An Analysis of Current and Emerging Therapies and Benefit Design Considerations for Psoriasis and Psoriatic Arthritis

Jointly provided by the Annenberg Center for Health Sciences at Eisenhower and Impact Education, LLC, in collaboration with Postgraduate Institute for Medicine

This activity is supported by independent educational grants from Celgene Corporation, Lilly, and Novartis Pharmaceuticals Corporation. For further information concerning Lilly grant funding visit www.lillygrantoffice.com.
• The first curriculum of its kind, The Managed Care Review Board™ is specifically designed and developed for managed care professionals

• It uses a multidisciplinary, evidence-based process for decision-making that contributes to the optimization of patient outcomes to enhance managed care stakeholders' ability to compare the effects of various treatment options on clinical outcomes, perceived value, and economic implications for the entire health care system

• www.ManagedCareReviewBoard.com is a website devoted to delivering these CE activities
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
</table>
| 6:35 AM – 7:15 AM | Evolving Treatment Options and Clinical Benefits Update in Psoriasis and Psoriatic Arthritis  
Philip Mease, MD  
Paul Yamauchi, MD, PhD |
| 7:15 AM – 7:35 AM | Current Practice Guidelines Review and Application of CER Analyses to Improve Treatment Decisions  
Kenneth Schaecher, MD, FACP, CPC |
| 7:35 AM – 7:40 AM | Faculty Idea Exchange                                                   |
| 7:40 AM – 7:55 AM | Analyzing the Available Data to Assess the Value of Psoriasis and Psoriatic Arthritis Treatment Options  
Diana Brixner, RPh, PhD, FAMCP |
| 7:55 AM – 8:15 AM | Plan Benefit Designs and Specialty Pharmacy Considerations in a New Era of Health Care Reform  
James Kenney, RPh, MBA |
| 8:15 AM – 8:30 AM | Moderated Faculty Idea Exchange and Audience Question & Answer Session |
Educational Objectives

At the conclusion of this activity, participants should be able to demonstrate improved ability to:

- Analyze the available evidence-base for the treatment of psoriasis and psoriatic arthritis (PsA) in a true CER framework
- Assess current and emerging therapies for the treatment of psoriasis and PsA and cite their clinical trial data
- Address nonadherence factors associated with various therapies for psoriasis and PsA
- Integrate interventions to coordinate health plan and affiliated providers efforts in the health care reform era that will lead to better outcomes for patients with psoriasis and PsA
- Provide accurate and appropriate counsel as part of the managed care treatment team
An Analysis of Current and Emerging Therapies and Benefit Design Considerations for Psoriasis and Psoriatic Arthritis

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Evolving Treatment Options and Clinical Benefits Update in Psoriasis

Paul Yamauchi, MD, PhD
Clinical Assistant Professor of Dermatology
David Geffen School of Medicine at UCLA
Adjunct Associate Professor
John Wayne Cancer Institute
Dermatology Institute & Skin Care Center, Inc.
Clinical Science Institute
• Assess current and emerging therapies for the treatment of psoriasis and cite their clinical trial data
Psoriasis Epidemiology and Burden

- Affects 2% to 3% of the US population (~7.5 million Americans)$^1$
  - 2 million people present with moderate to severe psoriasis
  - 150,000 newly diagnosed cases per year
- Affects males and females equally
- All races and socioeconomic groups
- Total direct and indirect health care costs in the US: $135 billion$^2$

Psoriasis is a Systemic Disease

- Chronic relapsing immune-mediated inflammatory disease
- Psoriatic plaques
  - Erythema (redness)
  - Induration (thickness)
  - Desquamation (scaling)
- Affected areas of the body
  - Symmetric
  - Extensors (elbows, knees)
  - Scalp
  - Trunk
- No permanent cure

### Comorbidities Associated with Moderate-to-Severe Psoriasis

<table>
<thead>
<tr>
<th>Condition</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metabolic syndrome</td>
<td>5.29</td>
</tr>
<tr>
<td>Heavy alcohol consumption</td>
<td>3.61</td>
</tr>
<tr>
<td>Regular alcohol consumption</td>
<td>3.33</td>
</tr>
<tr>
<td>Hypertension</td>
<td>3.27</td>
</tr>
<tr>
<td>Smoking</td>
<td>2.96</td>
</tr>
<tr>
<td>Type 2 diabetes</td>
<td>2.48</td>
</tr>
<tr>
<td>Hyperlipidemia</td>
<td>2.09</td>
</tr>
<tr>
<td>Coronary heart disease</td>
<td>1.95</td>
</tr>
</tbody>
</table>

n=581 adult patients hospitalized for plaque type psoriasis vs; n=1044 hospital-based controls

Screening for Joint Involvement and Comorbidities

Joint Involvement

- Up to 30% of psoriasis patients also develop psoriatic arthritis
- ~85% of patients with psoriatic arthritis are first diagnosed with psoriasis
- Psoriatic arthritis often remains undiagnosed in psoriasis patients
- Patients with severe psoriatic disease require care from both dermatologists and rheumatologists, to adequately manage both skin and joint psoriatic involvement

Comorbidities

- Patient should be screened for:
  - Cardiovascular disease
  - Obesity
  - Depression
  - Psoriatic arthritis
  - Other immune-mediated diseases

References:
Treatment of Psoriasis: Establishing Clinical Goals

• Goal of treatment\(^1\)
  • Clear the skin
  • Minimize adverse events
  • Enhance patient quality of life
  • Address comorbidities

• Treatment strategies\(^2\)
  • Agree upon treatment goals with the patient before initiating therapy
  • Regularly evaluate treatment response
  • Modify therapy when the results are insufficient

• Involve patients in the decision-making process and consider patient preferences when establishing the treatment plan\(^1,2\)

Importance of Patient Preference When Selecting a Psoriasis Therapy

- High rate of non-adherence to prescribed psoriasis therapy
- Lack of fit of recommended treatment into a patient’s lifestyle may contribute to poor adherence
- Medications with a convenient means of administration may favorably impact adherence

Survey of patients with moderate to severe psoriasis (n=163)

<table>
<thead>
<tr>
<th>Means of administration</th>
<th>Frequency of administration</th>
<th>Duration of treatment</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>19</td>
<td>19</td>
<td>18</td>
</tr>
</tbody>
</table>

Assessing Psoriasis Severity

- Severity is primarily determined by the proportion of the body surface area (BSA) affected by psoriasis
  - Mild: 1% to 3%
  - Moderate: 3% to 10%
  - Severe: >10%
- Location also determines severity
  - Scalp
  - Hands and feet
  - Groin and skinfolds

Psoriasis Area and Severity Index (PASI) Score

• Scaling score ranging from 0 to 72
• Three elements characterizing psoriatic plaques
  • Erythema
  • Induration
  • Scaling
• Surface area in each body region
  • Head
  • Trunk
  • Upper/lower extremities
• PASI score >10 is moderate-to-severe
• FDA requires a 75% improvement in the PASI score for a clinical success

Data from the National Psoriasis Foundation Suggests Psoriasis is Undertreated

Proportions of Patients Receiving No Treatment

- **Mild**: 49.2%
- **Moderate**: 23.6%
- **Severe**: 9.4%

Proportions of Patients Using Topical Medications Alone

- **Mild**: 41.9%
- **Moderate**: 29.5%
- **Severe**: 21.5%

Reasons Patients Discontinue Their Psoriasis Therapy

Self-reported Reasons for Utilizing Topical Medications

- Fewer adverse events: 19%
- Doctor will not prescribe any other therapy: 15%
- Convenience: 6%
- Less expensive: 5%

Top Reasons for Discontinuation of a Biologic Medication

- Did not work: 8%
- Stopped working: 16%
- Adverse event: 28%
- Insurance would not cover or cannot afford: 12%

Treatment of Psoriasis

• Topical therapies
  • Steroid creams
  • Vitamin D analogues
  • Vitamin A retinoids

• Ultraviolet light/lasers
  • UVB
  • PUVA

• Systemic therapies
  • Traditional/biologic DMARDs

DMARD = disease-modifying antirheumatic drugs

Systemic Therapies Indicated for the Treatment of Moderate-to-Severe Psoriasis

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Target</th>
<th>Approval for Psoriasis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional Systemic Therapies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acitretin</td>
<td>Retinoic acid receptor</td>
<td>1996</td>
</tr>
<tr>
<td>Cyclosporine</td>
<td>T cells</td>
<td>1997</td>
</tr>
<tr>
<td>Methotrexate</td>
<td>Folate metabolism</td>
<td>1972</td>
</tr>
<tr>
<td><strong>Biologics/Small Molecule Drugs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adalimumab</td>
<td>Tumor Necrosis Factor –α</td>
<td>2008</td>
</tr>
<tr>
<td>Apremilast</td>
<td>Phosphodiesterase-4</td>
<td>2014</td>
</tr>
<tr>
<td>Etanercept</td>
<td>TNF–α</td>
<td>2004</td>
</tr>
<tr>
<td>Infliximab</td>
<td>TNF–α</td>
<td>2006</td>
</tr>
<tr>
<td>Infliximab-dyyb</td>
<td>TNF-α (biosimilar)</td>
<td>2016</td>
</tr>
<tr>
<td>Ixekizumab</td>
<td>IL17A</td>
<td>2016</td>
</tr>
<tr>
<td>Secukinumab</td>
<td>IL17A</td>
<td>2015</td>
</tr>
<tr>
<td>Ustekinumab</td>
<td>IL12/23 p40 subunit</td>
<td>2009</td>
</tr>
</tbody>
</table>
PASI Rates for Systemic Psoriasis Therapies

## Agents in Late Phase Development for Moderate-to-Severe Psoriasis

<table>
<thead>
<tr>
<th>Drug</th>
<th>Mechanism of Action</th>
<th>Dosing and Administration</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brodalumab</strong></td>
<td>Anti-IL-17</td>
<td>SC injection every 2 weeks</td>
<td>Phase 3</td>
</tr>
<tr>
<td>Valeant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Tildrakizumab</strong></td>
<td>Anti-IL-23</td>
<td>SC injection every 12 weeks</td>
<td>Phase 3</td>
</tr>
<tr>
<td>Merck &amp; Sun Pharmaceuticals</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>Guselkumab</strong></td>
<td>Anti-IL-23</td>
<td>SC injection every 8 weeks</td>
<td>Phase 3</td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BI655066</strong></td>
<td>Anti-IL-23</td>
<td>SC injection 12 weeks</td>
<td>Phase 3</td>
</tr>
<tr>
<td>Boehringer Ingelheim &amp; Abbvie</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PASI Rates for Systemic Psoriasis Therapies in Development

- **Brodalumab**
  - PASI 75: 83%
  - PASI 90: 70%
  - PASI 100: 42%
  - (Week 12)

- **Guselkumab**
  - PASI 75: 81%
  - PASI 90: 57%
  - (Week 16; 200 mg)

- **Tidrakizumab**
  - PASI 90: 74%
  - (Week 16; 200 mg)

- **BI655066**
  - PASI 100: 87%
  - 58%
  - 16%
  - (Week 12; Phase 1)

Biosimilars and Psoriasis

**Perspective**

- Successor to a biologic medicine that has lost exclusivity
- Not a simple generic, but highly similar to the reference product
- No clinically meaningful differences between the biosimilar and reference product in terms of the safety, purity, and potency
- The biosimilar infliximab-dyyb was approved by the FDA for the treatment of psoriasis on April 5, 2016

**Pending Biosimilar Products**

<table>
<thead>
<tr>
<th>Product</th>
<th>US Patent Expiration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etanercept</td>
<td>October 23, 2012</td>
</tr>
<tr>
<td>Infliximab</td>
<td>December 29, 2014</td>
</tr>
<tr>
<td>Adalimumab</td>
<td>December 31, 2016</td>
</tr>
</tbody>
</table>

• Psoriasis is a common chronic inflammatory skin condition associated with significant morbidity

• Comorbidities must be recognized and appropriately managed

• Dermatologists should screen for joint involvement in their psoriasis patients and collaborate with rheumatologists to adequately manage both skin and joint involvement over the long term

• The primary goals of treatment include clearing the skin, minimizing adverse events, addressing comorbidities, and enhancing patient quality of life

• Patient preference should be considered when selecting therapy

• Multiple treatment options are now available, including a recently approved biosimilar
Evolving Treatment Options and Clinical Benefits Update in Psoriatic Arthritis

Philip Mease, MD
Clinical Professor
University of Washington School of Medicine
Director, Rheumatology Clinical Research Division
Swedish Medical Center
• Assess current and emerging therapies for the treatment of psoriatic arthritis and cite their clinical trial data
Psoriatic Arthritis: Overview

• Affects ~0.6% to 1.0% of the population\(^1\)
• 6% to 42% of patients with psoriasis will develop psoriatic arthritis\(^1\)\(^-\)\(^3\)
• Joint symptoms usually appear within 5 to 10 years of cutaneous disease onset\(^4\)
• 10% to 15% of patients present with concomitant skin and joint symptoms\(^5\)

Psoriatic Arthritis: A Chronic, Systemic Inflammatory Disease

- DIP involvement (39%)²
- Nail involvement (85%)³
- Enthesopathy (75%)⁴
- Dactylitis (48%)⁵
- Axial involvement (40-50%)¹

DIP = distal interphalangeal predominant

Burden of Psoriatic Arthritis

- Historically considered a benign arthropathy\(^1\), however, as many as 66% of patients develop bone erosions and joint deformities\(^2\)

- Joint damage contributes to\(^3\)
  - Reduced articular function
  - Higher mortality
  - Increased risk of comorbid disease
  - Impaired ability to work and form/maintain social relationships
  - Poor quality of life

- Average annual direct and indirect per patient cost associated with psoriatic arthritis is \(~$8,367\) to \($18,110\)\(^4\)

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Psoriatic Disease: A Complex, Polygenic Autoimmune Disease with Diverse Clinical Features

Slide courtesy of Oliver FitzGerald.
**CASPAR Classification Criteria**

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>STEM Criteria</td>
<td>Clinician considers patient to have an inflammatory arthritis, enthesitis, or spondylitis</td>
</tr>
<tr>
<td>1. Evidence of psoriasis</td>
<td>a. Psoriatic skin or scalp disease present today</td>
</tr>
<tr>
<td></td>
<td>b. History of psoriasis</td>
</tr>
<tr>
<td></td>
<td>c. History of psoriasis in a first- or second-degree relative (according to patient report)</td>
</tr>
<tr>
<td>2. Psoriatic nail involvement</td>
<td>Typical psoriatic nail dystrophy, including onycholysis, pitting, and hyperkeratosis, observed on current physical examination</td>
</tr>
<tr>
<td>3. RF negative</td>
<td>Preferably by enzyme-linked immunosorbent assay or nephelometry</td>
</tr>
<tr>
<td>4. Dactylitis</td>
<td>a. Swelling of an entire finger</td>
</tr>
<tr>
<td></td>
<td>b. History of dactylitis recorded by a rheumatologist</td>
</tr>
<tr>
<td>5. Radiologic evidence of juxta-articular new bone formation</td>
<td>Ill-defined ossification near joint margins (but excluding osteophyte formation) on plain radiographs of a hand or foot</td>
</tr>
</tbody>
</table>

*CASPAR=CIASsification of Psoriatic ARthritis*


*The specificity/sensitivity is 99%/93% respectively.*
A Diagnosis of Psoriatic Arthritis in Patients with Skin Involvement Can be Challenging

Screening 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)\(^4\)

Psoriatic Arthritis 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

GRAPPA Treatment Recommendations (2016)

Which domains are involved?

Peripheral arthritis
- DMARDs (MTX, SSZ, LFN), TNFi or PDE4i
- Biologicals (TNFi, IL12/23i or IL17i)
- Switch biologic (TNFi, IL12/23i or IL17i)
- Physiotherapy and NSAIDs
- NSAIDs only
- TNFi, IL17i or IL12/23i
- Switch biologic (TNFi, IL17i or IL12/23i)
- No direct evidence for therapies in axial PsA recommendations based on axial SpA literature

Axial disease
- Physiotherapy and NSAIDs
- NSAIDs
- Biologics (TNFi, IL12/23i or IL17i) or PDE4i
- Switch biologic (TNFi, IL12/23i, IL17i) or PDE4i
- Switch biologic (TNFi, IL12/23i, IL17i) or PDE4i
- CS injections: consider on an individual basis due to potential for serious side effects; no clear evidence for efficacy

Enthesitis
- Physiotherapy
- NSAIDs
- Biologics (TNFi, IL12/23i, IL17i) or PDE4i
- Switch biologic (TNFi, IL12/23i, IL17i) or PDE4i
- Corticosteroid injections as indicated

Dactylitis
- Physiotherapy
- NSAIDs
- Biologics (TNFi, IL12/23i, IL17i) or PDE4i
- Switch biologic (TNFi, IL12/23i, IL17i) or PDE4i
- Corticosteroid injections as indicated

Skin
- Physiotherapy
- Topicals (keratolytics, steroids, vit. D analogues, emollients, calcineurin i)
- Phototox or DMARDs (MTX, CSA, acitretin, fumaric acid esters) or PDE4i
- Topicals as indicated

Nails
- Physiotherapy
- Biologicals (TNFi, IL12/23i, IL17i) or PDE4i
- Topical or procedural or DMARDs (CSA, LEF, MTX, acitretin)
- Switch biologic (TNFi, IL12/23i, IL17i) or PDE4i

GRAPPA = Group for Research and Assessment of Psoriasis and Psoriatic Arthritis

### Peripheral arthritis

- NSAIDs for relief of musculoskeletal symptoms
- Conventional DMARDs in early stage disease
  - Methotrexate preferred with skin involvement
- IA/systemic steroids as adjunctive therapy
- Biologics
  - Anti-TNF for inadequate response to conventional DMARD
  - Anti-IL 12/13 or IL17 for inadequate response to conventional DMARD and ineligible for anti-TNF
  - PDE-4 inhibitor for inadequate response to conventional DMARD and ineligible for anti-TNF

### Axial disease

- Biologics (anti-TNF) if insufficient response to NSAIDs

### Enthesitis and/or Dactylitis

- Biologics (anti-TNF) if insufficient response to NSAIDs

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DMARD = disease-modifying antirheumatic drugs; EULAR=European League Against Rheumatism; IA = intra-articular; NSAID = nonsteroidal anti-inflammatory drugs

### Drug name/Manufacturer

<table>
<thead>
<tr>
<th>Drug name/Manufacturer</th>
<th>Comments</th>
</tr>
</thead>
</table>
| **DMARDS**             | • Weak recommendation  
                         | • Usually required as first line therapy by payers before more expensive treatment options are tried |
| Methotrexate           |          |
| Sulphasalazine         |          |
| Leflunomide            |          |
| **TNF inhibitors**     | • Strongly recommended  
                         | • TNF-inhibitor drugs are the first-line biologic agents for treating psoriatic arthritis |
| Adalimumab             |          |
| Certolizumab pegol    |          |
| Etanercept             |          |
| Golimumab              |          |
| Infliximab             |          |
| Infliximab-dyyb (biosimilar) |          |
| **IL-17 inhibitor**    | • Strongly recommended  
                         | • FDA-approved for first-line use in psoriatic arthritis  
                         | • Does not have to be used after an TNF-inhibitor |
| Secukinumab            |          |
| **IL 12/13 inhibitor** | • Strongly recommended for peripheral arthritis and enthesitis |
| Ustekinumab            |          |
| **Phosphodiesterase inhibitor** | • Good recommendation |
| Apremilast             |          |

Therapies Approved for Psoriatic Arthritis: ACR20 at Week 24

Infliximab 54
Etanercept 50
Adalimumab 57
Golimumab 52
Certolizumab 64
Ustekinumab 44
Apremilast 38
Secukinumab 51

ACR20=American College of Rheumatology 20% improvement criteria

<table>
<thead>
<tr>
<th>Drug</th>
<th>Mechanism of Action</th>
<th>Dosing &amp; Administration</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ixekizumab</td>
<td>IL-17A antagonist</td>
<td>SC injection every two or four weeks</td>
<td>Phase 3</td>
</tr>
<tr>
<td>Lilly</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brodalumab</td>
<td>IL-17 receptor antagonist</td>
<td>SC injection every two weeks</td>
<td>Phase 3</td>
</tr>
<tr>
<td>Valeant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abatacept</td>
<td>T cell (T lymphocyte) activation</td>
<td>SC injection once weekly</td>
<td>Phase 3</td>
</tr>
<tr>
<td>BMS</td>
<td>inhibitor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tofacitinib</td>
<td>Janus kinase (JAK) inhibitor</td>
<td>Oral administration BID dosing</td>
<td>Phase 3</td>
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<tr>
<td>Pfizer</td>
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</tr>
<tr>
<td>Tildrakizumab</td>
<td>IL-23 inhibitor</td>
<td>Dosed every 12 weeks</td>
<td>Phase 3</td>
</tr>
<tr>
<td>Merck &amp; Sun</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guselkumab</td>
<td>IL-23 inhibitor</td>
<td>Dosed every 8 weeks</td>
<td>Phase 3</td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
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<tr>
<td>Risankizumab</td>
<td>IL-23 inhibitor</td>
<td>Dosed every 12 weeks</td>
<td>Phase 2</td>
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<tr>
<td>Boehringer Ingelheim</td>
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</tbody>
</table>
Multidisciplinary Management of Psoriatic 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.\(^2\)

Sample Referral Criteria for Patients with Psoriatic Disease\(^1\)

<table>
<thead>
<tr>
<th>From Dermatology</th>
<th>From Rheumatology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peripheral arthritis</td>
<td>Patients with suspected arthritis and psoriasis</td>
</tr>
<tr>
<td>Dactyilitis</td>
<td>Patients with poor skin and psoriatic arthritis treatment results</td>
</tr>
<tr>
<td>DIP synovitis</td>
<td>Patients with psoriatic arthritis and severe skin psoriasis</td>
</tr>
<tr>
<td>Enthesitis</td>
<td>Suspected skin complications associated with treatment</td>
</tr>
<tr>
<td>Inflammatory low back pain</td>
<td></td>
</tr>
<tr>
<td>Unspecified joint pain</td>
<td></td>
</tr>
<tr>
<td>Asymmetrical oligoarthritis</td>
<td></td>
</tr>
</tbody>
</table>

DIP = distal interphalangeal predominant

Psoriatic arthritis is a chronic, progressive, debilitating disease affecting 0.3% to 1.0% of the US population.

Up to 40% of patients with psoriasis develop psoriatic arthritis; two-thirds of whom will develop bone erosions and joint deformities.

Early diagnosis and treatment can lead to better outcomes.

Screening tools are available but must be routinely implemented in clinical practice to be effective.

With several novel therapeutic options now available and more in development, treatment decisions in clinical practice remain challenging.

Given the heterogeneous presentation of psoriatic arthritis, multidisciplinary approach is needed for its diagnosis and management.
An Analysis of Current and Emerging Therapies and Benefit Design Considerations for Psoriasis and Psoriatic Arthritis

Jointly provided by the Annenberg Center for Health Sciences at Eisenhower and Impact Education, LLC, in collaboration with Postgraduate Institute for Medicine

This activity is supported by independent educational grants from Celgene Corporation, Lilly, and Novartis Pharmaceuticals Corporation. For further information concerning Lilly grant funding visit www.lillygrantoffice.com.
Current Practice Guidelines Review and Application of CER Analyses to Improve Treatment Decisions

Kenneth Schaecher, MD, FACP, CPC
Medical Director
SelectHealth
• Familiarize participants with current published practice guidelines for the treatment of psoriasis and psoriatic arthritis

• Analyze the available evidence-base for the treatment of psoriasis and psoriatic arthritis in a true comparative effectiveness research framework
Providers and managed care professionals rely on guidelines to inform clinical and benefit design decisions.
Limitations of Current Psoriatic Disease Treatment Guidelines

- Health care decision-making, whether at the bedside or in the executive suite, is significantly influenced by guidelines.
- While guidelines are critical for the delivery of quality care, they are inherently limited by:
  - The relative small proportion of medical practices actually studied in well-designed clinical trials
  - Lack of head-to-head comparator trials
  - Inability to keep up with the rapid pace of change in medical therapies
    - For example, the psoriasis treatment guidelines have not been updated since 2011 despite the approval of at least 4 novel agents for its treatment
  - Reliance on expert opinion and clinical experience
  - Lack of patient perspective

Comparative Effectiveness Research

- Comparative effectiveness research (CER) synthesizes reliable data to compare available therapies in the absence of comprehensive and current treatment guidelines
- CER...
  - Generates evidence from multiple sources to compare benefits and harms of methods to treat a clinical condition
  - Seeks evidence that is relevant to providers, patients, and payers
  - Informs decision making about real-world practices and outcomes

Why CER?

• Health care decision-making must often rely on incomplete data
• Lack of head-to-head data can lead to a “trial and error” approach to decision making
• Effectively designed and conducted CER fills data gaps
  • Comparison of drug therapies in the absence of head-to-head data
  • Applicable to a variety of practice settings and patients
  • Supports decisions about formulary inclusion and positioning
• CER can
  • Differentiate efficacy of a therapy in a clinical trial vs effectiveness in the real world
  • Determine threshold of positive effect to alter current behavior
    • Patients
    • Providers
    • Payers

Application of CER to Psoriatic Disease
• Low- to moderate-strength evidence indicates that biologic TNF-α DMARDs improve psoriatic arthritis

• Oral conventional DMARDs may also be beneficial

• AEs associated with DMARDs is insufficient to inform decision making
  • TNF-α inhibitors are associated with an increased risk of infection

• Sparse evidence from head-to-head comparisons exists limiting conclusions about which class of DMARDs are superior for minimizing joint damage and optimizing quality of life

<table>
<thead>
<tr>
<th>Oral DMARDs</th>
<th>Strength of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sulfasalazine</strong></td>
<td>Moderate</td>
</tr>
<tr>
<td>• Greater improvement vs placebo</td>
<td></td>
</tr>
<tr>
<td>• Minimal clinically important difference not known</td>
<td></td>
</tr>
<tr>
<td><strong>Methotrexate</strong></td>
<td>Low</td>
</tr>
<tr>
<td>• Greater improvement vs placebo</td>
<td></td>
</tr>
<tr>
<td>• Minimal clinically important difference not known</td>
<td></td>
</tr>
<tr>
<td><strong>Leflunomide</strong></td>
<td>Low</td>
</tr>
<tr>
<td>• Improved disease activity vs placebo</td>
<td></td>
</tr>
<tr>
<td>• No clinically significant improvement in functional capacity</td>
<td></td>
</tr>
<tr>
<td>• No clinically significant improvement in physical components of health-related QoL</td>
<td></td>
</tr>
</tbody>
</table>

*Percent of patients achieving ACR20
†Health Assessment Questionnaire Minimum Clinically Important Difference (MCID) ≥0.22
‡Medical Outcomes Study Short Form 36 PCS = physical component score MCID = 2.2 to 4.7

<table>
<thead>
<tr>
<th>Comparison</th>
<th>Efficacy and Effectiveness</th>
<th>Harms</th>
</tr>
</thead>
</table>
| Biologic DMARD + Oral DMARD vs Biologic DMARD or Oral DMARD | • Low  
• Current evidence limited | • Insufficient  
• No head-to-head evidence met inclusion criteria; unable to draw conclusions |
| Biologic DMARDs | • Insufficient; low to moderate  
• No head-to-head trials met inclusion criteria; unable to draw conclusions | • Low; insufficient  
• Evidence limited to placebo-controlled trials where adverse events were not the primary outcome  
• Overall AE profiles appeared to be similar for biologic DMARDs and placebo |

## Effect of Biologic Agents on Indices of Psoriatic Arthritis Disease Activity


<table>
<thead>
<tr>
<th>Biologic DMARDs</th>
<th>Improvement in Disease Activity*</th>
<th>Improvement in Functional Capacity†</th>
<th>Improvement in Quality of Life‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adalimumab</td>
<td>39 to 57%</td>
<td>0.2 to 0.3</td>
<td>2.9 to 7.9</td>
</tr>
<tr>
<td>Etanercept</td>
<td>59 to 65%</td>
<td>0.5 to 1.1</td>
<td>8.6</td>
</tr>
<tr>
<td>Golimumab</td>
<td>45 to 51%</td>
<td>0.34 to 0.4</td>
<td>5.9 to 7.2</td>
</tr>
<tr>
<td>Infliximab</td>
<td>58 to 62%</td>
<td>0.4 to 0.6</td>
<td>6.4 to 8.0</td>
</tr>
</tbody>
</table>

*Percent of patients achieving ACR20

†Health Assessment Questionnaire Minimum Clinically Important Difference (MCID) ≥0.22

‡Medical Outcomes Study Short Form 36 PCS = physical component score MCID = 2.2 to 4.7
### Psoriasis

- Ustekinumab is moderately more efficacious than etanercept
- No definite clinically relevant differences in short-term efficacy or effectiveness between Infliximab, adalimumab and etanercept
- Biologic agents are more efficacious and effective than nonbiologic systemic agents
- In real-world practice, incremental gain in effectiveness of biologic agents over methotrexate is small and may not be clinically meaningful
- Limited comparative short-term safety data suggests adalimumab may be better tolerated and less hepatotoxic than methotrexate
- Long-term comparative safety data and cost-effectiveness studies are needed
- Insufficient evidence to support a recommendation to use antipsoriatic biologics as first-line therapy
- Insufficient clinical evidence to support mandating the use of nonbiologic systemic agents before biologics

Psoriatic Arthritis

- Unclear whether one biologic is better vs others in psoriatic arthritis

- Biologics are disease-modifying vs nonbiologic systemic agents

- Biologics (as a class) may be better tolerated than systemic nonbiologics

- Adalimumab, etanercept, golimumab, and infliximab have evidence to support their first-line use

- Biologics are first-line treatment for patients both plaque psoriasis and psoriatic arthritis

- Adalimumab, etanercept, and infliximab have longer safety records and may be preferable over golimumab or ustekinumab
“Real-world” CER of Biologics for the Treatment of Psoriasis

- Analysis of therapeutic responses to etanercept, adalimumab, infliximab vs ustekinumab during the Psoriasis Longitudinal Assessment and Registry (PSOLAR)

- Primary finding:
  - In a real-world setting, ustekinumab, an example of a newer IL12/23 inhibitor biologics, demonstrated greater effectiveness vs TNF inhibitors for the majority of comparisons at 6 and 12 months

CER of Systemic Psoriasis Treatments in the Clinical Practice Setting

• Cross-sectional comparison of effectiveness of biologics, non-biologic systemic therapies, and phototherapy for psoriasis across 10 outpatient practice settings (n=713)

• Primary outcome:
  • Clear or almost clear on the Physician Global Assessment

• Secondary outcomes
  • Psoriasis Area and Severity Index
  • Affected body surface area
  • Dermatology Life Quality Index

Real-world Data Suggests Absolute Differences Between Therapies Studied are Small*

*Analysis includes biologics approved for the treatment of psoriasis and psoriatic arthritis as of June 2011.

Summary

• Comparison of clinical trial results is difficult due to confounding variables such as variations in study design, patient demographics, and study inclusion criteria
  • CER allows comparison of treatment methodologies in the absence of head-to-head clinical trial data

• Data used in to conduct a CER analysis is drawn from multiple sources

• Several CER analyses have been conducted analyzing drug therapies used to treat psoriatic disease
  • For psoriatic arthritis, few head-to-head comparisons exist, thus limiting conclusions about which agents may be superior for minimizing joint damage and optimizing quality of life
    • However, evidence suggest biologics are first-line treatment for patients both psoriasis and psoriatic arthritis
  • For psoriasis, clinical trial evidence suggests biologics are more efficacious and effective than nonbiologic systemic agents
    • Real-world data argues any incremental gain in effectiveness of biologic agents vs methotrexate is small and may not be clinically meaningful

• CER data is currently lacking for novel agents recently approved for the treatment of psoriatic disease including the phosphodiesterase-4 and IL-17 inhibitors
An Analysis of Current and Emerging Therapies and Benefit Design Considerations for Psoriasis and Psoriatic Arthritis

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Analyzing the Available Data to Assess the Value of Psoriasis and Psoriatic Arthritis Treatment Options

Diana Brixner, RPh, PhD, FAMCP
Professor, Department of Pharmacotherapy
University of Utah College of Pharmacy
Executive Director, Outcomes Research Center
Director of Outcomes, Program in Personalized Health Care
University of Utah Health Sciences Center
• Assess the value of psoriatic treatment options
Annual Expenditures on the Treatment of Psoriasis in the US is Substantial


<table>
<thead>
<tr>
<th>Source of cost</th>
<th>Annual Cost per Psoriasis Patient ($)*</th>
<th>Annual Cost for Psoriasis Population (Billion $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimate of direct health care costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Low</td>
<td>6985</td>
<td>51.7</td>
</tr>
<tr>
<td>• High</td>
<td>8536</td>
<td>63.2</td>
</tr>
<tr>
<td>Estimate of indirect health care costs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Low</td>
<td>3225</td>
<td>23.9</td>
</tr>
<tr>
<td>• High</td>
<td>4787</td>
<td>35.4</td>
</tr>
<tr>
<td>Medical comorbidity direct health care costs</td>
<td>4920</td>
<td>36.4</td>
</tr>
<tr>
<td>Intangible health care costs</td>
<td>11,498 lifetime cost†</td>
<td>85.1 lifetime cost†</td>
</tr>
<tr>
<td>Total Annual Costs</td>
<td>$22,863 to $25,796‡</td>
<td>$112 to $135‡</td>
</tr>
</tbody>
</table>

*Adjusted to 2013 dollars using the Consumer Price Index for All Urban Consumers.
†On-time cost.
‡Does not include intangible health care costs.
Psoriatic Disease Also Places a Large Financial Burden on Patients

- Psoriatic disease (PD) imposes a considerable economic burden\(^1,2\)
- PD also associated with a higher prevalence of comorbidities and greater health care resource utilization including medication use\(^1,2\)
- Many patients with psoriatic disease require chronic treatment with higher cost specialty (biologic) agents\(^1,2\)
- However, a primary reason for patients to not seek treatment is the prohibitive cost of therapy\(^2\)
  - A survey of PD patients indicated that respondents spent >$2500 per year out-of-pocket on their psoriasis care\(^2\)
    - Highest costs were due to health insurance premiums, prescription medications, psoriasis-related physician visits, and over-the-counter therapies\(^2\)

All-cause Health Care Costs for Patients with Psoriatic Disease

Nearly Two-thirds of Patients with Psoriatic Disease are Treated with a Biologic Agent

Psoriasis¹
(n=6702)

- 59% Biologic Alone
- 79% Oral
- 15% Non-biologic

Psoriatic Arthritis²
(n=3164)

- 67.7% Biologic Alone
- 32.3% Biologic + Conventional DMARD

References:
Payers Also Report That Pharmacy Spending on Specialty Biologics Continues to Grow

$87.1  $192.2  $401.7

2012  2016*  2020*

121% increase from 2012

109% increase from 2016

*projected

Mean Annual Cost of Biologics for Treatment of Psoriatic Disease is >$50,000 per Patient

Analysis of a PBM Claims Database for 8,306 Privately Insured Patients
Conducted January 2008 and August 2011

- Rheumatoid arthritis: $23,450
- Psoriasis: $26,342
- Psoriatic arthritis: $24,993
- Ankylosing spondylitis: $23,443
- Psoriasis and psoriatic arthritis: $26,033
- Rheumatoid arthritis and psoriatic arthritis: $24,765

Mean Cost of Anti-TNF Biologic Agents

Mean Annual Cost Per Psoriatic Disease Patients Treated With Biologics

Analysis of the Annual Cost of Biologic Therapies (approved prior to September 2012) for the Treatment Psoriasis and Psoriatic Arthritis Using a Commercial Claims Database

Determining the Value of Psoriatic Disease Treatment Options
Cost Efficacy of Psoriatic Disease Treatments: Caveats

• Biologic agents are more efficacious than conventional DMARDs, but generally carry a higher cost

• The relatively high cost and expanding use of biologics make them an important target for economic evaluation

• Most cost-effectiveness analyses of psoriasis treatments are limited by
  • Short time horizons
  • Failure to use quality-adjusted life-years as the effectiveness measure
  • Failure to cost all relevant resource use

• Cost related to treatment, hospitalization for nonresponders, efficacy, and impact on quality of life are the drivers of cost effectiveness of treatments for psoriatic disease

• Cost efficacy analyses from a US payer perspective for novel agents (eg, apremilast, secukinumab, and ixekizumab) used to treat psoriatic disease are currently limited

Cost of All Approved Psoriasis Therapies (as of 2013)

- Methotrexate and cyclosporine the least costly therapy to achieve PASI 75
- Infliximab the most costly therapy due primarily to cost of infusion

• Economic evaluation tools include
  • Cost-effectiveness analysis (CEA): Compares the cost and effectiveness of two or more treatments
  • Cost-utility analysis (CUA): A subtype of CEA, applying quality adjusted life years (QALY) as a measure of effectiveness
    • Primary outcome measure in CUA is the incremental cost-effectiveness ratio (ICER)
    • ICER describes difference in cost between two treatments per QALY gained
  • A threshold of $50,000/QALY is often used as a socially acceptable standard against which to compare treatments
ICER Analysis: Cost-efficacy for Treatment of Psoriasis

- Meta-analysis conducted to determine efficacy (PASI 75) of etanercept, adalimumab, infliximab, and ustekinumab (13 trials; n=5309 patient records)
- Cost-efficacy analysis performed by calculating the ICER per subject achieving PASI 75

<table>
<thead>
<tr>
<th></th>
<th>6-Month Cost</th>
<th>Incremental Efficacy of PASI Response</th>
<th>ICER (cost per additional PASI 75 responder)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etanercept</td>
<td>$17,954</td>
<td>55%</td>
<td>Dominated</td>
</tr>
<tr>
<td>Adalimumab</td>
<td>$13,429</td>
<td>63%</td>
<td>$21,315&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Ustekinumab 45mg</td>
<td>$16,787</td>
<td>67%</td>
<td>$83,950&lt;sup&gt;2&lt;/sup&gt;</td>
</tr>
<tr>
<td>Infliximab</td>
<td>$19,725</td>
<td>71%</td>
<td>$68,175&lt;sup&gt;3&lt;/sup&gt;</td>
</tr>
<tr>
<td>Ustekinumab 90 mg</td>
<td>$33,574</td>
<td>72%</td>
<td>$1,384,900&lt;sup&gt;4&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

1. vs placebo; 2. vs adalimumab; 3. vs ustekinumab 45 mg; 4. vs infliximab

- Infliximab and ustekinumab 90 mg had the highest efficacy
- Adalimumab had the more favorable cost-efficacy

Sequencing a Non-biologic Agent Early in Treatment is Potentially Cost-saving

- Cost-effectiveness assessment from a US payer perspective of placing apremilast before biologics for patients with moderate to severe plaque psoriasis
- 10-year Markov state transition cohort model developed to compare two treatment sequences in the base case: 1) apremilast followed by adalimumab followed by etanercept, and 2) adalimumab followed by etanercept

<table>
<thead>
<tr>
<th>Base-case Results</th>
<th>Apremilast</th>
<th>Comparator</th>
<th>Incremental Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall costs per patient</td>
<td>$234,293</td>
<td>$243,365</td>
<td>-$9072</td>
</tr>
<tr>
<td>Life-years per patient</td>
<td>9.82</td>
<td>9.82</td>
<td>0.0</td>
</tr>
<tr>
<td>QALYs per patient</td>
<td>6.86</td>
<td>6.72</td>
<td>+0.14</td>
</tr>
<tr>
<td>Average time spent on biologic agents, years</td>
<td>4.26</td>
<td>4.82</td>
<td>-0.56</td>
</tr>
<tr>
<td>Average time spent with PASI 75 response, years</td>
<td>5.0</td>
<td>4.26</td>
<td>+0.74</td>
</tr>
<tr>
<td>Average time spent in best supportive care*</td>
<td>3.96</td>
<td>5.00</td>
<td>-1.04</td>
</tr>
<tr>
<td>Incremental cost per QALY gained</td>
<td>Dominant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Patients who failed etanercept assumed to receive best supportive care (BSC) as last line of treatment
BSC = total healthcare costs following failure of conventional and biologic treatment

Cost Effectiveness of Biologics for Plaque Psoriasis

• Treatment selection in psoriatic disease is influenced by efficacy and tolerability

• Similarly, cost efficacy of an agent is highly influenced by its efficacy and safety
  • Adverse events often require the consumption of additional health care resources to manage and/or have a negative effect on patient quality of life (QoL)

• To assess the cost effectiveness of biologic agents with regard to achievement of PASI 75 and a minimally important difference in QoL, 27 studies of biologic agent approved as of January 2012 for the treatment of moderate to severe plaque psoriasis were analyzed

Cost of Achieving a Meaningful Improvement in QoL and Skin Clearance

Cost per Patient of Achieving PASI 75

- Infliximab 3 mg/kg: $9742
- Adalimumab 40 mg eow*: $11689
- Adalimumab 40 mg eow: $13299
- Infliximab 5 mg/kg: $13548

Cost per Patient of Achieving DLQI MID

- Infliximab 3 mg/kg: $3938
- Etanercept 25 mg eow: $4565
- Infliximab 5 mg/kg: $5405
- Etanercept Adalimumab 50 mg eow 50 mg eow*: $5589

*after an 80-mg loading dose
eow=every other week
PASI=Psoriasis Area Severity Index
DLQI MID=Dermatology Life Quality Index Minimally Important Difference
Psoriatic disease imposes a considerable economic burden

Many patients with psoriatic disease require chronic treatment with higher cost specialty (biologic) agents
  - Mean annual cost of biologics for treatment of psoriatic disease is >$25,000 per patient

Relatively high cost and expanding use of biologics make them an important target for economic evaluation

Several tools are available to assess the cost efficacy of psoriatic disease treatments

Current data suggests the TNF-a inhibitor biologics are cost-effective, however conclusions are limited by the lack of cost-efficacy analyses conducted from a US payer perspective on newly approved and emerging agents with novel mechanisms of action
An Analysis of Current and Emerging Therapies and Benefit Design Considerations for Psoriasis and Psoriatic Arthritis

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Plan Benefit Designs and Specialty Pharmacy Considerations in a New Era of Health Care Reform

James Kenney, RPh, MBA
Manager, Specialty and Pharmacy Contracts
Harvard Pilgrim Health Care
Integrate interventions to coordinate health plan and affiliated providers efforts in the health care reform era that will lead to better outcomes for patients with psoriasis and psoriatic arthritis.
Healthcare is Transforming

- Data driven
- Individualized care planning
- Multidisciplinary team-based
- Managing a population down to the individual
New Model of Chronic Care: Placing the Patient in the Center of Care

- Open, two-way communication
- Shared decision making
- Understanding the patient’s perspective
- Multidisciplinary team care

- Care coordination
- Easy access to care
- Clinical information systems & registries
- Easy to access & use information
Physician-Patient Communication

• Primary goals of doctor-patient communication include:
  • Creating a good interpersonal relationship
  • Facilitating exchange of information
  • Including patients in decision making

• Patients provided information on their diagnosis and prognosis achieve better symptom relief and functional outcomes

• Engaging the patient in the management of their disease

Patient-centered Care: Shared Decision Making

• **Definition:** Health-related decision-making process is made jointly by the patient and health care provider(s)

• Incorporates principles of patient-centered care and evidence-based medicine

• Provider shares information with the patient on the benefits and risks of available options

• Takes into account the provider’s expertise and experience and the patient’s values and preferences

Essential Steps of Shared Decision Making

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

Redesigning Health Care Benefits: Different Strategies for Different Patients
Chronic Inflammatory Conditions are the Most Expensive Specialty Therapy Class

<table>
<thead>
<tr>
<th>Therapy Class</th>
<th>Specialty Medical PMPM</th>
<th>Specialty Pharmacy PMPM</th>
<th>Total Specialty PMPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inflammatory conditions</td>
<td>$3.95</td>
<td>$12.30</td>
<td>$16.25</td>
</tr>
<tr>
<td>Oncology</td>
<td>$7.56</td>
<td>$4.66</td>
<td>$12.23</td>
</tr>
<tr>
<td>Multiple sclerosis</td>
<td>$0.97</td>
<td>$5.91</td>
<td>$6.88</td>
</tr>
<tr>
<td>Immune deficiency</td>
<td>$1.87</td>
<td>$3.92</td>
<td>$5.79</td>
</tr>
<tr>
<td>Hepatitis agents</td>
<td>$0.00</td>
<td>$4.50</td>
<td>$4.50</td>
</tr>
<tr>
<td>Growth deficiency</td>
<td>$0.00</td>
<td>$1.26</td>
<td>$1.26</td>
</tr>
<tr>
<td>Cystic fibrosis</td>
<td>$0.00</td>
<td>$1.15</td>
<td>$1.15</td>
</tr>
<tr>
<td>Hemophilia</td>
<td>$0.33</td>
<td>$0.79</td>
<td>$1.12</td>
</tr>
<tr>
<td>All others</td>
<td>$6.41</td>
<td>$2.89</td>
<td>$9.30</td>
</tr>
</tbody>
</table>

PMPM = per member per month

Specialty Drug Spending Trend for Inflammatory Conditions

- Represents 27% of all specialty costs and is driven by:
  - High prevalence of inflammatory conditions such as psoriasis and psoriatic arthritis
  - Expansion in approved indications for the most commonly used drugs in the class
  - Recent product launches

- Growth in pharmacy spending for specialty anti-inflammatory products due to plan sponsors shifting management from the medical to the pharmacy benefit as a means of controlling costs
  - Approximately 76% of costs now paid through the pharmacy benefit

Managing the Spending Trend for Inflammatory Conditions is Challenging

• Benefit design changes implemented to address multiple cost-related issues include
  • Migrating select medical specialty drugs for management under the pharmacy benefit
  • Standardizing site of care
  • Cost sharing
  • Specialty tiers
  • Introduction of oral biologics
  • Biosimilars
Designing a Benefit Strategy that Optimizes Patient Care and Controls Costs

• To ensure optimal clinical outcomes and manage costs, the benefit strategy must...
  • Provide clinical services designed to optimize patient outcomes and minimize negative consequences
  • Ensure appropriate use by employing clinical guidelines, prior authorization, and formulary programs
  • Equalize benefits between pharmacy and medical to avoid members selecting a site of administration based on their coverage

Elements of a Benefit Plan Designed To Optimize Patient Care and Controls Costs

**Right Drug**
- Efficacy/safety
- Proper duration of therapy
- Correct quantity (minimize waste)
- Preferred products

**Right Site of Care**
- Hospital (in/out patient)
- Provider office
- Retail pharmacy/clinic
- Home nursing care
- Home self-care

**Right Cost**
- Utilization management
- Cost-sharing
  - Deductibles
  - Copays
- Contracts/ rebates
- Outcomes-based contracts
Specialty Anti-inflammatory Drugs: Clinical and Utilization Management

- **Percent of plans (n=70)**
  - Require PA (IV): 93%
  - Require PA (SC): 89%
  - Strengthen PA for non-preferred drugs: 41%
  - Exclude coverage of specific non-preferred products: 30%
  - Remove PA from preferred drugs: 21%
  - Create coverage guidelines across Rx and medical benefit: 70%
  - Include site of service program for IV: 35%
  - Allow 90-day supply for stable patients: 13%

**Abbreviations:**
- IV = intravenous
- PA = prior authorization
- SC = subcutaneous

Select preferred products regardless of mechanism of action

Select preferred products regardless of route of administration

Select at least 1 preferred product from each mechanism of action

Prefer self-administered over provider-administered drugs

Select at least 1 preferred product from each route of administration

Percent of plans

71%

47%

24%

24%

17%

(n=70)

0% 20% 40% 60% 80% 100%

Specialty Anti-inflammatories: Formulary Management

Specialty Anti-inflammatories: Site of Service Management

Currently implemented
Plan to implement within 12 months

Prior authorization
- 29%
- 56%

Recommend alternate site after first infusion
- 29%
- 50%

Incentivize with lower cost share
- 17%
- 56%

n=52 plans that have or plan to have site-of-service programs

Influence of the Site of Care on Treatment Costs and Patient Convenience

- Hospital inpatient
- Hospital outpatient
- Provider office
- Home nursing care
- Retail clinic
- Home self-care

Cost vs. Patient Convenience diagram
<table>
<thead>
<tr>
<th>Specialty Tiers</th>
<th>Percent of plans</th>
<th>Mean cost share</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional Benefit Design-Plans with Specialty Tiers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single tier specialty cost share</td>
<td>71%</td>
<td>--</td>
</tr>
<tr>
<td>Dollar copay</td>
<td>43%</td>
<td>$102</td>
</tr>
<tr>
<td>Coinsurance with maximum OOP</td>
<td>57%</td>
<td>22%</td>
</tr>
<tr>
<td>Coinsurance max OOP/Rx amount</td>
<td>--</td>
<td>$217</td>
</tr>
<tr>
<td><strong>High Deductible Plans with Specialty Tiers</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single tier specialty cost share</td>
<td>74%</td>
<td>--</td>
</tr>
<tr>
<td>Dollar copay</td>
<td>32%</td>
<td>$100</td>
</tr>
<tr>
<td>Coinsurance with maximum OOP</td>
<td>69%</td>
<td>23%</td>
</tr>
<tr>
<td>Coinsurance max OOP/Rx amount</td>
<td>--</td>
<td>$326</td>
</tr>
</tbody>
</table>
• Health care delivery is undergoing a rapid transformation with a new emphasis on patient-centered care
• Health care benefits are evolving in step with changes in care delivery with the goal of optimizing patient outcomes and controlling costs
• Inflammatory conditions such as psoriasis and psoriatic arthritis have the highest per patient per month (PMPM) within the specialty drug therapy class
• Payers implement several utilization and cost management strategies to mitigate the financial impact of treatment
An Analysis of Current and Emerging Therapies and Benefit Design Considerations for Psoriasis and Psoriatic Arthritis

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