1. Study establishes 16 genetic-risk regions for psoriatic arthritis and 12 for cutaneous-only psoriasis


Summary
The aim of this multi-center collaborative study was to identify the differences in genetic risk factors for psoriatic arthritis (PsA) and cutaneous-only psoriasis (PsC). To date, almost 70 genetic loci for psoriasis vulgaris (PsV) have been identified through a series of large genome-wide association studies (GWASs) and genome-wide (GW) meta-analyses. However, the researchers identified a need for more powerful and comprehensive genetic studies of PsA and PsC. Initially, a large GWAS of psoriatic arthritis, involving 1,430 individuals with the condition and 1,417 unaffected (control) individuals was performed. Subsequently, the results of this study were combined with five published studies of psoriasis association comprising a discovery meta-analysis of 3,061 PsA case subjects, 3,110 PsC case subjects, 9,293 PsV case subjects, and 13,670 unaffected control subjects. For the purposes of this study, PsC was defined as the presence of skin symptoms without PsA for at least 10 years. For markers with promising association signals in the discovery analysis, a large partially overlapping sample of up to 13,857 individuals was genotyped, which allowed both independent replication and validation of the data.

Having performed a well-powered and comprehensive examination of the genetic associations of PsA and PsC, the researchers identified five independent genetic loci as differentially-associated with both phenotypes of psoriasis. Three genetic loci were more strongly associated with PsC than PsA (rs12189871 near HLA-C; rs4908742 near TNFRSF9; and rs10888503 near LCE3A), and two were more strongly associated with PsA than PsC (rs12044149 near IL23R; and rs9321623 near TNFAIP3). In addition, GW-significant association was identified with PsA for three regions...
Dear colleagues,

Welcome to the July 2016 issue of the IPC Psoriasis Review newsletter.

I will begin by commending the World Health Organisation (WHO) for issuing the “2016 Global Report on Psoriasis” earlier this year. Acting on a resolution passed in 2014 by WHO member states recognising psoriasis as a serious non-communicable disease, the WHO has written this report to raise awareness of the global burden of psoriasis and the many ways in which it affects people’s lives. The report recommends ways for policymakers, healthcare professionals and everyone in the psoriasis community to improve access to quality health care, including early diagnosis and appropriate treatment, for people living with this often debilitating and stigmatizing disease. The report underscores the importance of IPC’s own Global Psoriasis Atlas project, in which we are collaborating with the International Federation of Psoriasis Associations (IFPA) and the International League of Dermatological Societies (ILDs) to determine the true global burden of psoriasis. The project’s first goal is to gather data on the worldwide prevalence of psoriasis that can be used to advocate for improved treatment, better access to care, and gaining the recognition people with the disease deserve. The WHO report will help boost our efforts to increase the understanding of psoriasis around the world. Read more about the report on page 24.

In this issue you’ll also find articles highlighting the progress we continue to make in our work to advance knowledge about psoriasis. A prime example is the report on page 20 about the Hot Topics symposium we hosted during the American Academy of Dermatology (AAD) annual meeting in Washington, D.C., this past March. Under the title “The Changing Landscape of Global Psoriasis Management,” experts from around the world discussed a wide range of topics, including patient-reported outcomes, psoriasis management in Latin America and the Middle East, and the future of psoriasis management.

The symposium was one of a host of new educational symposia the IPC is presenting worldwide this year. We hosted a symposium on large and small molecules at the 27th annual meeting of the Society of Investigative Dermatology in May and a “Hot Topics” symposium on psoriasis in Latin America at the Reunión Anual de Dermatólogos Latinoamericanos (RADLA) conference in June. In September, the IPC will sponsor a symposium on P4 Medicine at the European Society of Dermatological Research annual meeting in Munich and co-sponsor a symposium with the International Eczema Council on psoriasis and atopic dermatitis at the annual congress of the European Academy of Dermatology and Venereology in Vienna.

You will find information about these meetings in this issue, as well as updates on our topical therapies, systemic therapies and biosimilars working groups; titles of four IPC-produced manuscripts recently published in scientific journals; our regular “Top 5” feature with summaries and commentaries of five recently-published psoriasis research papers; and a summary of psoriasis-related topics discussed at the March AAD meeting.

On a sombre note, I am saddened to acknowledge the loss of our longtime, esteemed colleague, Professor Sergio Chimenti of Italy. He was well respected around the world for his contributions to our field as a practitioner, researcher, educator, and mentor. We will miss his lively and provocative spirit.

In closing, I want to thank IPC Councillors Dr. Helen Young, Manchester, United Kingdom, and Dr. Andrew Johnston, Ann Arbor, Michigan, United States, for for serving as scientific co-editors for this issue of the IPC Psoriasis Review newsletter. As always, I am grateful to board members and councillors for their commitment to the IPC and for giving freely of their time and expertise to advance our mission and goals.

With best wishes,

Chris Griffiths, MD, FRCP, FMedSci
President, International Psoriasis Council
Manchester, United Kingdom
Cont. from Page 1

(near IFNL1, IFIH1, and NFKBIA) and with PsC for five regions (TNFRSF9, LCE3/C/B, TRAF3IP2, IL23A, and NFKBIA). These findings increase the list of firmly established PsA and PsC genetic risk regions to 16 and 12, respectively.

**COMMENTARY** That psoriasis vulgaris (PsV) and psoriatic arthritis (PsA) have a strong genetic component is well established. Based on twin and family studies in populations of European descent, estimates of heritability for PsV range from 50% to 90%. However, the genetic contribution to PsA appears even larger, with estimates of heritability between 80% and 100%. In contrast to the research effort invested in understanding the genetic associations of PsV, PsA has been relatively under-researched with studies identifying 13 genetic loci for PsA and PsC, which were all within known regions of PsV association. The greatest degree of differential association was a signal in the class I MHC between HLA-C and HLA-B, which meant that carriage of the PsV risk allele nearly halved the odds of developing PsA in addition to PsC. Other investigations suggested that the key to this observation is a glutamine residue at position 45 of HLA-B, which increases PsA versus PsC susceptibility more than any other classical HLA protein allele, amino acid, SNP (single nucleotide polymorphism), or indel (INsertion/DELetion) in the region. This study highlights the need for ever-larger sample sizes to ensure that research in this field is adequately powered. Adequate sample sizes, together with assiduously documented clinical phenotype data will undoubtedly yield more comprehensive phenotype-genotype association in the future.

–Dr. Helen Young

For additional copies of the IPC Psoriasis Review newsletter, or to learn more about IPC, please visit www.psoriasiscouncil.org.
2. Selective targeting of IL-23 is highly efficacious in treating psoriasis, guselkumab study shows


Summary
In this company-sponsored, phase 2 clinical trial, the investigators compared the efficacy, dosing and safety of guselkumab, a specific anti-interleukin-23 (IL-23) therapy, with adalimumab and placebo. A total of 293 individuals with moderate to severe chronic plaque psoriasis were randomized to receive one of 5 possible guselkumab treatment regimens; adalimumab 80 mg at week 0 followed by 40 mg at week 1 and alternate weeks thereafter; or placebo. The guselkumab regimens were either (1) 5 mg at weeks 0 and 4 and every 12 weeks thereafter; (2) 15 mg every 8 weeks; (3) 50 mg at weeks 0 and 4 and every 12 weeks thereafter; (4) 100 mg every 8 weeks; or (5) 200 mg at weeks 0 and 4 and every 12 weeks thereafter. Individuals in the placebo group received placebo for 16 weeks and then crossed over to receive treatment with guselkumab at a dose of 100 mg every 8 weeks. Blinding was not maintained for adalimumab. Treatment continued for 40 weeks followed by a 12-week follow-up period. The proportion of individuals achieving a Physicians Global Assessment (PGA) score of 0 or 1 at week 16 was the primary endpoint. A Psoriasis Area Severity Index (PASI) of 75 and a reduction in Dermatology Life Quality Index (DLQI) at week 16 were secondary endpoints. At week 16, the proportion of individuals with a PGA score of 0 or 1 for guselkumab 5 mg, guselkumab 15 mg, guselkumab 50 mg, guselkumab 100 mg, guselkumab 200 mg, adalimumab, and placebo was 34%, 61%, 79%, 86%, and 83%, respectively, versus 58% adalimumab and 7% placebo. PASI 75 and reduction in DLQI at week 16 were secondary endpoints. At week 16, the proportion of individuals with a PGA score of 0 or 1 for guselkumab 5 mg, guselkumab 15 mg, guselkumab 50 mg, guselkumab 100 mg, guselkumab 200 mg, adalimumab, and placebo was 34%, 61%, 79%, 86%, and 83%, respectively, versus 58% adalimumab and 7% placebo. PASI 75 and reduction in DLQI at week 16 was significantly greater for the guselkumab-treated groups as compared with the placebo-treated group. At week 40, the proportion of individuals with a PGA score of 0 or 1 for guselkumab 50 mg, guselkumab 100 mg, guselkumab 200 mg, and adalimumab, was 71%, 77%, and 81%, respectively, versus 49% adalimumab. PGA scores of 0 or 1 at PASI 75 improvement were evident as early as week 4 after the initiation of guselkumab. The proportion of patients with a PGA score of 0 or 1 continued to increase over time, reaching the maximum response at week 20 in most guselkumab treated groups. A modest loss of efficacy near the end of each dosing interval occurred, more consistently, among the patients who received guselkumab every 12 weeks than those who received guselkumab every 8 weeks. By the end of the study, at week 52, low-titre, non-neutralizing antibodies to guselkumab had developed in 6% of the guselkumab-treated individuals.

Infection was the most common adverse event throughout the study. No cases of tuberculosis or opportunistic infections were reported during the study. Overall, between weeks 16 and 52 of the study, the proportion of individuals with one or more adverse events was higher in the adalimumab group (61%) compared with the guselkumab group (49%). In the guselkumab-treated groups, there was no evidence of a relationship between the dosage administered and the rate of adverse event reporting. One case of cancer (grade 3 cervical intraepithelial neoplasia) was reported in a patient receiving guselkumab. Three individuals receiving treatment with guselkumab (1 in the 5-mg group and 2 in the 100-mg group) had major adverse cardiovascular events, including an individual who died of myocardial infarction. No anaphylaxis or serum sickness-like reactions were observed with guselkumab.

COMMENTARY This study provides further evidence of the importance of the Th17 pathway in psoriasis pathogenesis. Clearly, IL-23 is a key therapeutic target, as selective antagonism of IL-23 in patients with moderate to severe psoriasis is highly efficacious. Guselkumab antagonizes the activity of IL-23 through its p19 subunit and, therefore, permits more selective cytokine targeting, which is also potentially more specific to psoriasis than other therapies. It is difficult to interpret the significance of the 3 reported major adverse cardiovascular events; the phase 3 trial data should characterize the clinical utility of this therapy further. – HY
3. Researchers use British patient registry to assess the effectiveness and safety of first-course biological psoriasis therapies


**Summary**

This study investigated the clinical effectiveness, safety, and real-world utility of biological therapy in biologic naïve individuals by using a prospective, longitudinal pharmacovigilance register to assess “drug survival” as a proxy marker for these treatment outcomes. A cohort of more than 3,500 individuals with chronic plaque psoriasis receiving first-course biological therapy were identified using the British Association of Dermatologists Biologic Interventions Register (BADBIR). BADBIR prospectively collects real-world pharmacovigilance data on individuals treated with traditional systemic and biologic therapies through the collaboration of multiple dermatology centers across the United Kingdom and Republic of Ireland. Drug survival data for the first course of biologic therapy were available for a median follow-up period of between 1.2 and 1.5 years. Drug survival was defined as the length of time from initiation to discontinuation of therapy. Discontinuation of therapy was defined as any treatment gap greater than 90 days’ duration (with the exception of temporary or intermittent treatment as a consequence of clinical reasons). Adalimumab was the most commonly prescribed biologic in the registry and consequently was considered as the reference standard to which the other biologic therapies were compared. Overall, drug survival rates in the first year of treatment were 77%, although this fell to 53% in the third year. Ustekinumab had a significantly higher survival rate than TNFIs (tumor necrosis factor-α inhibitors), a difference that persisted after controlling for potential systematic bias. Adalimumab had the highest survival rate in those individuals treated with TNFIs. Important predictors for drug failure included female gender, a higher registration DLQI, and being a current smoker. Predictors for drug survival included comorbid psoriatic arthritis. Ustekinumab had the highest first-course drug survival (hazard ratio (HR) 0.48; 95% confidence interval (CI): 0.37–0.62). However, in comparison to adalimumab, individuals on etanercept (HR 1.63; 95% CI: 1.45–1.84) or infliximab (HR 1.56; 95% CI: 1.16–2.09) were more likely to discontinue therapy.

**COMMENTARY**

A durable and predictable response to biological therapy is important for both patients and clinicians, and is key to these high-cost drugs truly delivering on their promise to improve the quality of life for those who live with psoriasis. Finding the right drug the first time for patients can also be more cost-effective for the wider health economy. However, the long-term safety and real-world utility of therapeutics cannot be adequately assessed in clinical trials, as trials are often restricted by their inclusion criteria and size, being powered for primary efficacy outcomes, which may not reflect the real-world experience. As illustrated by this study, pharmacovigilance registries can be used to analyze the real-world experience with therapeutics and to answer key clinical questions. In particular, BADBIR represents an ideal resource for studies in the psoriasis population, due to its size, rigorous data collection process, independent data analysis, inclusion of important co-variates, and high external validity through participation of multiple dermatology centers. –HY
4. Study identifies role of melanocyte-restricted autoantigen in development of psoriasis


**Summary**
In this report, Jörg Prinz and his team identified a melanocyte-restricted autoantigen that triggers CD8+ T cell activation in psoriasis. They began by screening a number of skin cell types using a reporter cell line equipped with a T cell receptor (TCR) containing a β-chain rearrangement previously shown to be over-represented in psoriasis lesions (Vβ13). The researchers found that only melanocytes, and not keratinocytes from human leukocyte antigen (HLA)-C*06:02 positive individuals, activated the reporter cells. In lesional psoriasis skin, CD8+ T cells were found to be in close apposition to melanocytes and the lack of melanocyte apoptosis suggested that these cells were targets of non-cytotoxic CD8+ T cell immunity. To show that this interaction was driven by peptide antigen presentation, they used a combinatorial peptide library to screen 9-mer peptides recognized by this TCR in the context of HLA-C*06:02, which yielded a set of 8 peptides that shared a conserved sequence motif. Although no proteins were found that contained any of those exact sequences, the conserved motif was used to screen the human proteome, identifying 180 candidate peptides, 6 of which activated the reporter cell line when presented by HLA-C*06:02. These six 9-mer peptides shared a conserved amino acid motif that also contained known HLA-C*06:02 anchor residues. When the full-length parental protein for one of these peptides (ADAMTSL5, later shown to be preferentially expressed by melanocytes) was overexpressed in HLA-C*06:02+ melanoma cell lines, reporter cell line activation was detected. Evidence supporting ADAMTSL5 peptidase as a public autoantigen was presented as an increase in the proportion of IL-17A and IFN-γ-positive CD8+ T cells in the peptide-stimulated PBMC of psoriasis patients compared with controls. Interestingly, this reactivity was not restricted only to HLA-C*06:02+ patients.

**COMMENTARY** Psoriasis has been linked to the inheritance of particular HLA molecules for decades, and recently the gene driving the strongest genetic association in plaque psoriasis (PSORS1) was confirmed as being HLA-C*06:02. Carriage of C*06:02 has a number of significant effects on the natural course of the disease, yet despite this and our knowledge of the immunology of HLA molecules, we still do not have a satisfactory explanation for the role of C*06:02 in this disease. HLA-A, B, and C are a family of classical type I HLA molecules. As such, they are critical for presenting peptide antigens derived from within the cell, whether peptide antigen presentation by HLA-C*06:02 is critical, whether HLA-C*06:02 restricted T cells can be identified, and finally, why psoriatic plaques are limited to the skin. In this work, several of these questions are answered: The authors demonstrate an HLA-C restricted T cell response and identify the skin-restricted protein ADAMTS-like protein 5 (ADAMTSL5) as the source of the antigen recognized in the context of HLA-C*06:02. This is undoubtedly a major advance although it does raise a question about how vitiligo and psoriasis can co-localize on the skin of the same patient.

—Dr. Andrew Johnston
5. Study sheds light on the proinflammatory role of IL-26 in psoriasis and other autoimmune diseases


**Summary**
This paper describes novel functions of interleukin (IL)-26, an IL-10 superfamily cytokine produced by Th17 cells. Using protein sequence analysis and 3-dimensional modeling, the authors show that for a protein of its class, IL-26 has an unusually high positive charge at physiological pH, and that this charge is clustered on the surface, resulting in an amphipathic molecule with areas of cationic amino acids on one side and hydrophobic residues on the other. X-ray diffraction analysis revealed that, unlike other IL-10 superfamily members (eg, IL-22), IL-26 does not form dimers but appears to form elongated multimeric complexes. Given that several antimicrobial peptides have cationic amphipathic structures, the authors investigated the possibility that IL-26 could directly kill bacteria. They found that 5-10µM IL-26 was effective at inhibiting the growth of several Gram-negative bacterial strains and the Gram-positive Staphylococcus Aureus. This was supported by an in vivo mouse lung infection model which showed that IL-26 could significantly reduce bacterial titers. Consistent with the mode of action of other antimicrobial peptides, IL-26 had the ability to bind the cell wall constituent lipotechoic acid from Gram positive bacteria and the outer membrane constituent LPS from Gram negative bacteria. Furthermore, IL-26 killed bacteria by pore formation and loss of bacterial membrane integrity, as visualized with electron microscopy. The authors show that Th17, and to a lesser extent, Th1 T cells are the main sources of IL-26, and conditioned media from Th17 cell cultures could kill Pseudomonas aeruginosa in an IL-26-dependent manner. Confocal microscopy revealed that IL-26 formed complexes with DNA released during bacterial killing, prevented its degradation and increased its immunogenicity. These IL-26-DNA complexes were found to be endocytosed by plasmacytoid dendritic cells, bound the endosomal DNA sensor TLR9 and triggered release of IFN-α, provoking further immune activation.

**COMMENTARY** Over the last decade, the importance of Th17 cells in the immune defense of epithelial barriers such as the skin has been realized; however, Th17 cells have also been implicated in a number of pathologies such as Crohn’s disease, multiple sclerosis, and psoriasis. While Th17 cells are known for their ability to tackle extracellular infections by bacteria and fungi, this finding now augments the functions of Th17 cells by crediting them with a direct bactericidal activity and possibly an underappreciated anti-viral capacity. IL-26 is overexpressed in psoriasis lesions and was thought to act only on epithelial cells, not immune cells; however, this work reveals that after directly killing bacteria, IL-26 can bind the extracellular DNA released during killing, and stimulate plasmacytoid dendritic cells via TLR9 to drive anti-microbial responses. IL-26 is not alone in being a cytokine with direct antimicrobial activity. The topological formation of a large, positively charged area on the surface of the cytokine is a common feature of antimicrobial cytokines, and at least 17 human chemokines exhibit this ability including CCL20, another molecule heavily upregulated in psoriasis skin and also a product of Th17 T cells. Taken together, this work cements the position of Th17 cells as immune sentinels and soldiers at our epithelial barriers.

---

**IPC’S SEMI-ANNUAL REVIEW OF THE TOP FIVE PAPERS: JULY-DECEMBER 2015**  

---

Advancing Knowledge | Enhancing Care
Psoriasis-related topics included comorbidities, new and emerging therapies, PASI 75 vs PASI 90 as treatment endpoint, and the future use of biosimilars

By Rebecca Hartman, MD, MPH, and Kathryn Shahwan, MD

Rebecca I. Hartman, MD, MPH is a second-year dermatology resident at the Harvard Combined Dermatology Residency Training Program in Boston, Massachusetts. She received her bachelor's and medical degrees from the University of Pennsylvania and her master's degree in public health from Harvard University.

Kathryn Shahwan, MD, is a research fellow in the Department of Dermatology at Massachusetts General Hospital under Dr. Alexa Kimball. After finishing her fellowship, she will complete her dermatology residency training at the University of Minnesota.

Psoriasis, its comorbidities, and emerging therapies were the focus of multiple sessions at the 74th annual meeting of the American Academy of Dermatology held in Washington, D.C., in March 2016. Presented here are summaries of the key issues discussed.

Psoriasis pathogenesis

The pathogenesis of psoriasis involves a complex interplay of the innate immune system, T-cell activation, cytokine signaling, endothelial cell activation, recruitment of immune cells, and keratinocyte proliferation. The cell types that play the greatest role are TH1, TH2, and TH17 cells, but a deficiency in T regulatory cells may also contribute. Inflammatory cytokines secreted by these T cells and dendritic cells, including TNF-α, IL-17, IL-12, and IL-23, are strongly implicated in the pathogenesis of psoriasis, and therapeutic targeting of these cytokines using biologic therapy is highly effective. Inhibition of the JAK/STAT pathway is also an attractive therapeutic target because it transduces signals from a number of inflammatory cytokines; this facilitates T-cell activation by dendritic cells and expression of genes implicated in psoriasis.1

Genetics

Psoriasis is highly heritable, with up to 70% concordance between identical twins and 33% of patients reporting a positive family history. Approximately 65 genetic loci have now been associated with the skin disease, the majority of which are low-impact regulatory single nucleotide polymorphisms (SNPs) that are clustered into inflammatory pathways.2 Certain susceptibility genes have been shown to correlate with psoriatic phenotype, including age of onset and morphology.3,4 There is also genetic overlap between psoriasis, cardiovascular disease, and autoimmune diseases such as lupus, rheumatoid arthritis, and inflammatory bowel disease.2

Psoriasis is highly heritable, with up to 70% concordance between identical twins and 33% of patients reporting a positive family history.

Psoriasis comorbidities

Psoriasis is now well established as a systemic disease with multiple comorbidities including psoriatic arthritis, obesity, the metabolic syndrome, non-alcoholic fatty liver disease, cardiovascular disease, chronic renal insufficiency,33...
Psoriatic arthritis
Patients should be screened for psoriatic arthritis regularly, as 40-60% will develop erosive joint disease. Early diagnosis and treatment are critical to preventing permanent damage and deformity. Providers should ask all patients with psoriasis about joint pain that increases throughout the day, joint swelling, and morning stiffness, and should examine the joints for evidence of synovitis, dactylitis, and enthesitis. Patients with concerning symptoms should undergo a lab work-up for inflammatory markers, imaging studies, and rheumatology evaluation.

Obesity and the metabolic syndrome
Patients with psoriasis are significantly more likely to be obese, especially those with severe disease. In addition, obese individuals are more likely to develop incident psoriasis, and those who exercise regularly have a decreased risk of developing psoriasis. Psoriasis also confers a greater risk of the metabolic syndrome including diabetes mellitus, hypertension, and hyperlipidemia.

In the United States, healthcare costs for treating the medical comorbidities of patients with psoriasis are estimated at $36.4 billion dollars annually.

Nonalcoholic steatohepatitis
Nonalcoholic fatty liver disease (NAFLD), which affects approximately 60% of psoriasis patients, is an independent cardiovascular risk factor and can progress to end-stage cirrhosis. Furthermore, among patients with NAFLD, those with psoriasis are 60% more likely to have advanced disease. Early studies suggest that TNF-α inhibitors may slow the progression of NAFLD, but further research is needed.

Cardiovascular disease
Patients with psoriasis have a significantly increased risk of cardiovascular disease including myocardial infarction and stroke, and the Framingham risk score underestimates their risk of such events. FDG-PET scans reveal substantial vascular inflammation in patients with psoriasis beyond that attributable to classic cardiovascular risk factors.

Treatment with TNF-α inhibitors has been shown to improve markers of atherosclerosis such as carotid intima-media thickness and arterial stiffness. Observational studies also suggest that treatment with methotrexate and TNF-α inhibitors decreases the risk of major cardiovascular events, and adalimumab and ustekinumab have been shown to improve cardiac function. Analysis of more long-term data from randomized clinical trials and patient databases is ongoing. There is also an ongoing project funded by the National Institutes of Health, the Vascular Inflammation in Psoriasis Trial or “VIP Trial” that aims to evaluate the effect of adalimumab on biomarkers and FDG-PET findings.

Importantly, many primary care physicians and cardiologists are unaware of the association between psoriasis and cardiovascular disease, resulting in a lack of routine screening in this patient population. Patients with psoriasis should be systematically screened for modifiable risk factors including obesity, hypertension, diabetes, and hypercholesterolemia on a regular basis. The National
Psoriasis Foundation recommends checking patients’ blood pressure, heart rate, and BMI every 2 years and screening for lipid abnormalities and diabetes every 2-5 years, depending on risk factors. Patients should also be encouraged to maintain a healthy weight, avoid smoking, minimize alcohol use, eat a well-balanced diet, and exercise regularly.40

**Sleep apnea**
Approximately half of patients with psoriasis have comorbid sleep apnea.41 In addition, patients with sleep apnea are 2.3 times more likely to develop psoriatic disease than the general population.41

**COPD (Chronic obstructive pulmonary disease)**
Patients with psoriatic disease are more likely to develop obstructive lung disease, even after adjusting for risk factors such as age and smoking history. They also have a worse prognosis than controls, with significantly increased mortality.43

**Autoimmune diseases**
Patients with psoriasis are at greater risk of having other autoimmune conditions, including inflammatory bowel disease, celiac disease,44 uveitis, and multiple sclerosis,45 possibly because of shared genetic risk factors.2

**Malignancy**
Non-melanoma skin cancer, lymphoma, and lung cancer are all more common in patients with psoriasis. Although psoriasis has not been associated with prostate, colon, or breast cancer, patients should still be encouraged to complete age-appropriate cancer screenings.46

**Psychiatric disorders**
Patients with psoriasis are more likely to smoke47 and abuse alcohol48 than the general population. They also have a higher risk of depression, anxiety disorders, and suicide.49 Interestingly, depressed patients in general have been shown to have elevated levels of TNF-α and IL-6,50 and multiple studies have demonstrated an improvement in depression scores when patients with psoriasis are treated with TNF-α inhibitors.53,52,53

**Psoriasis treatment**

**Topicals**
Topical therapies play a key role in psoriasis treatment with up to 80% of patients receiving only topical therapy. Combining a topical steroid with another topical agent such as tazarotene, ammonium lactate, or vitamin D analogues can decrease the side effects of steroid atrophy and improve treatment efficacy. In addition, regular application of a combination topical steroid and vitamin D analogue is more effective than as-needed use.54

The vehicle plays a critical role in efficacy of topical therapies, with newer vehicle technologies challenging traditional thought that occlusive ointments have the best penetration and efficacy. Calcipotriene ointment and cream are effective, but irritating, prompting the development of newer formulations. A recently-invented aerosol foam formulation of calcipotriene plus betamethasone demonstrated superior efficacy and similar safety profile to the combination ointment.55 Beyond new formulations, there are also new topical therapies in development, including a topical JAK inhibitor.56

Multiple studies have demonstrated an improvement in depression scores when patients with psoriasis are treated with TNF-α inhibitors.

**Phototherapy**
Phototherapy remains a common treatment method and may be particularly useful in patients with moderate to severe psoriasis who have contraindications to or wish
A recently-invented aerosol foam formulation of calcipotriene plus betamethasone demonstrated superior efficacy and similar safety profile to the combination ointment to avoid systemic therapy. Narrow-band ultraviolet light B (NB-UVB) is the most commonly used modality, and is frequently used in combination with topical therapies. It has also been studied in combination with methotrexate, cyclosporine, etanercept, adalimumab, and ustekinumab, but no long-term safety data are available, so overlap time should be limited. Long-term use of NB-UVB alone has not been shown to result in an increased risk of melanoma or non-melanoma skin cancer, but patients who were exposed to both NB-UVB and PUVA (the light-sensitizing drug psoralen with ultraviolet light A) had a slightly increased risk of basal cell carcinoma. Home NB-UVB booths are also an option for some patients, but are most useful during the maintenance phase of treatment.

Targeted phototherapy using an excimer laser is ideal for patients with a low-percent body-surface area, localized persistent plaques that have failed to respond to other treatments, and for treating special sites such as the scalp, palms, and soles.

**Systemic therapies**
Methotrexate, cyclosporine, and acitretin have long been used as first-line treatment options for moderate to severe psoriasis; however, they carry a risk of systemic toxicity, especially with long-term use. In the age of biologic therapy, there is less reliance on these medications; however, they still are commonly used as initial therapy due to their affordability, relatively rapid onset of action, and insurance appropriateness criteria for coverage of biologics. They may also be used long-term for patients who cannot afford biologics or have a contraindication to their use.

**New oral medications**
Novel oral therapies are offering patients additional treatment options that do not require subcutaneous injections. Approved for psoriasis and psoriatic arthritis, apremilast is an inhibitor of phosphodiesterase 4 (PDE4), a key enzyme that degrades cAMP, which is involved in inflammatory cytokine production. At week 16, apremilast achieved PASI 75 responses in one-third of patients and this response was maintained through 32 weeks. The medication has also proven efficacy in treating psoriatic arthritis, as well as nail and scalp psoriasis. From 41-47% of patients receiving apremilast with scalp psoriasis achieved a Scalp Physician Global Assessment (ScPGA) score of 0 or 1, compared to 17% receiving placebo at week 16. Similarly, by week 16, 33% of patients on apremilast achieved a Nail Psoriasis Severity Index response of 50, compared to 15% on placebo. The main side effects of apremilast are gastrointestinal (GI), including nausea and diarrhea. Some patients may also experience weight loss. There are additional investigational
anti-PDE4 products in development, possibly targeting the specific isoforms of PDE4.

Biologics
As more knowledge is gained about the molecular pathogenesis of psoriasis, new, targeted treatments are offering better clinical results than ever.

Interleukin-17 (IL-17) is a very attractive target for inhibition in psoriasis. Currently available anti-IL-17 agents include secukinumab, as well as the recently approved ixekizumab.

IL-17-targeted therapies
IL-17A is a cytokine produced by several cell types of both the innate and acquired immune systems, most notably Th17 T cells. IL-17 drives keratinocyte inflammatory responses and is considered downstream to two other recently-targeted cytokines, TNF-α and IL-12/IL-23p40.

As a result, IL-17 is a very attractive target for inhibition in psoriasis. Currently available anti-IL-17 agents include secukinumab, as well as the recently approved ixekizumab. Brodalumab, which targets the IL-17RA receptor, is another anti-IL-17 agent that has been shown to be highly effective. The U.S. Food and Drug Administration is reviewing the status of a proposal by pharmaceutical manufacturers Valeant and AstraZeneca for further development of brodalumab. A decision is expected in November.

Anti-IL-17 drugs demonstrate impressive clinical efficacy with durable responses. At 12 weeks, secukinumab achieved PASI 75, 90, and 100 responses seen in 82%, 59%, and 29% of patients. Additionally, this response was sustained up to week 52 with maximal effect seen after week 16. Similarly, ixekizumab demonstrated impressive efficacy outcomes at week 12 with PASI 75, 90, and 100 responses seen in 89%, 71%, and 35% of patients with responses sustained up to week 52. Brodalumab also exhibited similar efficacy at 12 weeks with PASI 75, 90, and 100 responses seen in 86%, 70%, and 44% of patients, with lasting responses sustained up to 144 weeks.

Not only do these therapies work well, but they work quickly. Secukinumab has demonstrated more than twice as fast onset of action as etanercept in achieving a PASI 50 response, with half of patients doing so after just 3 weeks of treatment. Similarly, half of patients on ixekizumab achieved a PASI 75 response by week 4. Impressively, even after just 1 week of treatment with ixekizumab, a significant improvement in mean PASI score could be seen. Similar to other biologic therapies, increases in patient body weight may decrease therapeutic effect, although at high doses of secukinumab (300 mg) and ixekizumab (75 or 150 mg), the effect of patient body weight on efficacy is minimized. The side effect profile of anti-IL-17 therapies is similar to that of TNF-α inhibitors with similar rates of serious infections, although there are a few key differences. IL-17 inhibition is associated with a slightly higher risk of candidal infections, occurring in 5% of patients receiving 300 mg secukinumab. In contrast to TNF-α inhibition, blocking IL-17 may be protective against cancer. No increased risk of heart attacks or malignancies have been seen with IL-17 inhibition. Secukinumab is not effective in treating Crohn’s disease, and some data suggest that secukinumab can trigger flares in patients with pre-existing Crohn’s disease, although there is no evidence to suggest de novo development of Crohn’s disease with secukinumab use. Thus, it is recommended to use caution when prescribing secukinumab to patients with a history of Crohn’s disease.

IL-23-targeted therapies
Also on the horizon is selective inhibition of the IL-23p19 subunit.

IL-23-targeted therapies
Also on the horizon is selective inhibition of the IL-23p19 subunit. Current IL-12/IL-23 antagonists such as ustekinumab primarily achieve their effect through antagonizing IL-23. Thus, agents such as guselkumab and tildrakizumab, which only inhibit IL-23, likely offer more targeted approaches. At week 16, PASI 75 response rates were seen in 80% of patients on guselkumab and 74% of patients on tildrakizumab. The most common side effects seen with these medications are nasopharyngitis and URIs.
An investigational compound BI 655066, which also targets the IL-23p19 subunit, has demonstrated impressive efficacy to date, with PASI 75, 90, and 100 responses over 90%, 80%, and 50% at 36 weeks. This response appears durable; more than 225 days elapsed before PASI 90 response was lost in half of patients. Perhaps even a single dose of BI 655066 can generate a durable clinical response, with 75% of patients enrolled in extended follow-up maintaining a PASI 100 response for up to 66 weeks after a single dose.

Measuring the effect of biologics
Given the improving efficacy of biologic therapies for psoriasis, a highlight of one of the psoriasis sessions was a debate as to whether PASI 75 should remain the standard treatment endpoint for psoriasis biologic therapies, a position advocated by IPC Councilor Dr. Robert Bissonnette, or whether PASI 75 should be replaced by PASI 90, a position advocated by IPC Councilor Dr. David Pariser.

In favor of maintaining PASI 75 as the standard efficacy endpoint, Dr. Bissonnette reasoned that PASI 75 is a good measure of improvement and provides a uniform standard to compare older and newer biologic agents. He argued that clearance is the ultimate treatment goal and best associated with reversal of quality-of-life impairment. Thus, practitioners should aim for PASI 100 responses with treatment while still using PASI 75 responses to compare treatment efficacies.

In contrast, Dr. Pariser maintained that PASI response tracks closely with quality-of-life index measurements, and thus PASI 90 offers meaningful improvements in quality of life over PASI 75. Additionally, examining PASI 90 responses permits differentiation between therapies as PASI 50 responses may be similar for many agents, but differences arise for PASI 90 responses. For example, the newer anti-IL-17 agents clearly exhibit enhanced PASI 90 responses compared to other agents.

Both speakers presented their cases well, as the audience was evenly split between the two positions. Nevertheless, a key takeaway is that biologic therapies for psoriasis are achieving better efficacy endpoint outcomes than ever, irrespective of which efficacy measurements we use, and achieving PASI 100 responses or complete clearance is now a realistic treatment goal for patients and their providers.

A highlight of one of the psoriasis sessions was a debate as to whether PASI 75 should remain the standard treatment endpoint for psoriasis biologic therapies.

Maintaining biologics’ efficacy
Biologic therapies have clearly demonstrated impressive efficacy, but, unfortunately, sometimes therapeutic response is lost. This can be due to reductions in drug levels because of immunogenicity, suboptimal dosing schedule for some patients, poor patient adherence, and altered pathophysiology of the disease due to therapeutic pressure.

Immunogenicity is known to occur in patients treated with biologics, although it is difficult to compare rates of immunogenicity across different biologic drugs due to differences in assays for antibodies. Antibodies can be neutralizing in vitro or non-neutralizing. Neutralizing antibodies to adalimumab are associated with lower drug levels and non-response to treatment, although concomitant methotrexate use at a dose of 10 mg per week can reduce the risk of neutralizing antibody development.

In contrast, because etanercept’s functional domain is similar to the native TNF-receptor, antibodies are non-neutralizing and not associated with treatment non-response. Nevertheless, adding methotrexate to etanercept increases efficacy of etanercept as well, likely for reasons other than immunogenicity.

The BIOBADADERM registry in Spain has examined differences in drug survival rates for biologic therapies. Cyclosporine and acitretin were most likely to be discontinued and lose efficacy overall, while ustekinumab was least likely. Similar data from the global prospective registry PSOLAR also found ustekinumab to have better persistence over time when compared to infliximab, adalimumab, and etanercept. A meta-analysis found that infliximab was more strongly associated with anti-drug antibodies than other TNF-α inhibitors, including adalimumab, certolizumab, golimumab, and etanercept.
Safety of biologics

Infection risk
Registries are providing increasing data on the safety of biologic therapies. PSOLAR is an 8-year global prospective registry with patient enrollment of more than 12,000.\(^8^4\) It found that ustekinumab use was not associated with an increased risk of serious infections, although other biologics were associated with an approximately 2-fold increased risk of serious infections, with infliximab in particular carrying a higher risk. OBSERVE-5 is a 5-year prospective registry of etanercept that enrolled more than 2,500 patients and found that rates of serious infections were similar between patients on etanercept, nonbiologic therapies, and phototherapy.\(^8^5\) ESPRIT is an ongoing 10-year international prospective registry of adalimumab of more than 6,000 patients that found a serious infection rate of one event for every 100 person-years of adalimumab use.\(^8^6\)

The BIOBADADERM registry in Spain has examined differences in drug survival rates for biologic therapies. Cyclosporine and acitretin were most likely to be discontinued and lose efficacy overall, while ustekinumab was least likely.

Similarly, the SABER Collaboration conducted a retrospective cohort study examining TNF-\(\alpha\) inhibitor use across various rheumatologic indications, including psoriasis, spondyloarthropathies, rheumatoid arthritis, and inflammatory bowel disease, and found no significant increased risk of serious infections, although subgroup analysis identified an association with infliximab.\(^8^7\) The anti-IL-17 drug secukinumab appears to exhibit a risk of serious infections similar to TNF-\(\alpha\) inhibitors, but there is a higher risk of candidal infection, seen in approximately 5% of patients.\(^8^8\)

Overall, it appears that clinical studies do not seem to indicate a significant increased risk of infection with the exception of infliximab. Nevertheless, screening for tuberculosis and hepatitis B is indicated prior to starting biologic therapy, and patients should be alert for any infectious symptoms.

Malignancy risk
Additionally, registry data are being examined to identify any associations between biologic therapies and malignancy risk. The PSOLAR registry found no significant increased risk of malignancy among users of ustekinumab or other biologics.\(^8^4\) The OBSERVE-5 registry found no significant increased risk of malignancy, lymphoma, and non-melanoma skin cancer (NMSC) among etanercept users compared to the general population.\(^8^5\) The ESPRIT registry found a rate of malignancy among adalimumab users of one event per 100 person-years, similar to the rate of serious infection.\(^8^6\) The SABER Collaboration also found no increased risk of malignancy among TNF-\(\alpha\) inhibitor users across multiple autoimmune diseases.\(^8^8\)

Similarly, rates of malignancy have been low in patients on IL-17 inhibitors, with an incidence rate of 0.8 per 100 patient-years for secukinumab,\(^8^9\) most of which were non-melanoma skin cancer (NMSC), while no significant increased rate of malignancy was seen with ixekizumab.\(^9^0\) Although the above data do not suggest an increased malignancy risk with biologics, it should be noted that patients with psoriasis or other autoimmune diseases are more likely to develop lymphoma. Patients on biologics, with the exception of anti-IL-17 therapies, should be screened every 6 months for NMSC, and all patients should receive up-to-date screening for internal malignancies by their primary care physicians.

Screening for tuberculosis and hepatitis B is indicated prior to starting biologic therapy, and patients should be alert for any infectious symptoms.

Biosimilars
Biosimilars will likely be available soon in the United States and were frequently discussed at this year’s meeting. Recently, the FDA approved an infliximab biosimilar.
The goal of biosimilars is to reduce treatment costs and improve patient access to biologic therapies, although some questions remain about their clinical use.

(Inflectra) to treat psoriasis, psoriatic arthritis, and other indications. A biosimilar is a biologic that is highly similar to the reference product without any clinically meaningful differences. These products are not true generic drugs because they are slightly different in composition than their reference products due to the complexities of reverse engineering biologic agents. The goal of biosimilars is to reduce treatment costs and improve patient access to biologic therapies, although some questions remain about their clinical use.

Small changes made during the production of biosimilars may cause clinically meaningful differences. For example, types of cell line and growth media can cause changes in glycosylation of proteins, which may affect immunogenicity and medication clearance. Thus, clinical trials of biosimilars will need to demonstrate equivalent efficacy and immunogenicity endpoints, compared to reference products. In addition, there is a question as to whether interchangeability will be granted; ie, could biologic substitution occur without prescriber knowledge.

A poll of the session’s attendees revealed that two-thirds would prescribe a biosimilar. Half of the audience had efficacy concerns regarding the use of biosimilars, while 80% had safety concerns. The field of biosimilars is clearly an evolving one, as are provider attitudes toward these novel therapies.

Special sites
Psoriasis can be difficult to treat in specialized sites, such as the nails, scalp, palms and soles. Topical therapies are first-line therapies, but biologic drugs may be used in difficult to treat or more severe cases. Evidence-based guidelines provide strong evidence for the use of infliximab, etanercept, and adalimumab in nail, scalp, and palmoplantar psoriasis. Ustekinumab was recommended for nail psoriasis, and as more data are collected, newer generation biologics will likely obtain additional evidence to support their use for specialized sites. Complete resolution of a case of palmoplantar psoriasis has been reported with ustekinumab. Secukinumab has also demonstrated promising results for palmoplantar psoriasis, with one-third of patients achieving clear or almost clear at week 16. There is also evidence supporting the use of secukinumab for treating nail disease.

Pediatric psoriasis
More severe cases of pediatric psoriasis often require systemic therapies. Methotrexate remains the most commonly used systemic medication for pediatric psoriasis followed by biologic drugs, including etanercept, adalimumab, and ustekinumab. Recent data found that adalimumab dosed at 0.8 mg/kg every other week demonstrated a PASI 75 response of 58%, compared to 32% with methotrexate. The safety profile of adalimumab in this study was similar to that of methotrexate. Some recent data suggest the efficacy and safety of ustekinumab for pediatric psoriasis. At week 12, 81% of patients achieved a PASI 75 while 61% achieved a PASI 90. There were no unexpected adverse events.

As biologic therapies are increasingly used to treat severe pediatric psoriasis, more data are being acquired on long-term efficacy and safety in this population. There are long-term safety and efficacy data on the use of etanercept for psoriasis in children and adolescents for up to 264 weeks of treatment, with sustained PASI 75 and 90 responses seen in 60-70% and 30-40% of patients, respectively. Nearly 90% of patients experienced an adverse effect, most commonly URI, nasopharyngitis, and headache. There was only one treatment-related serious adverse effect, an episode of cellulitis. There were no reported opportunistic infections or malignancies, although more extensive long-term follow-up is needed.

Summary
The main points of discussion related to psoriasis at the 74th annual AAD meeting included established and emerging comorbidities, newly developed oral medications and biologics, and the future use of biosimilars for the treatment of psoriatic disease. Future research will
continue to explore the effect of psoriasis therapy on comorbidities, the use of pharmacogenetics to predict phenotype and treatment response, long-term efficacy and safety data for existing medications, novel targeted therapies, and establishing the equivalency and safety of biosimilars.

References
2. Liao W. Updates in genetics. Psoriasis: Updates in Biologic Therapy, Comorbidities, Genetics, and Biosimilars. Forum at the 74th Annual Meeting of the American Academy of Dermatology; 2016 Mar 5; Washington, DC.
A REPORT FROM THE 74TH ANNUAL MEETING OF THE AMERICAN ACADEMY OF DERMATOLOGY


32. Mehta N. Comorbidities in Psoriasis: What a Dermatologist Needs to Know. Focus group at the 74th Annual Meeting of the American Academy of Dermatology; 2016 Mar 4; Washington, DC.


38. Wu J. Updates in comorbidities. Psoriasis: Updates in Biologic Therapy, Comorbidities, Genetics, and Biosimilars. Forum at the 74th Annual Meeting of the American Academy of Dermatology; 2016 Mar 5; Washington, DC.


A REPORT FROM THE 74TH ANNUAL MEETING OF THE AMERICAN ACADEMY OF DERMATOLOGY


69. Gordon KB. Ixekizumab For Treatment Of Moderate-To-Severe Plaque Psoriasis: 60-Week Results From A Double-Blind Phase 3 Induction And Randomized Withdrawal Study (UNCOVER-1). Symposium session at the 73rd Annual Meeting of the American Academy of Dermatology; 2015 Mar 20; San Francisco, CA.


77. Papp K. Onset and duration of clinical response following treatment with a selective IL-23p19 inhibitor (BI 655066) compared with ustekinumab in patients with moderate-to-severe chronic plaque psoriasis. Presentation at the 24th European Academy of Dermatology and Venereology Congress; 2015 Oct 7-11; Copenhagen, Denmark.


81. Davila Seijo P. Differences in Drug Survival Rates for Biologic Agents in Moderate-Severe Psoriasis Patients. Results From the BIOBADADERM Registry. Poster presentation at the 23rd European Academy of Dermatology and Venereology Congress; 2014 Oct 8-12; Amsterdam, Netherlands.

82. Menter A. Persistence of Biologic Therapy in the Psoriasis Longitudinal Assessment and Registry. Poster presentation at the 23rd European Academy of Dermatology and Venereology Congress; 2014 Oct 8-12; Amsterdam, Netherlands.


89. Mease PJ. Secukinumab safety and tolerability in patients with active psoriatic arthritis and psoriasis: results from a pooled safety analysis. Poster presentation at the American College of Rheumatology Meeting; 2015 Nov 10; San Francisco, CA.

90. Strober B. Safety and tolerability of ixekizumab: analysis of malignancies in 7 clinical studies of moderate-to-severe plaque psoriasis. Presentation at the 24th European Academy of Dermatology and Venereology Congress; 2015 Oct 8; Copenhagen, Denmark.


96. Papp K. Efficacy and Safety of Adalimumab versus Methotrexate Treatment in Pediatric Patients with Severe Chronic Plaque Psoriasis: Results from the 16-Week Randomized, Double-Blind Period of a Phase 3 Study. Presentation at the 23rd World Congress of Dermatology; 2015 June 9; Vancouver, Canada.


Psoriasis experts from around the world attended the IPC’s Hot Topics symposium, titled “The Changing Landscape of Global Psoriasis Management,” at the 74th annual meeting of the American Academy of Dermatology in March. They discussed topics that included the utility of patient-reported outcomes in clinical practice, comorbidities associated with psoriasis, the use of combination therapies to treat psoriatic disease, and the challenges of treating psoriasis in Latin America and the Middle East. Presented here are summaries of the key issues discussed.

Patient-reported outcomes: utility in clinical practice

Various outcome measures are used in both research and clinical practice to evaluate the effect of psoriasis therapies on disease severity and quality of life. Studies using generic patient-reported outcome measures such as the EuroQol five dimensions questionnaire (EQ-5D) and the Short Form (36) health survey (SF-36) have revealed that psoriasis has a profound impact on quality of life, comparable to that of depression, diabetes, chronic lung disease, heart disease, kidney failure, liver disease, arthritis, and cancer.1,2

Furthermore, while the Psoriasis Area and Severity Index (PASI) and Physician Global Assessment (PGA) are well-established, objective measures of disease severity, they do not capture the patient experience. For example, a commonly used endpoint in clinical trials is a PGA of ≤1, representing clear or almost clear skin. Patients with clear skin, however, are significantly less likely to report a negative impact on quality of life than patients with almost clear skin.3 This suggests the need for psoriasis-specific patient-reported outcome measures looking at symptoms, behaviors, comorbidities, and impact on emotional well-being, social relationships, and occupational status. In the future, developments in health information technology will allow patients to submit this information electronically, making it easier to incorporate these measures into clinical practice.4

Psoriasis comorbidities

Psoriasis is a systemic disease with a growing list of established comorbidities, including psoriatic arthritis, obesity, metabolic syndrome, non-alcoholic steatohepatitis, autoimmune diseases, psychiatric conditions, sleep apnea, chronic obstructive pulmonary disease, renal insufficiency, certain types of cancer, and cardiovascular disease.5 Psoriatic arthritis tends to present 5-10 years after the onset of psoriasis, so dermatologists are often the first line of contact and should screen patients for joint pain and stiffness, synovitis, dactylitis, and enthesitis at every visit. Patients with psoriatic arthritis should be treated aggressively to prevent permanent joint damage, and ongoing collaboration with rheumatologists is critical.6

Patients with moderate to severe psoriasis are also at an increased risk of cardiovascular disease and early mortality. Psoriatic disease has been posited as an independent cardiovascular risk factor due to systemic inflammation, but patients also have a higher prevalence of obesity, diabetes, hypertension, hypercholesterolemia, and tobacco use.6 These conditions are underdiagnosed and undertreated in this patient population, so it is important to ensure that they undergo regular screening, are encouraged to make healthy lifestyle changes, and are treated appropriately for their modifiable risk factors.6 In addition, treating their psoriasis with methotrexate or biologics has also been shown to decrease the risk of major cardiovascular events.7

Combination therapies

Many patients with psoriasis require combination therapy, particularly those who have failed monotherapy or have persistent psoriatic arthritis symptoms despite improvement in their skin disease. Combinations are also used to allow for dose sparing and in an effort to prevent...
Considering the widespread use of combination therapy, research on the efficacy and safety of specific combinations is lacking and is mostly limited to small observational studies and patient registries.

Antibody formation against biologics. Patient registries have revealed that more than 20% of patients are on more than one medication and approximately 25% of patients on biologics are also on methotrexate. Considering the widespread use of combination therapy, research on the efficacy and safety of specific combinations is lacking and is mostly limited to small observational studies and patient registries.

The Goeckerman regimen, which combines topical tar and broad-band UVB therapy, as well as the Ingram regimen, which combines topical dithranol, tar baths, and broad-band UVB therapy, both have 95% clearance rates but require inpatient admission. Phototherapy, including narrow-band UVB and PUVA (UVA treatment plus the light-sensitizing drug psoralen), has also been used successfully in combination with both acitretin and methotrexate.

Combining multiple non-biologic systemic therapies is no longer a common practice, and is not thought to be necessary in the age of biologics. In a small study of 19 patients with psoriasis, a combination of cyclosporine and methotrexate was effective and allowed for dose sparing of both agents; however, this regimen is not recommended long term due to the potential for renal toxicity. The combination of cyclosporine and acitretin has not been studied; however evidence-based treatment guidelines state there is likely no benefit and an increased risk of dyslipidemia. Apremilast, an oral phosphodiesterase 4 (PDE4) inhibitor, has been studied in combination with phototherapy, methotrexate, acitretin, cyclosporine, TNF-α inhibitors, and ustekinumab; 17% of patients discontinued therapy early due to GI side effects; however, 81% of those remaining achieved PASI 75.

On the other hand, biologics are frequently used in combination with other therapies. Etanercept has been used successfully in combination with NB-UVB, acitretin, and methotrexate. Adalimumab has also been studied in combination with phototherapy with good results. Short-term cyclosporine has been used with both etanercept and adalimumab as a bridge to more preferred modalities. Infliximab has only been studied in combination with methotrexate, with a 6% increase in the PASI 75 rate in patients with psoriatic arthritis. Interestingly, registry data suggest that concomitant methotrexate does not increase the duration of treatment with etanercept, adalimumab, or infliximab.
Furthermore, a small study revealed a significant and faster decrease in PASI with a combination of ustekinumab and narrow-band UVB as compared to ustekinumab alone. Use of multiple biologics simultaneously is not a common practice, and data is limited to case reports.

**Psoriasis management in Latin America, Middle East**

Major challenges of psoriasis management in Latin America include a low ratio of dermatologists to patients and the risk of infectious complications with biologic therapy, particularly reactivation of tuberculosis. According to the Brazilian Rheumatology Registry of Biologics (BIOBADA), the incidence of tuberculosis in patients treated with TNF-α inhibitors is approximately 286 per 100,000 patients/year, whereas the incidence in the general population is only 37.2 per 100,000 patients/year. These findings from Latin America provide evidence for the importance of and requirement for comprehensive tuberculosis screening for all patients prior to starting a biologic.

In the Middle East, major challenges include limited access to dermatologic care, lack of psoriasis research, socioeconomic hardship, and difficulty obtaining newer medications. There is often a delay in the diagnosis of psoriasis, resulting in many patients with severe, recalcitrant disease and multiple comorbidities. Of particular concern is the high rate of hepatitis C infection, which greatly limits treatment options if left untreated.

The utilization of pharmacogenetics will allow for personalized, targeted therapies, and patients will be encouraged to participate in their care through health information technology and social networking.

**The future of psoriasis management**

In the future, the management of psoriasis will revolve around 4 P’s: prediction, prevention, personalization, and participation. The first goal is to predict which individuals are most likely to develop psoriasis, and those patients at greatest risk of developing comorbidities. The next goal is prevention of severe disease and comorbidities, such as cardiovascular disease, with early intervention. Furthermore, the utilization of pharmacogenetics will allow for personalized, targeted therapies, and patients will be encouraged to participate in their care through health information technology and social networking. This approach will require extensive further research and an ongoing collaboration between physicians, patients, and industry, but ultimately will result in improved outcomes and more efficient, cost-effective care.

**References**

5. Menter A. Co-morbidities in psoriasis with special emphasis to joint and cardiovascular issues. IPC presents: Hot Topics in Psoriasis. Symposium session at the 74th Annual Meeting of the American Academy of Dermatology’s International Day; 2016 Mar 3; Washington, DC.
8. Kirby B. Combination therapy for moderate to severe psoriasis. IPC presents: Hot Topics in Psoriasis. Symposium session at the 74th Annual Meeting of the American Academy of Dermatology’s International Day; 2016 Mar 3; Washington, DC.


Milestone WHO report raises awareness of psoriasis as a serious global disease

The worldwide psoriasis community celebrated a major achievement in February when the World Health Organization issued its comprehensive, 44-page “WHO Global Report on Psoriasis,” which details the global burden of the disease, and recommends ways to improve access to health care and address the disease’s social consequences.

The report is a response to a 2014 resolution made by the World Health Assembly, an arm of the WHO, recognizing psoriasis as a serious, noncommunicable disease that deserves global attention.

The report “intends to empower policymakers with practical solutions to improve the health care and social inclusion of people living with psoriasis in their populations,” wrote Dr. Oleg Chestnov, WHO assistant director-general, noncommunicable diseases and mental health, in the report’s foreword.

The report describes the disease’s numerous consequences, including significant comorbidities, stigmatization, and the often-debilitating effects on quality of life.

It also makes recommendations for what governments, policymakers, health care professionals, researchers, patients themselves, and society in general can do to improve access to care and quality of life.

Among the report’s key findings:
- The prevalence of psoriasis in countries ranges between 0.09% and 11.4%, making it a serious global problem.
- People with psoriasis suffer needlessly due to incorrect or delayed diagnosis, inadequate treatment options, and insufficient access to care.

Among the report’s recommendations:
- Governments and policymakers can support research and development of medicines for noncommunicable diseases, including psoriasis, that primarily affect low- and middle-income countries. They can also provide access to medicines for all.
- Health systems must adopt a patient-centered approach to care, including other issues related to their health and well-being.
- Health care organizations must increase the skills and capacity of primary healthcare providers for psoriasis diagnosis, treatment, and management.
- Research is needed in many areas, including the etiology of the disease, therapies to prevent and manage symptoms, new and affordable treatments that can be available globally, the association between psoriasis and cardiovascular disorders, and more reliable outcomes.


WHO report bolsters Psoriasis Global Atlas project

IPC President Professor Chris Griffiths says the “WHO 2016 Global Psoriasis Report” supports the need for the Psoriasis Global Atlas project, which the IPC has formed with the International Federation of Psoriasis Associations (IFPA) and the International League of Dermatological Societies (ILDS) to establish a reliable database documenting the burden of the disease worldwide and by country.

IFPA President Lars Ettarp says the report is “an urgent call to action for the international psoriasis community.” Griffiths agrees and says it will reinforce the goals of the global atlas to build an evidence base that can be used to advocate for improved treatment and access to care, collect data and research that could lead to better use of resources, and enable benchmarking within and between countries by collecting consistent and comparable local and regional evidence.

IPC councilors who provided helpful comments, and technical review were Matthias Augustin, Ulrich Mrowietz, Wolf-Henning Boehncke, Mahira Hamdy El Sayed, Peter van de Kerkhof, Mark Lebwohl, Alan Menter, Jörg Prinz, Lone Skov, and Mona Stahle.
Psoriasis and Atopic Dermatitis: Two Diseases or One Spectrum?

This interactive discussion will explore epidemiological and clinical similarities for both conditions, new targeted therapies, and the need to better subclassify based on underlying immunophenotype.

Wednesday, September 28, 2016
9:00 a.m. - 1:00 p.m.

25th Congress of the European Academy of Dermatology & Venereology
Vienna, Austria

Program Chairs
Chris Griffiths, MD
University of Manchester
Amy Paller, MD
Northwestern University
Feinberg School of Medicine
Emma Guttman, MD, PhD
Icahn School of Medicine at Mount Sinai

To learn more about these programs and pre-register, visit www.psoriasiscouncil.org/events.htm
PATIENT CARE

Biosimilars Working Group
Arnon Cohen, Israel, and Jashin Wu, United States, were named the new co-chairs of the IPC Biosimilars Working Group during a meeting of the group at the American Academy of Dermatology annual meeting in March. They replaced Dr. Andrew Blauvelt, United States, who has served as the group’s chair since 2014. At the March meeting, Blauvelt reported on two manuscripts produced by the working group: a pre-clinical analytics manuscript published in the British Journal of Dermatology and a manuscript about clinical trial design that is under review by the same journal. A third manuscript on clinical practice is being readied for submission this year. A fourth manuscript analyzing biosimilars-related public health issues, including the impact pricing has on patient access, is also planned for production later this year. The IPC thanks AbbVie, Amgen, and Sandoz for sponsoring this working group in 2016. For more information about this group and its projects visit http://www.psoriasiscouncil.org/bioswg.htm.

Latin America Working Group launches
IPC’s newly formed Latin America Working Group met for the first time in June during the Reunión Anual de Dermatólogos Latinoamericanos (RADLA) in São Paulo, Brazil. This working group is co-chaired by IPC Board Member Ricardo Romiti, Brazil, and IPC Councilor Claudia de la Cruz, Chile. Members discussed a manuscript in development, “Biosimilars in Psoriasis: Clinical Practice and Regulatory Perspectives in Latin America,” Claudia de la Cruz, André Vicente Esteves de Carvalho, Angela Maria Londoño García, et al. The paper resulted from an IPC Hot Topics Roundtable meeting on biosimilars in Latin America held last October during the European Academy

Topical Therapies Working Group
At a meeting of this group during the March AAD annual meeting, Chair Lars Iversen, Denmark, introduced two new co-chairs, Vermén Verallo-Rowell, Philippines, and Charles Lynde, Canada. The group discussed a number of topics, including updates on a topical usage survey, a review of international guidelines, and the IPC-produced key-research-needs manuscript recently accepted for publication in the Journal of the European Academy of Dermatology and Venereology. They also discussed how the IPC can best lend its expertise to the knowledge and use of topical treatments, and generated a list of potential projects that included, among others, a survey of topical use in third-world countries, a meta-analysis of topical usage in sensitive areas, and topical use in pediatrics. The IPC thanks Leo Pharma for its support of this working group for 2016. For more information about this group and its work, visit http://www.psoriasiscouncil.org/ttwg.htm.
of Dermatology and Venereology Congress. Other topics included the development of future educational programs in the region and a Latin American psoriasis registry.

Systemic Therapies Working Group
Optimizing the global use of systemic therapies to treat psoriasis is the focus of IPC's Systemic Therapies Working Group, which the IPC has relaunched to better understand and promote the use of systemics. Many patients with psoriasis are either untreated or undertreated while living with the physical, psychological, and emotional impact of their disease. The working group will use members’ experiences to find ways to address these impacts. The group’s aims include discussing controversial topics, challenging existing opinions, identifying gaps in knowledge, and contributing evidence-based solutions regarding the global use of systemic therapies. The first topic the group will address is “Treating the Moderate Patient.” IPC appreciates the sponsorship for this working group in 2016 provided by AbbVie and Janssen.

RESEARCH

IPC papers appear in prestigious publications
• This manuscript, titled “European S3-Guidelines on the systemic treatment of psoriasis vulgaris - Update 2015 - Short version - EDF in cooperation with EADV and IPC,” by Nast A, Gisondi P, Ormerod, AD, et al, appeared in the December 2015 issue of the Journal of the European Academy of Dermatology and Venereology. It was first published online Oct. 15, 2015. For this paper, the IPC teamed with the European Dermatology Forum and the European Academy of Dermatology and Venereology to provide a comprehensive overview of treatment guidelines and goals.

• Getting under the skin: Report from the International Psoriasis Council workshop on the role of stress in psoriasis, Julia Schwartz, Andrea W.M. Evers, Christine Bundy, Alexandra B. Kimball, appeared in the Feb. 2, 2016, issue of Frontiers in Psychology. The article highlights the roles of stress and distress in psoriasis, and identifies gaps in research and treatment strategies for patients with the disease.

• Biosimilars for psoriasis: pre-clinical analytic assessment to determine similarity, Blauvelt A, Cohen AD, Puig L, Vender R, van der Walt J, Wu JJ, appeared in the February 2016 issue of the British Journal of Dermatology, first published online Dec. 30, 2015. It discusses the science behind the preclinical development of biosimilars. It also suggests ways to make sure that future biosimilars are produced in a high-quality and standardized manner in order to maintain safety and efficacy.

• Identification of key research needs for topical therapy treatment of psoriasis - a consensus paper by the International Psoriasis Council, Wu JJ, Lynde CW, Kleyn CE, was published online March 10, 2016, by the Journal of the European Academy of Dermatology and Venereology before inclusion in a future issue. In the article, members of IPC’s Topical Therapy Working Group present the results of their analysis of knowledge gaps in topical therapy for psoriasis with regard to safety and efficacy, as well as various combination therapies. The goal of the paper is to help direct future research in this therapeutic area.

Abstracts for each of these articles are available at http://www.psoriasiscouncil.org/ipcpubs.htm

IPC abstracts presented at 3 global conferences
• The abstract of a paper titled “Use of systemic agents in pediatric psoriasis: characteristics, comorbidities, and reported adverse events in 446 patients,” was presented at the annual meeting of the Society for Investigative Dermatology (SID) on Thursday, May 12, in Scottsdale, Arizona, and also at the 13th annual European Society for Pediatric Dermatology (ESPD) meeting in Paris on Thursday, May 26. The paper was written by Inge MGJ Bronckers and M.M.B. Seyger of Radboud University Medical Center, the Netherlands, and Dennis P. West, of Northwestern University, United States, et al.

The paper is a retrospective analysis of comorbidities and various systemic agents in the pediatric population. IPC Councilor Dr. Amy Paller, also of Northwestern University, presented the abstract at the SID meeting. Dr. Bronckers, who presented the abstract at the ESPD meeting, performed the major part of the study under
advancing knowledge | enhancing care

the supervision of Dr. Paller and Dr. Seyger, also an IPC Councilor, and Professor West. The paper was sponsored by the IPC, the Pediatric Dermatology Research Alliance, and the Society for Pediatric Dermatology.

• The abstract of a paper titled “Biosimilars in psoriasis: clinical practice and regulatory perspectives in Latin America,” was presented at the 5th Congress of the Psoriasis International Network in Paris July 7-9. It was written by Claudia de la Cruz, Clínica DermaCross, Santiago, Chile; André Vicente Esteves de Carvalho, Santa Casa de Misericórdia de Porto Alegre, Brazil; Angela Maria Londoño García, CES University, Medellin, Colombia, et al. This paper explores the complexities of the current regulatory landscape and key therapeutic issues for use of biosimilars to treat psoriasis in Latin America.

EDUCATION AND OUTREACH

IPC launches Global Medical Education Interest Survey

IPC recently launched a worldwide survey aimed at dermatologists who treat psoriasis. The short survey intends to identify current knowledge gaps, educational needs, interests, and preferred learning formats of individuals treating psoriasis around the world. The results of the survey will be used to create educational materials and resources with the most up-to-date information on psoriasis and in a variety of formats to accommodate various learning styles. You can participate in this short survey today at www.psoriasiscouncil.org/edsurvey.htm or by scanning the QR code on the right.

IPC symposium focuses on psoriasis advances

In early May, the IPC sponsored an exciting and informative symposium titled “Psoriasis - the way forward: Novel clinical and pathogenic insights” at the Society of Investigative Dermatology (SID) Annual Meeting in Scottsdale, Arizona. The symposium explored psoriasis advances on both the clinical and fine molecular levels. Speakers presented new data on major drivers of inflammation in pustular and plaque psoriasis examined through state-of-the-art technologies. Another discussion topic was the impact of systemic psoriasis agents on cardiovascular comorbidities at the protein level. The session also included a retrospective discussion of the treatment of pediatric psoriasis, as well as characteristics, comorbidities, and adverse events that have been reported through an international registry. Chairing the symposium was Dr. Johann Gudjonsson, University of Michigan, Ann Arbor. Presenters were Drs. Amy Paller, Northwestern University, Chicago; James Kruger, Rockefeller University, New York City; Rachel Clarke, Harvard Medical School, Boston; J.T. Elder and Andrew Johnston, University of Michigan.

Among IPC councilors who gathered for IPC’s June 4 Hot Topics in Psoriasis: Latin America symposium in São Paulo, Brazil, were, left to right, Fernando Stengel, Argentina; André Vicente Esteves de Carvalho, Brazil; Fernando Valenzuela, Chile; Ricardo Romiti and Marcelo Arnone, Brazil.

Hot Topics in Psoriasis: Latin America

IPC councilors and regional experts led a dynamic and informative discussion of biosimilar drugs and the current understanding of psoriasis at an IPC-sponsored Hot Topics symposium held June 4 as part of the 34th Reunión Anual de Dermatólogos Latinoamericanos (RADLA) in São Paulo, Brazil. Other topics discussed were localized psoriasis and moderate to severe psoriasis, as well as various case studies. Co-chairing the event were Ricardo Romiti, São Paulo, and Claudia de la Cruz, Santiago, Chile. Faculty were Fernando Valenzuela, Santiago, Chile; Marcelo Arnone and Andrés Luis S. Hirayama, São Paulo; Angela Londoño, Medellin, Colombia; Edgardo Chouela, Fernando Stengel, and and Matías Maskin, Buenos Aires, Argentina; César Gonzalez, Bogotá, Colombia; and André Vicente Esteves de Carvalho, Porto Alegre, Brazil.
Psoriasis Review in Amsterdam & Dubai
Copies of the IPC Psoriasis Review newsletters were made available to attendees of Psoriasis Academy conferences held in Amsterdam, the Netherlands, and Dubai, United Arab Emirates, last winter. The newsletters provided “excellent insights into what is happening in the field of therapy,” said a representative of the pharmaceutical company Leo Pharma, which sponsored the conferences.

If you know of any organizations that would be interested in distributing the IPC Psoriasis Review to their members, contact the IPC at info@psoriasiscouncil.org.

IPC’s Meet the Experts programs

Singapore
In April, IPC councilors and staff traveled to Singapore for a Meet the Experts (MTE) panel discussion that addressed challenging cases in psoriasis. The session was part of the 22nd Regional Conference of Dermatology, the biennial official congress of the League of ASEAN Dermatological Societies (LADS), which comprises the dermatological societies of Singapore, Malaysia, Indonesia, Thailand, the Philippines, and Vietnam. Faculty for the MTE meeting were IPC President Chris Griffiths, United Kingdom, Councilors Colin Theng and Wei-Sheng Chong, Singapore, and Vermén Verallo-Rowell, the Philippines. This was IPC’s first trip to Singapore and marked the beginning of the IPC’s aim to expand efforts and sponsor more programs in Asia.

Birmingham, United Kingdom
In July, as part of the 96th Annual Meeting of the British Association of Dermatologists in Birmingham, United Kingdom, the IPC sponsored a Meet the Experts interactive discussion of challenging psoriasis cases and treatment strategies. Topics included “Expect the Unexpected,” “Poor Response to Multiple Biologics,” “Serious Infection Whilst on Biological Therapy: Acute and Subsequent Management,” and “Increasing Patient Adherence in Psoriasis Management.”

Moderated by IPC President Professor Chris Griffiths, Manchester, the meeting also featured panelists Richard Warren and Chris Bundy, University of Manchester; Catherine Smith, King’s College, London; and Nick Reynolds, Newcastle University, Newcastle upon Tyne.

NEWSMAKERS
Congratulations to IPC Councilor Nicole Ward, PhD, who delivered the renowned Eugene M. Farber endowment lecture at the Society of Investigative Dermatology’s annual meeting in Scottsdale, Ariz., in May. Her lecture, titled “Modelling Mayhem: What Transgenic Mice Can Teach Us About Psoriasis Pathogenesis,” described her discovery of the KC-Tie2 mouse model and current investigations into the role of the nervous system in psoriasis pathogenesis. Ward, an associate dermatology professor at Case Western Reserve University in Cleveland, Ohio, has a background in neuroscience, which she has integrated with her research into psoriasis pathogenesis. Her findings that KC-Tie2 mice can be used as psoriasis models were published in the journal Molecular & Cellular Proteomics. The Farber endowment lecture, presented annually at the SID annual meeting, is named for dermatologist Eugene M. Farber (1917-2000), who devoted much of his career to psoriasis research. The honor of delivering the lecture usually is awarded to a speaker whose work advances the science of psoriasis.
IPC NEWS

IPC Councilor Ron Vender MD, FRCP of Canada, a member of IPC’s Biosimilars Working Group, was interviewed for an article in the February 2016 issue of The Chronicle of Skin & Allergy, which discussed IPC’s recommendation that minimum standards are needed to compare biosimilar drugs to their original counterparts. The Chronicle article followed the publication of an IPC-produced paper, “Biosimilars for Psoriasis: Pre-Clinical Analytical Assessment to Determine Similarity,” in the Nov. 1, 2015, issue of the British Journal of Dermatology. Vender cautioned dermatologists to remember that these (similar biologics) are not the same as the original biologics. “Rely upon pre-clinical analytical studies to define similarity between biosimilars and an originator biologic,” he said.

NEW IPC COUNCILOR

Nawaf B.S.N. Al-Mutairi
Farwaniya, Kuwait

Professor Al-Mutairi is a member of the Faculty of Medicine at Kuwait University and chairman of the Dermatology Council of Kuwait. He belongs to several professional organizations including the Pan-Arab Dermatology Society, GCC Dermatology Association, the International Society of Dermatology, and the American Academy of Dermatology. He has published more than 30 research papers, nearly 2 dozen refereed case reports, nearly 20 articles in local and regional journals, and a chapter addressing skin infections in diabetes for the textbook “Skin Infections: Diagnosis and Treatment” (Cambridge University Press, 2009). This year, he co-edited “Practical Pediatric Dermatology: Controversies in Diagnosis and Treatment” (Springer International Publishing, Switzerland, 2016), focusing on key controversies in pediatric dermatology and describing evidence-based approaches to diagnosis and treatment.

UPCOMING EVENTS

IPC satellite symposium: P4 medicine

P4 medicine, a cross-disciplinary, personalized system of healthcare that could revolutionize medicine, will be the focus of an engaging and instructive IPC satellite symposium scheduled for Wednesday, Sept. 7, during the European Society for Dermatological Research (ESDR) conference in Munich, Germany. P4 medicine (predictive, personalized, preventive, participatory) focuses on the individual patient, emphasizing wellness over disease. The IPC symposium will discuss opportunities and challenges of P4 medicine in psoriasis treatment. Topics will include predicting disease progression, preventing comorbidities, psoriasis stratification to optimize therapy, industry perspective of P4 medicine, and P4 medicine in autoimmune and inflammatory diseases. Co-chairs for the session will be IPC President Professor Chris Griffiths, University of Manchester, and IPC Councilor Professor Catherine Smith, King’s College, London. For more information, visit http://www.psoriasiscouncil.org/P4_esdr.htm.

Psoriasis and atopic dermatitis

The IPC and the International Eczema Council (IEC) will jointly sponsor a symposium, titled “Psoriasis and atopic dermatitis: Two diseases or one spectrum?” Wednesday, Sept. 28, during the European Academy of Dermatology and Venereology (EADV) meeting in Vienna, Austria. The symposium will explore epidemiological and clinical similarities between psoriasis and atopic dermatitis, as well as targeted therapies for both conditions. IPC President Professor Chris Griffiths will provide the session’s overview and IEC board members Dr. Amy Paller, United States, who also is an IPC councilor, and Dr. Emma Guttman will serve as co-chairs. Visit http://www.psoriasiscouncil.org/IPC_IEC.htm for more information.

Newport Beach, California, USA

The neurological effects of biologics and biologics for pediatric psoriasis are among the topics that will be discussed at a Meet the Experts program scheduled for Saturday, Aug. 13, in Newport Beach. The meeting will be held during the 68th Annual Meeting of the Pacific Dermatologic Association. Cases to be discussed will include: “When your biologic of 5 years stops working”
and “30-year-old female with palmo-plantar pustular psoriasis.” Jashin J. Wu, Los Angeles, will moderate the discussion. Panelists will be Kristina Callis Duffin, Salt Lake City, Utah; Paul S. Yamauchi, Santa Monica, California; and Kelly M. Cordoro, San Francisco, California. The program is open to all congress attendees. For more information, visit http://www.psoriasiscouncil.org/pda_mte.htm

**Buenos Aires, Argentina**
Psoriasis experts from Argentina, Mexico, Chile, and Brazil will lead a discussion of challenging case studies at IPC’s Meet the Experts program scheduled for Thursday, Oct. 25, in Buenos Aires. The meeting will be part of the Congreso Ibero-Latinoamericano de Dermatología (CILAD) taking place Oct. 25-29. Session topics will include “Long-term psoriasis in real life,” “Alcoholism and biologic treatments,” “Tuberculosis and biologic therapy in 2016,” and “Infliximab: Prolonged treatment.” IPC President Chris Griffiths, Manchester, United Kingdom, will moderate the discussion. Panelists will be Edgardo Chouela and Fernando Stengel, Buenos Aires; Nancy Podoswa, Mexico City, Mexico; Claudia de la Cruz, Santiago, Chile; and Ricardo Romiti, São Paulo, Brazil. For more information, visit http://www.psoriasiscouncil.org/CILAD_mte.htm.

**MANY THANKS AND OUR DEEP APPRECIATION**

to IPC’s Board of Directors and our IPC Councilors from around the world. These individuals serve the organization by volunteering their time and exceptional expertise to further the IPC mission of advancing knowledge and enhancing care. We are extremely grateful for their energy, insights, and commitment to our many projects and programs.

IPC board members, left to right, front row: Craig Leonardi, Alexa B. Kimball, Christy Langan, Chris Griffiths. Back row: Bruce Strober, Peter van de Kerkhof, Hervé Bachelez, Ricardo Romiti, Alan Menter, Jonathan Barker. Not pictured, Bob Holland III.

**ACKNOWLEDGMENTS**

IPC gratefully acknowledges Co-Editors Dr. Andrew Johnston of the University of Michigan, United States, and Dr. Helen Young of the University of Manchester, United Kingdom, for their writing and editing contributions to the July 2016 **IPC Psoriasis Review** newsletter.
RESOURCES
The International Psoriasis Council is pleased to bring you the following educational opportunities and resources to advance your knowledge of treating patients with psoriasis.

UPCOMING IPC EVENTS
August 13, 2016
IPC’s Meet the Experts
68th Annual Meeting of the Pacific Dermatologic Association
Newport Beach, California, USA

September 7, 2016
IPC Scientific Symposium: P4 Medicine: Opportunities and Challenges in Psoriasis Treatment
46th Annual Meeting of the European Society for Dermatological Research
Munich, Germany

September 28, 2016
IPC & International Eczema Council joint symposium: Psoriasis and Atopic Dermatitis: Two Diseases or One Spectrum?
25th European Academy of Dermatology and Venereology Congress
Vienna, Austria

October 25, 2016
IPC’s Meet the Experts
XIX Congreso Ibero-Latinoamericano de Dermatologia (CILAD)
Buenos Aires, Argentina

IPC’S ONLINE RESOURCES
Challenging Cases Webcasts
Recorded over the years at our Meet the Experts Programs around the world, these challenging cases are now listed online by topic:
- Psoriasis and pregnancy
- Palmoplantar psoriasis
- Psoriasis and Hodgkin’s disease
- Juvenile psoriasis
- Many more
www.psoriasiscouncil.org/education/webcasts_date.htm

2016 CORPORATE MEMBERS

President’s Council
AbbVie
Amgen
Janssen Biotech Inc.

Executive’s Council
Eli Lilly and Company
Novartis Pharmaceuticals Corporation

Director’s Council
Celgene Corporation
LEO Pharma
Sandoz Biopharmaceuticals
SunPharma

Corporate Members provide unrestricted funds to support the overall mission of the IPC.

Scan this code with your smartphone to connect to the IPC Psoriasis Review online.
No smartphone? Visit www.psoriasiscouncil.org/psoriasisreview.htm

Advancing Knowledge | Enhancing Care
The International Psoriasis Council (IPC) is a dermatology-led, voluntary, global nonprofit organization dedicated to innovation across the full spectrum of psoriasis through research, education and patient care. IPC’s mission is to empower our network of global key opinion leaders to advance the knowledge of psoriasis and its associated comorbidities, enhancing the care of patients worldwide.