherapy
Biologics (anti-TNFs)

Reassess response to therapy and toxicity

NSAID=nonsteroidal anti-inflammatory drugs; IA steroids=intra-articular corticosteroids;
DMARD=disease-modifying antirheumatic drugs; MTX=methotrexate; CsA=cyclosporin A;
SSZ=sulfasalazine; LEF=leflunomide; anti-TNF=anti-tumor necrosis factor;
PUVA/UVB= psoralen + ultraviolet A/ultraviolet B; PT=physical therapy.

Richlin CT, et al. *Ann Rheum Dis*. 2009;68:1387-1394.

Traditional Systemic Treatment Options

Agent	Description/mechanism
Methotrexate	• Competitive inhibitor of dihydrofolate reductase • Interferes with nucleic acid synthesis inhibiting lymphoid proliferation
Sulfasalazine	• A sulfa drug synthesized by combining sulfapyridine and salicylate • Believed to act by inhibiting the 5-lipoxygenase pathway
Leflunomide	• Pyrimidine synthesis inhibitor • Prevents T cell activation and proliferation • Currently only approved by the FDA for the treatment of RA

Raychaudhuri SP, et al. *J Autoimmun*. 2017 Jan;76:21-37.
Coates LC, et al. *Arthritis Rheumatol*. 2016;68:1060-1071.

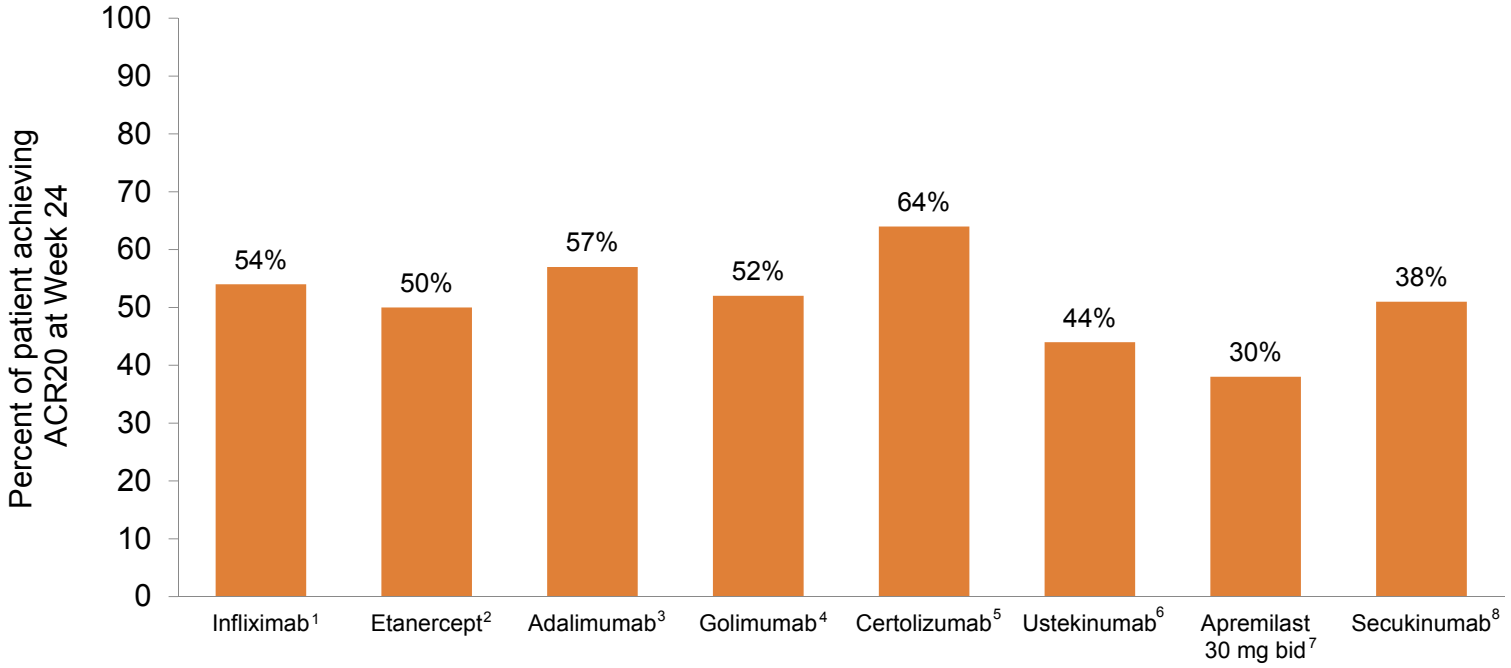
Biologics and Small Molecules: Therapeutic Targets

TNF-α	IL-12/IL-23	IL-17A	PDE-4
Adalimumab	Ustekinumab	Secukinumab	Apremilast
Certolizumab pegol			
Etanercept			
Golimumab			
Infliximab			
Biosimilars			

PDE-4=phosphodiesterase

Raychaudhuri SP, et al. *J Autoimmun*. 2017 Jan;76:21-37.
Coates LC, et al. *Arthritis Rheumatol*. 2016;68:1060-1071.

Biologic Therapies Approved for Psoriatic Arthritis: ACR20 at Week 24



1. Kavanaugh A, et al. *Ann Rheum Dis*. 65:1038–1043; 2. Mease P, et al. *Arthritis Rheum*. 2004;50:2264-2272; 3. Mease P, et al. *Ann Rheum Dis*. 2009;68:702-709; 4. Kavanaugh A, et al. *Ann Rheum Dis*. 2013;72:1777-1785; 5. Mease P, et al. *Ann Rheum Dis*. 2014;73:48-55; 6. McInnes I, et al. *Lancet*. 2013;382:780-789; 7. Kavanaugh A, et al. *Ann Rheum Dis*. 2014;73:1020-1026; 8. Cosentyx (secukinamab) prescribing information. Novartis Pharmaceuticals Corporation. 2017.

Biologics and Small Molecules in Late-Stage Development: Psoriatic Arthritis

Agent	Description/Mechanism	Status
Abatacept	• Selective T-cell costimulation modulator • Blocks activation of the CD28 receptor on T cells	Phase 3
Brodalumab	• Fully human IgG2 monoclonal antibody • Targets the IL-17 receptor subunit	Phase 3
Clazakizumab	• IL-6 monoclonal antibody • Direct inhibitor of IL-6	Phase 2b
Guselkumab	• Fully human IgG1λ monoclonal antibody • Targets the p19 subunit of IL-23	Phase 3
Ixekizumab	• Monoclonal antibody • Inhibits interleukin-17A	Phase 3
Risankizumab (BI 655066)	• High-affinity monoclonal antibody • Targets the p19 subunit of IL-23	Phase 2
Tildrakizumab	• Humanized IgG1κ monoclonal antibody • Targets the p19 subunit of IL-23	Phase 3
Tofacitinib	• Inhibitor of Janus kinase (JAK)1 and JAK3 signaling pathway • Blocks cytokine signaling	Phase 3

Raychaudhuri SP, et al. *J Autoimmun*. 2017 Jan;76:21-37.

Role of the Rheumatologist in the Management of Psoriasis Arthritis

- Management of psoriatic joint disease often requires the expertise of a rheumatologist in conjunction with dermatology[1]
- Multidisciplinary care may facilitate the diagnosis of joint disease and offers a more comprehensive treatment approach for patients with both psoriasis and psoriatic arthritis[1]

Sample Referral Criteria for Patients with Psoriatic Disease[2]

From Dermatology	From Rheumatology
• Peripheral arthritis • Dactylitis • PIP/DIP synovitis • Enthesitis • Inflammatory low back pain • Unspecified joint pain • Asymmetrical oligoarthritis	• Patients with suspected arthritis and psoriasis • Patients with poor skin and PsA evolution • Patients with PsA and severe skin psoriasis (PASI) • Suspected skin complications associated with treatment

1. Velez NF, et al. *Arch Dermatol Res*. 2012;304:7-13.
2. Luelmo J, et al. *Rheumatol Clin*. 2014;10:141–146.

Summary

- PsA is an inflammatory seronegative spondyloarthropathy characterized by stiffness, pain, swelling, tenderness of joints and peri-articular areas
- PsA may develop in up to 30% of patients with psoriasis
  - Despite being considered a “mild disease”, more than half of all patients develop joint complications
  - Early diagnosis and treatment can lead to remission of symptoms and reduction in utilization of health care resources
  - Several new agents with novel mechanisms of action have been approved for psoriatic arthritis, including oral therapies
  - Multidisciplinary care may facilitate the diagnosis of joint disease and offers a more comprehensive treatment approach for patients with psoriatic disease

Comparative Analyses of Current and Emerging Treatment Options

John Knispel, MD, CPE, FACOG
Regional Medical Director
Commercial Products Florida
Humana Inc.

Learning Objective

- Review the Comparative Effectiveness Research (CER) framework and discuss application of CER findings to benefit design and clinical decision making for patients with psoriatic disease

Management of Psoriatic Disease Presents a Challenge for Payers

Drug-Related Costs

- Acquisition cost of current and novel agents
- Contract implications of drug indications
- Patient Assistance Programs

Administrative Burden

- Lack of transparency in cost data due to differences in the medical and pharmacy benefit designs
- Patient health management programs
- Safety monitoring

Provider Relations

- Fee schedules and reimbursement
- Misaligned incentives
- Location/place of therapy
- Route of administration
- Support for mandated clinical pathways
- Delivery channels and other provider network issues

Decision Making in Psoriatic Disease is Often Challenged by Insufficient Data

- Payers, providers, and patients must often rely on incomplete information to make treatment and/or coverage decisions

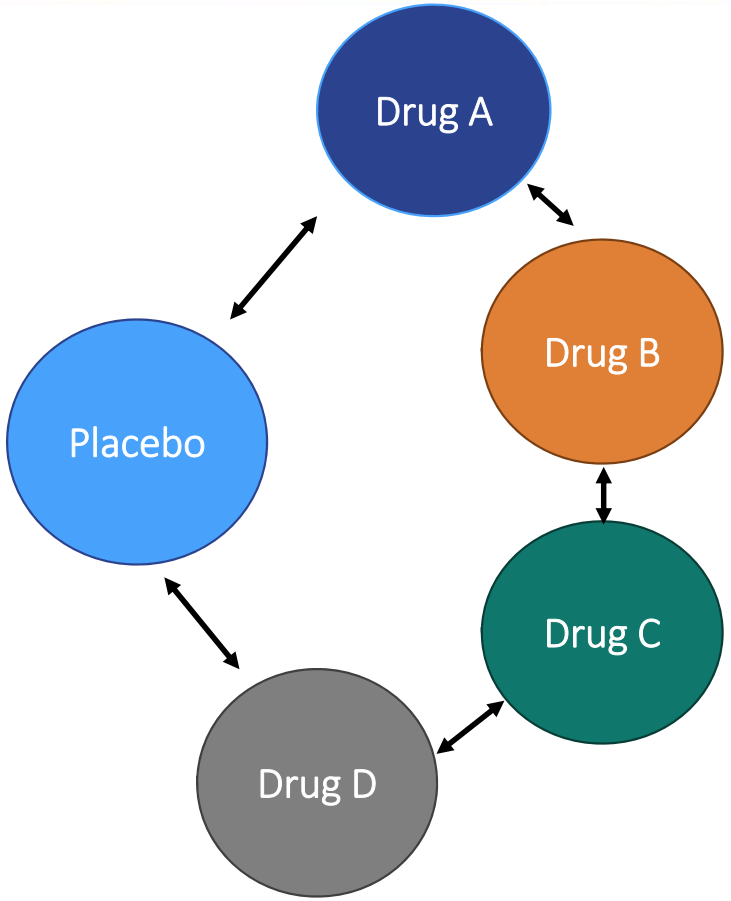
- Lack of head-to-head comparisons of competing treatment alternatives results in a “trial and error” approach to decision making

- Utility of data from cross-trial comparisons is limited by differences in
  - Trial design (eg, sample size, time frame, endpoints, statistical analyses)
  - Interventions (eg, dosing/administration, duration of treatment)
  - Patient characteristics (eg, disease severity, duration of disease, presence of comorbidities, prior treatments)

Williams HC, Delavalle RP. *J Invest Dermatol*. 2012;132:1008-1172.
Nambudiri VE, Qureshi A. *J Invest Dermatol*. 2013; 133, e5. doi:10.1038/jid.2012.497.

What is Comparative Effectiveness Research (CER)?

- A means to compare treatment alternatives in the absence of head-to-head data
  - Weighs evidence on clinical effectiveness, benefits, and harms of treatment alternatives
  - Applicable to a wide variety of practice settings and patients
- Results can help fill data gaps



Brixner DI, Oderda G. *J Manag Care Pharm*. 2012;18(Suppl. 4-a):S3-S4.
Nambudiri VE, Qureshi A. *J Invest Dermatol*. 2013;133, e5. doi:10.1038/jid.2012.497.

Application of CER to Psoriasis

Comparative effectiveness of biologic agents for the treatment of psoriasis in a real-world setting: Results from a large, prospective, observational study (Psoriasis Longitudinal Assessment and Registry [PSOLAR])

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Farmington, Connecticut; Waterloo and Toronto, Ontario, and Montreal, Quebec, Canada; Stanford, California; Boston, Massachusetts; Bergamo, Italy; Horsham, Pennsylvania; and New York, New York

Background: Comparing effectiveness of biologics in real-world settings will help inform treatment decisions.

Objectives: We sought to compare therapeutic responses among patients initiating infliximab, adalimumab, or etanercept versus ustekinumab during the Psoriasis Longitudinal Assessment and Registry (PSOLAR).

Methods: Proportions of patients achieving a Physician Global Assessment score of clear (0)/minimal (1) and mean decrease in percentage of body surface area with psoriasis were evaluated at 6 and 12 months. Adjusted logistic regression (Physician Global Assessment score 0/1) and analysis of covariance (percentage of body surface area with psoriasis) were performed to determine treatment factors associated with effectiveness.

From the University of Connecticut Health Center[a]; Probity Medical Research, Waterloo[b]; Innovaderm Research Inc, Montreal[c]; Department of Dermatology, Stanford University[d]; Department of Dermatology, Harvard Medical School and Massachusetts General Hospital[e]; Centro Studi Gruppo Italiano Studi Epidemiologici in Dermatologia (GISED), Azienda Ospedaliera Papa Giovanni XIII, Bergamo[f]; University of Toronto[g]; Janssen Scientific Affairs LLC,[h] Janssen Research and Development LLC,[i] and Janssen Health Economics and Outcomes Research,[j] Horsham; and Icahn School of Medicine at Mount Sinai, New York.[k]

This study was sponsored by Janssen Scientific Affairs, LLC (clinicaltrials.gov: NCT00508547).

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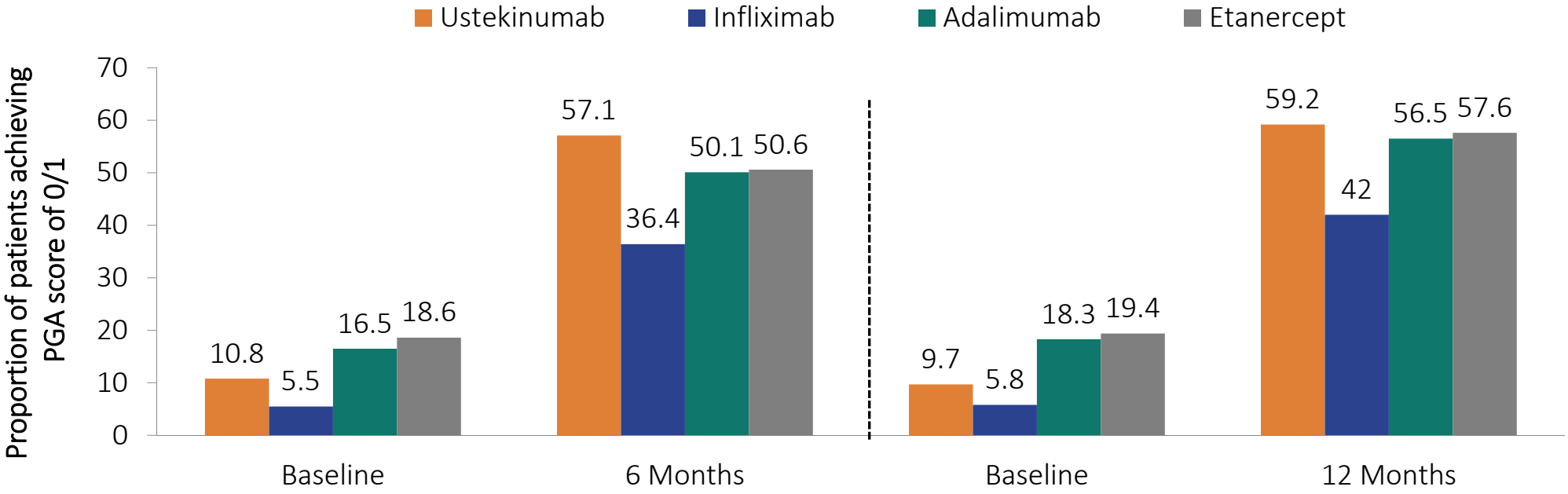
0190-9622

http://dx.doi.org/10.1016/j.jaad.2015.12.017

- Comparison of the therapeutic response to 6 and 12 months of treatment with biologic therapy in the Psoriasis Longitudinal Assessment and Registry (PSOLAR)
- Analysis of 2076 of 2541 patients in the registry with efficacy data including
  - Physician Global Assessment,
  - Percentage of body surface area with psoriasis
  - Dermatology Life Quality Index

Strober BE, et al. *J Am Acad Dermatol*. 2016;74:851-861.

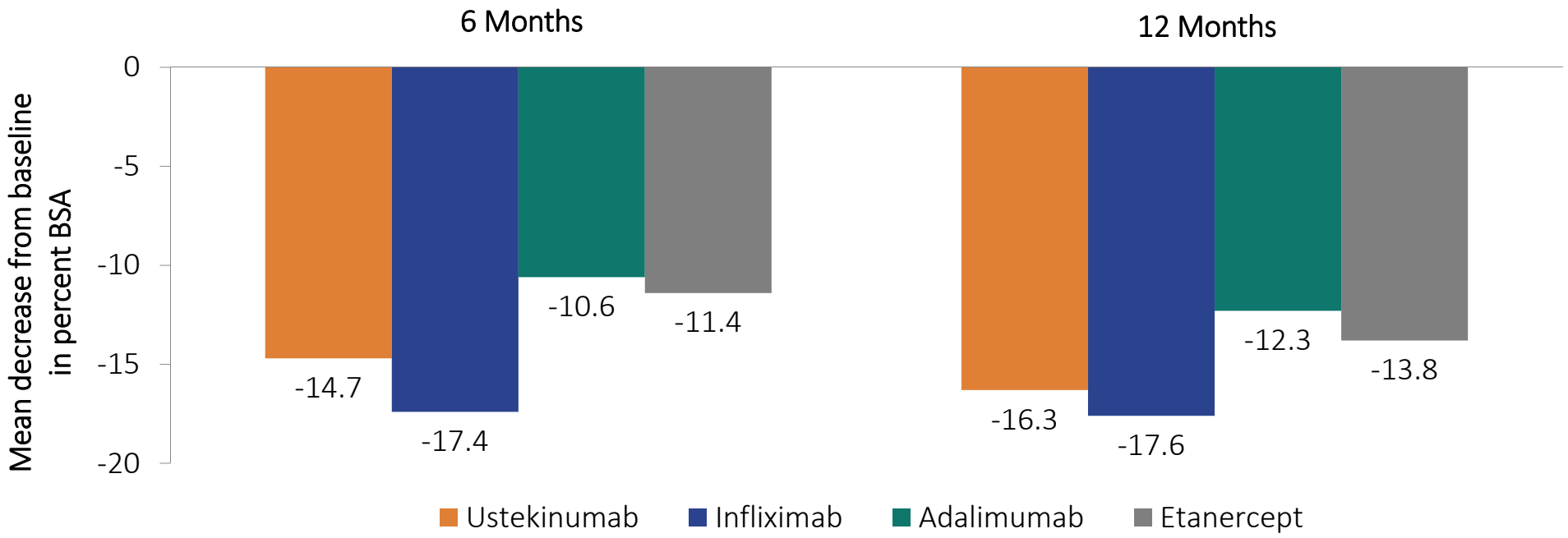
CER Results: Proportions of Patients with PGA Score of 0 (Clear) or 1 (Minimal) at 6 and 12 Months



Patients receiving TNF inhibitors were significantly less likely to achieve PGA score 0/1 vs Ustekinumab (infliximab [OR 0.396, *P*<.0001], adalimumab [OR 0.686, *P* =.0012], etanercept [OR 0.554, *P* =.0003] at 6 months and infliximab [OR 0.449, *P*=.0040] at 12 months

Strober BE, et al. *J Am Acad Dermatol*. 2016;74:851-861.

CER Results: Mean Decrease in Percentage of BSA With Psoriasis at 6 and 12 Months

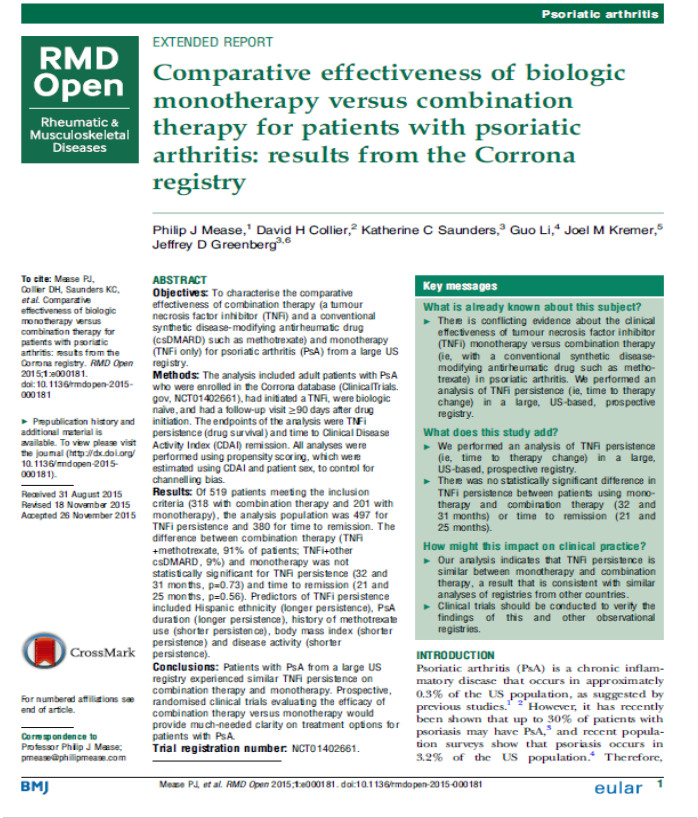


The decrease in % BSA at both 6 and 12 months was greater for ustekinumab vs adalimumab and etanercept, but less than that observed with infliximab.

BSA=body surface area

Strober BE, et al. *J Am Acad Dermatol*. 2016;74:851-861.

Application of CER to Psoriatic Arthritis



Psoriatic arthritis

RMD Open
Rheumatic & Musculoskeletal Diseases

EXTENDED REPORT

Comparative effectiveness of biologic monotherapy versus combination therapy for patients with psoriatic arthritis: results from the Corrona registry

Philip J Mease,[1] David H Collier,[2] Katherine C Saunders,[3] Guo Li,[4] Joel M Kremer,[5] Jeffrey D Greenberg[3,6]

To cite: Mease PJ, Collier DH, Saunders KC, *et al*. Comparative effectiveness of biologic monotherapy versus combination therapy for patients with psoriatic arthritis: results from the Corrona registry. *RMD Open* 2015;1:e000181. doi:10.1136/rmdopen-2015-000181

► Prepublication history and additional material is available. To view please visit the journal (http://dx.doi.org/10.1136/rmdopen-2015-000181).

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ABSTRACT

Objectives: To characterise the comparative effectiveness of combination therapy (a tumour necrosis factor inhibitor (TNFi) and a conventional synthetic disease-modifying antirheumatic drug (csDMARD) such as methotrexate) and monotherapy (TNFi only) for psoriatic arthritis (PsA) from a large US registry.

Methods: The analysis included adult patients with PsA who were enrolled in the Corrona database (ClinicalTrials.gov, NCT01402661), had initiated a TNFi, were biologic naïve, and had a follow-up visit ≥90 days after drug initiation. The endpoints of the analysis were TNFi persistence (drug survival) and time to Clinical Disease Activity Index (CDAI) remission. All analyses were performed using propensity scoring, which were estimated using CDAI and patient sex, to control for channelling bias.

Results: Of 519 patients meeting the inclusion criteria (318 with combination therapy and 201 with monotherapy), the analysis population was 497 for TNFi persistence and 380 for time to remission. The difference between combination therapy (TNFi +methotrexate, 91% of patients; TNFi+other csDMARD, 9%) and monotherapy was not statistically significant for TNFi persistence (32 and 31 months, p=0.73) and time to remission (21 and 25 months, p=0.56). Predictors of TNFi persistence included Hispanic ethnicity (longer persistence), PsA duration (longer persistence), history of methotrexate use (shorter persistence), body mass index (shorter persistence) and disease activity (shorter persistence).

Conclusions: Patients with PsA from a large US registry experienced similar TNFi persistence on combination therapy and monotherapy. Prospective, randomised clinical trials evaluating the efficacy of combination therapy versus monotherapy would provide much-needed clarity on treatment options for patients with PsA.

Trial registration number: NCT01402661.

Key messages

What is already known about this subject?
- There is conflicting evidence about the clinical effectiveness of tumour necrosis factor inhibitor (TNFi) monotherapy versus combination therapy (ie, with a conventional synthetic disease-modifying antirheumatic drug such as methotrexate) in psoriatic arthritis. We performed an analysis of TNFi persistence (ie, time to therapy change) in a large, US-based, prospective registry.

What does this study add?
- We performed an analysis of TNFi persistence (ie, time to therapy change) in a large, US-based, prospective registry.
- There was no statistically significant difference in TNFi persistence between patients using monotherapy and combination therapy (32 and 31 months) or time to remission (21 and 25 months).

How might this impact on clinical practice?
- Our analysis indicates that TNFi persistence is similar between monotherapy and combination therapy, a result that is consistent with similar analyses of registries from other countries.
- Clinical trials should be conducted to verify the findings of this and other observational registries.

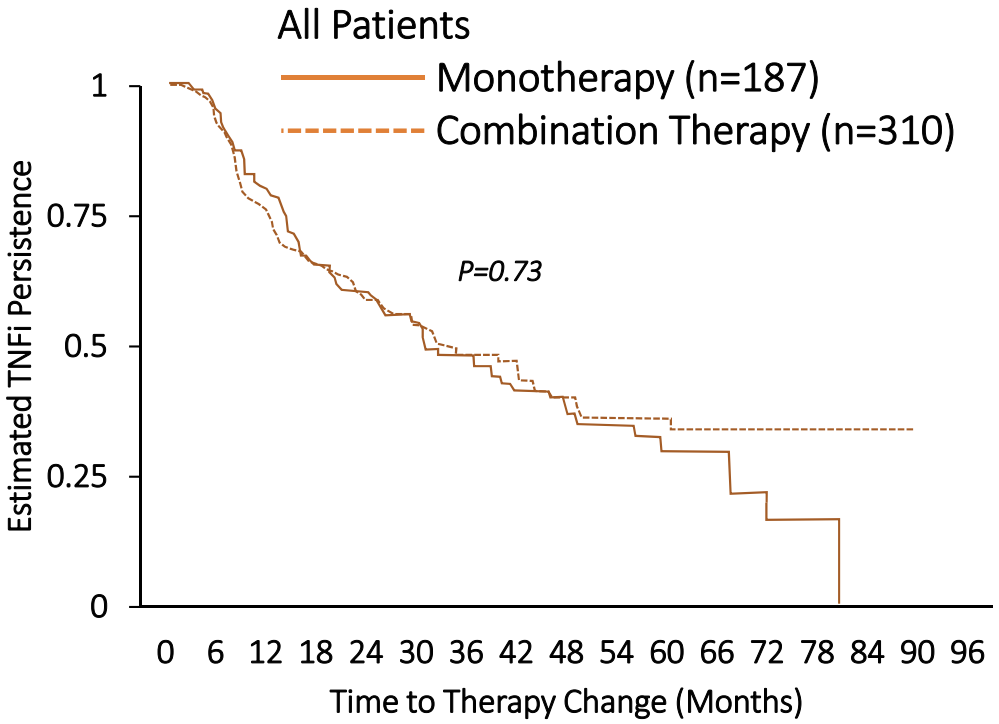
INTRODUCTION

Psoriatic arthritis (PsA) is a chronic inflammatory disease that occurs in approximately 0.3% of the US population, as suggested by previous studies.[1 2] However, it has recently been shown that up to 30% of patients with psoriasis may have PsA,[3] and recent population surveys show that psoriasis occurs in 3.2% of the US population.[4] Therefore,

- Compared the effectiveness of a combination of TNF inhibitor + methotrexate vs TNF inhibitor monotherapy for psoriatic arthritis in the in the Corrona registry
- Analysis included 497 of 519 patients in the registry
  - Combination therapy: n=318
  - Monotherapy: n=201
- Endpoints
  - TNF inhibitor persistence
  - Time to Clinical Disease Activity Index remission

Mease PJ, et al. *RMD Open*. 2015;1:e000181. doi:10.1136/rmdopen-2015-000181.

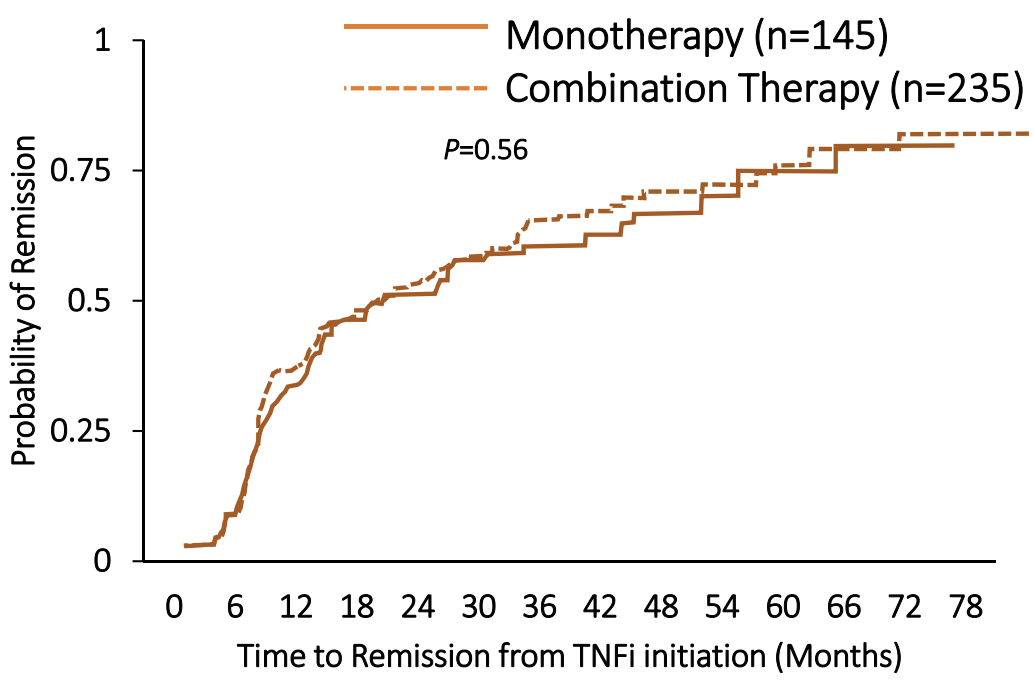
TNF Inhibitor Persistence: Combination Therapy vs TNF Monotherapy in All Patients



- No difference observed in TNF persistence between all patients taking combination therapy and monotherapy groups (32.4 months vs 30.8 months; *P*=0.73)

Mease PJ, et al. *RMD Open*. 2015;1:e000181. doi:10.1136/rmdopen-2015-000181.

No Difference Observed in Median Time to Remission



- No difference observed in between the combination and monotherapy groups in median time to achieve remission (20.7 vs 25.1 months; *P*=0.56)
- Female sex, higher BMI, higher baseline disability and disease activity, and history of hypertension or diabetes associated with a longer time to achieve remission (via univariate analysis)

Mease PJ, et al. *RMD Open*. 2015;1:e000181. doi:10.1136/rmdopen-2015-000181.

Real World Comparison of Monotherapy with Traditional DMARDs vs Combinations of MTX and Biologics

Population

- Moderate-to-severe plaque psoriasis
- Treatment received at sites participating in the Dermatology Clinical Effectiveness Research Network

Treatment

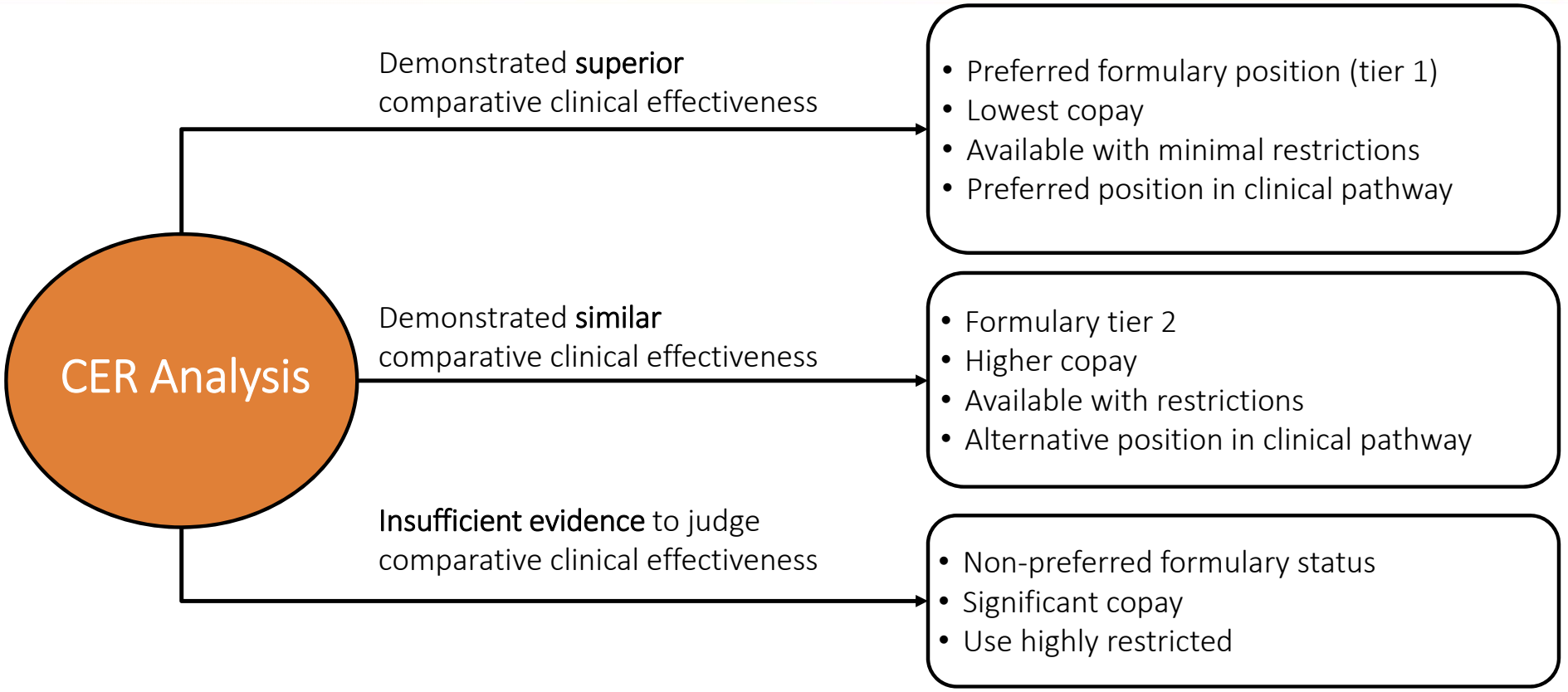
- Monotherapy with acitretin, cyclosporine, infliximab or combination therapies including adalimumab, etanercept, infliximab, and MTX (n=203)
- MTX monotherapy (n=168)

Results / Conclusions

- All drugs/combinations more likely to produce clear/almost clear skin vs MTX
- No differences when defined by HRQoL
- Clinical trials may overestimate effectiveness
- Physician-reported response rates were different, but no absolute differences and no differences in PROs

Takeshita J, et al. *J Am Acad Dermatol.* 2014;71:1167-1175.

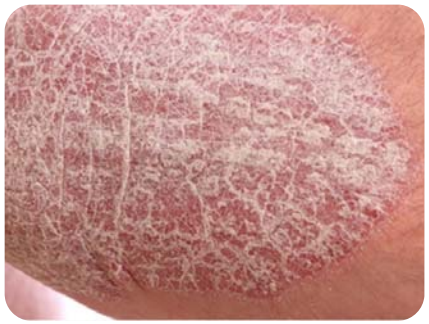
Using CER to Support Benefit Design Decisions

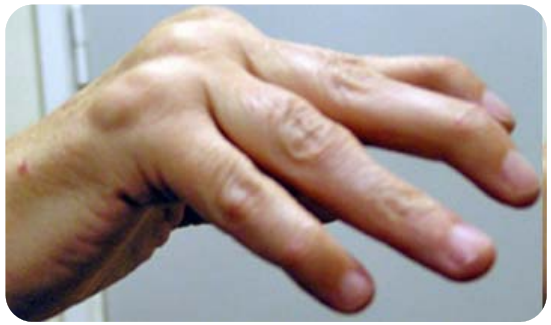


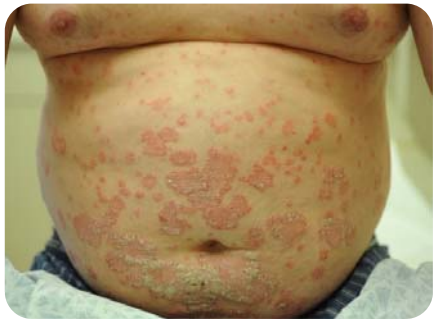
Biskupiak JE, et al. *J Manag Care Pharm*. 2012;18:S19-S28.

Using CER to Support Clinical Decision Making

- Delivering guideline concordant care to
  - Reduce treatment variability
  - Improve health outcomes
  - Reduce variability in costs
  - Reduce spending by using evidence to optimize efficacy and minimize toxicity







Using CER to Change Practice

Establishing Parameters to Measure Improvements	Determining a Threshold of Positive Effect to Alter current Behavior
• Outcomes • Reduction in costs • Increase in value	• Patients • Providers • Payers

Zwelling L. Comparative effectiveness research: how can it change practice? http://healthaffairs.org/blog/2011/04/18/comparative-effectiveness-research-how-can-it-change-practice/. April 18, 2011. Accessed February 2017.

Summary

- Healthcare decision makers including payers, providers, and patients are challenged to identify the most effective allocation of agents for optimal psoriatic disease management
  - Little data exists to guide individualization of therapy
- CER provides evidence to compare the effectiveness and safety of psoriasis/psoriatic arthritis therapies when head-to-head data is lacking
- Results can be used to support clinical decision making
  - Designed to reflect ‘real world’ settings typical of day-to-day patient care

Benefit Designs and Care Management Strategies in a Changing Environment

Jeffrey Dunn, PharmD, MBA
Senior Vice President
Chief Clinical Officer
VRx/MagellanRx

Learning Objective

- Integrate interventions to coordinate health plan and affiliated provider's efforts in the health care reform era that will lead to better outcomes for patients with psoriasis and psoriatic arthritis

Health Care Reform is Driving a Move Away From Volume and Toward Value

Emphasis on Rewarding Value Not Volume

Value-based purchasing, shared savings, gain-sharing, bundled payments, capitation, etc.

Use of Incentives to Drive Coordination of Care

CMS 5-Star Rating System: Plans with >4 Stars receive bonuses and higher rebates

New Structures are Promoting Actual and Virtual integration

Accountable Care Organizations (ACOs), Medical Homes, Home-based chronic care management, community health teams, health care innovation zones

New Models of Care Delivery Emphasize Value Over Volume

Models and Tactics Used by Accountable Care Organizations to Drive Value

- Patient-Centered Medical Homes (advance primary care)
  - An organizational structure that supports health promotion, patient-centered care, and clinical integration
- Payment mechanisms focused on "fee-for-value" rather than "fee-for-volume":
  - Quality incentives for improved processes and outcomes
  - Incremental roll out to improve probability of success
    - Fee-for-service: per case/at risk quality payment (bundled/capitated)

Evolving Care Models Emphasize Individualized Care

Disease and Treatment Variables	Health Care Delivery Variables
• Disease severity • Presence of comorbidities • Treatment efficacy • Employ a “treat-to-target” approach • Tolerability/drug interactions • Adherence	• Patient education • Improved provider-patient relationship • Patient empowerment • Medication therapy management • Medication reminders • Routine monitoring and adjustment of therapy • Highly coordinated, multidisciplinary care

Involving the Patient in Treatment Decision Making

- "Shared decision making" is the process by which health-related decisions are made jointly by the patient and the provider(s)

Step 1

Seek patient participation

Invite the patient to participate in treatment decision making

Step 2

Help patient explore and compare treatments

Discuss benefits and harms

Step 3

Assess patient's values and preferences

Take into account what matters to the patient

Step 4

Reach a decision with the patient

Decide together on the best treatment option

Step 5

Evaluate the decision

Revisit decision and its implementation

Agency for Healthcare Research and Quality. http://www.ahrq.gov/professionals/education/curriculum-tools/shareddecisionmaking/index.html. Accessed February 2017.

Potential Benefits of Shared Decision-Making

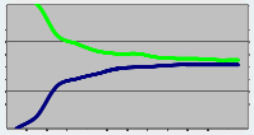
- Increased patient knowledge

- Less anxiety over the treatment regimen

- Improved health outcomes

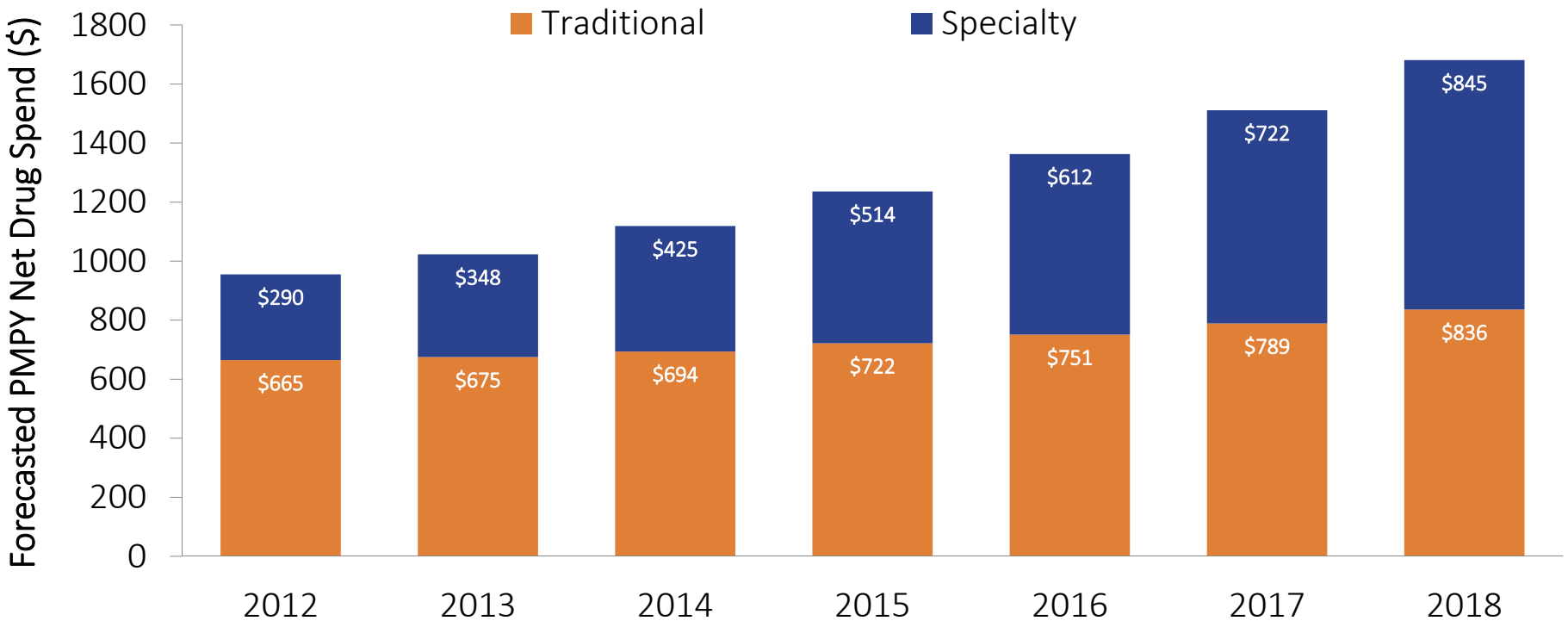
- Greater alignment with patients' values

- Reduced variation in care



Lee EO, Emanuel EJ. *N Engl J Med*. 2013;368:6-7.

Pharmacy Spending on Specialty Drugs Expected to Increase as Coverage Shifts From the Medical Benefit

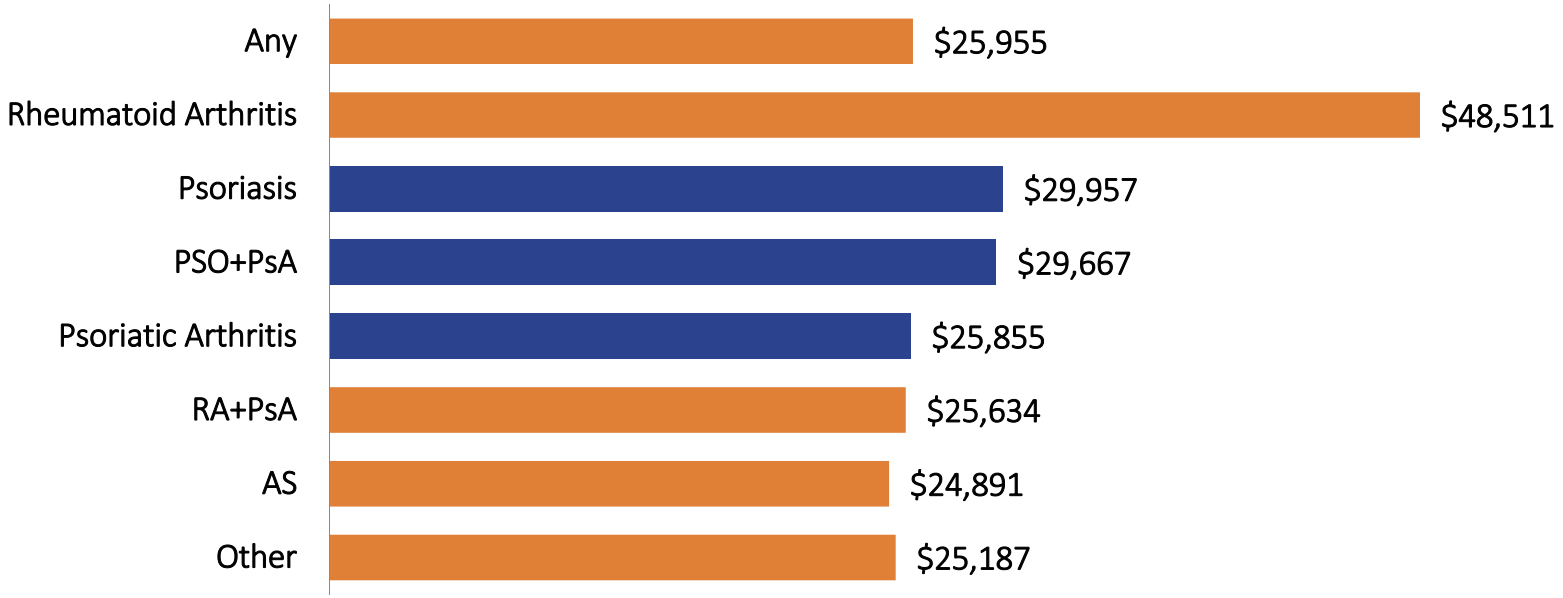


Artemetrx. Specialty Drug Trend Across the Medical and Pharmacy Benefit. http://www.artemetrx.com/wp-content/uploads/2014/08/artemetrx-specialty-drug-trends.pdf. Accessed February 2017.

PMPY=per member per year

Mean Annual Cost of Biologics for Treatment of Psoriatic Disease is ~$28,500 Per Patient

Claims Analysis* of 24,460 Managed Care Patients Who Received Biologic Therapy† for an Autoimmune Disorder Between July 2009 and January 2013



*HealthCore Integrated Research Database for adults with rheumatoid arthritis (RA), psoriatic arthritis (PsA), psoriasis (PSO), and/or ankylosing spondylitis (AS)

†abatacept, adalimumab, certolizumab, etanercept, golimumab, infliximab, rituximab, tocilizumab, or ustekinumab

Gu T, et al. *Drugs Real World Outcomes*. 2016;3:369-381.

Costs Shifting and Patient Adherence: A Tricky Balancing Act

Member Decision Factors

- Cost
- Adherence
- Efficacy & tolerability

Benefit Design Factors

- Medical vs Pharmacy
- Copay vs coinsurance
- Specialty tiers

Basic Tenets of Benefit Plan Design

Manage costs by restricting resource (eg, drug) utilization

Medical and pharmacy designs are usually independent

Cost sharing is used to influence patterns of utilization

Patient cost-share related to acquisition cost of the drug	Assumes an inelastic demand or willingness to pay

Willey VJ, et al. *Am J Manag Care*. 2008;14:S252-S263.

Common Components of Psoriatic Disease Benefit Design

Incentive Programs

Member | Physician: Differential Reimbursement; P4P

↓

Specialty Pharmacy Integration

↓

Coordination/Collaboration

Data Management/Greater Use of Information Technology

↓

Case Management

Patient-focused Efforts to Increase Involvement in Their Own Disease Management

↓

Patient Support Programs

Mandatory? | Use of Manufacturer-Provider Programs?

Psoriatic Disease Pharmacy: Benefit Design Considerations

Benefit Design

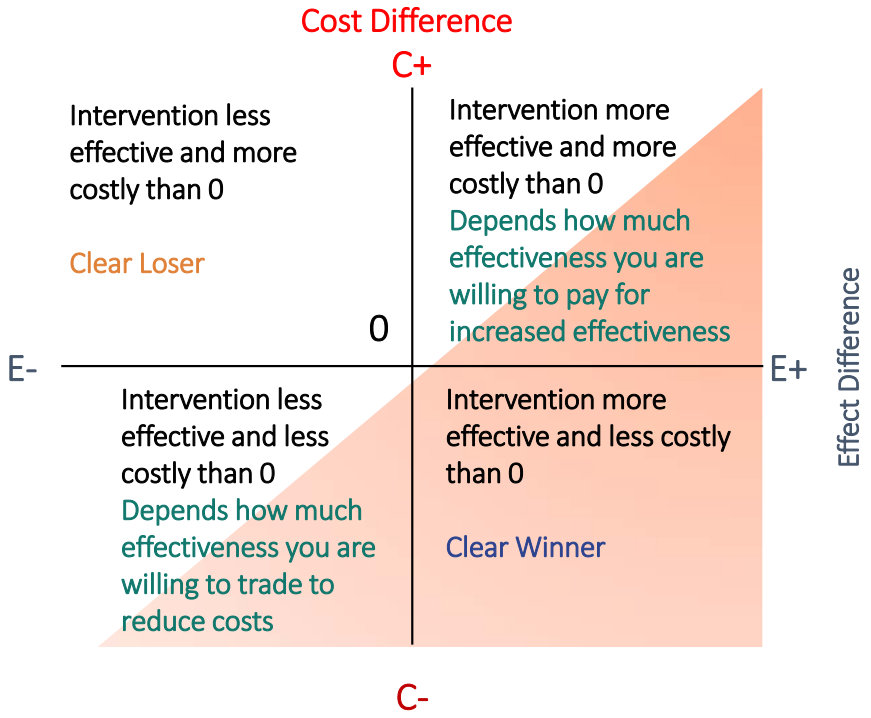
Tiers
Evaluation of out-of-pocket expenses and distribution

Biosimiliars
First follow-on biologics are in late-stage development

Application of Guidelines/Algorithms/Disease Management

Value = Cost-Effectiveness

- Efficacy
- Price
- Cost per event avoided
- Cost per % improvement
- Helps compare agents
  - When there are no head-to-head trials



Psoriatic Disease Pharmacy: Formulary Management

More Formulary Control			
Need for data/ use of CER	Levels of evidence for prior authorization	Quantity limits	Start/stop rules

Contracts	
Work with manufacturers; outcomes based contracts	Net effective pricing

Specialty Anti-Inflammatories: Formulary Tiers

Specialty Tiers	Percent of plans	Mean cost share
Traditional Benefit Design-Plans with Specialty Tiers		
Single tier specialty cost share	71%	--
Dollar copay	43%	$102
Coinsurance with maximum OOP	57%	22%
Coinsurance max OOP/Rx amount	--	$217
High Deductible Plans with Specialty Tiers		
Single tier specialty cost share	74%	--
Dollar copay	32%	$100
Coinsurance with maximum OOP	69%	23%
Coinsurance max OOP/Rx amount	--	$326

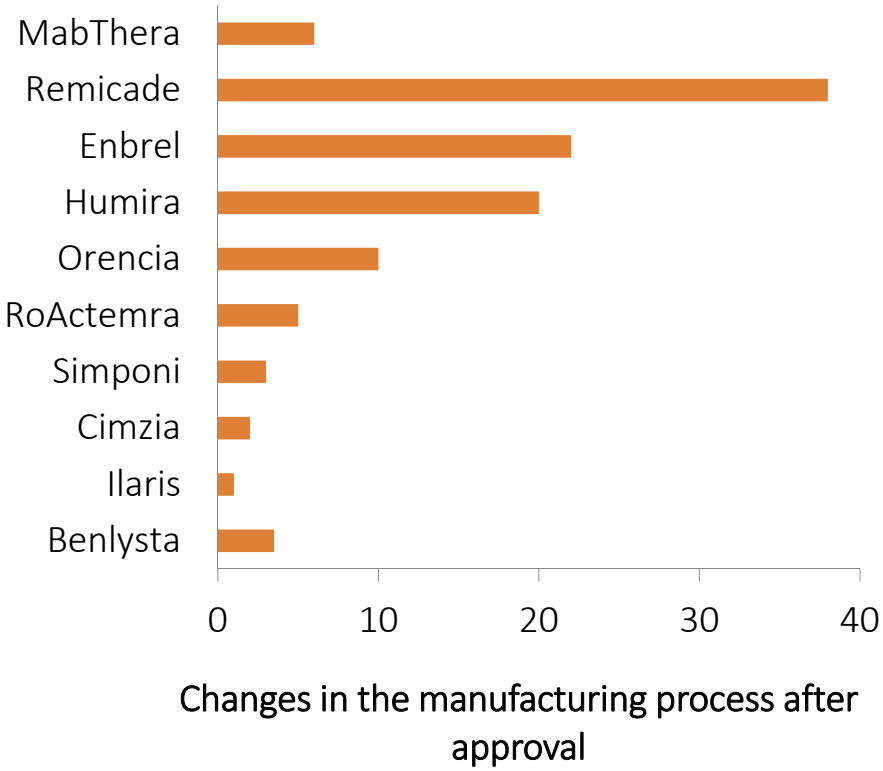
EMD Serono Specialty Digest, 11th Edition. 2015.

Introduction and Adoption of Biosimilars Will Influence Formulary Design

Overview	• Therapeutic protein product biosimilar to a reference product • Not a simple generic due to its complexity, size, structure and manufacturing
FDA Definition	• Biological product highly similar to reference biologic with potentially minor differences in clinically inactive components • No clinically meaningful differences between biosimilar product and reference product in terms of safety, purity, and potency
Final Product	• Demonstrates biosimilarity based on data that demonstrate a high degree of similarity to the reference product • FDA considers the totality of data submitted, including structural and functional characterization, nonclinical evaluation, human PK and PD data, clinical immunogenicity data, and CER data

US Department of Health and Human Services. Guidance for Industry.
http://www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM291128.pdf. Accessed February 2017.

Manufacturing



- *"For example, it is true that biologicals such as mAbs and -cepts are complex, and that small changes in their manufacturing process can have a large impact on their function (although I have also seen a few cases where larger changes had only little impact). This has often had the connotation to implicitly assume that biosimilars therefore may have an undetected 'inferior' quality compared with the established originators, or that at least there is more uncertainty around them."*
- *"One would have to add that also no batch of any reference product is 'identical' to the previous one—'non-identicality' is a normal feature of biotechnology that has to be controlled by tight specifications of critical product attributes, within current technical and scientific limitations (inherent variability)."*

-Dr. Christian K. Schneider
Danish Health and Medicines Authority

Schneider CK. *Ann Rheum Dis.* 2013;72:315-318.

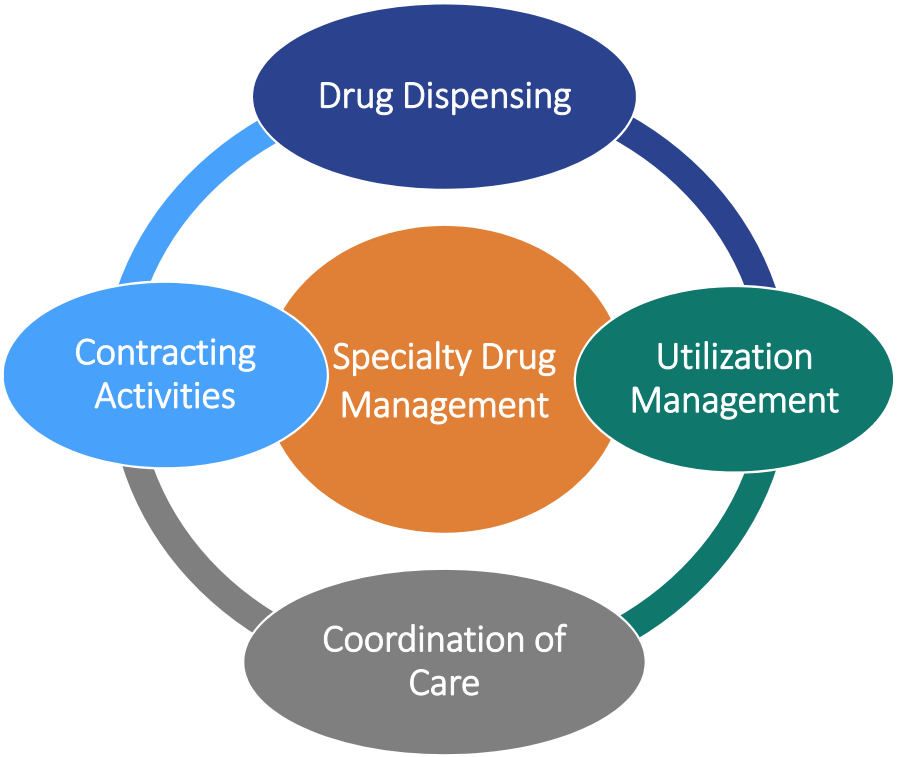
Biosimilars: Issues and Challenges

- Rating/interchangeability
- Data extrapolation/indications
- Safety
- Manufacturing
- Cost
- Formulary Limitations/Restraints:
  - Tier one: Generics
  - Tier two: Preferred brand
  - Tier three: Non-preferred brand
  - Tier four: Specialty pharmaceuticals (often biologicals)
    - Biosimilars?

Looking Forward: Specialty Care Management

Program	Actions
• Specialty Pharmacy Medication Therapy Management (MTM) – Integration with Care Management – Coordinate site of care – Ensure appropriate dosing – Adherence – Patient education – Expectation management	• Design workflow and integration with Care Management • Analyze drug utilization patterns to select targeted drugs/disease • Train personnel – Specialty diseases – Medications – Site of care logistics

Psoriatic Disease Pharmacy Management: Finding the Right Balance



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Benefit Design (Cost Share) & Formulary

Summary

- The number of novel agents approved to treat psoriatic disease continues to increase
- While the increasing number of treatment options benefits patients, providers, and payers, these same stakeholders are challenged by the acquisition cost of these therapies
- New plan designs and care models that emphasize value over volume of care are being implemented to ensure patients continue to have access to these innovative psoriatic disease therapies