ASLAN A⁴ Series: Aspects of Atopic Dermatitis and ASLAN004 with Dr Peter Lio

22 June 2022

NASDAQ: ASLN



Aspects of Atopic Dermatitis and ASLAN004 (eblasakimab)

- Company introduction and eblasakimab
- Atopic Dermatitis: patient journeys and unmet needs
- Fireside Chat
- Q&A
- Close

Dr Carl Firth

Dr Peter Lio

Dr Lio & Dr Veverka



Introduction

Dr Carl Firth CEO



Legal disclaimer

This presentation contains forward-looking statements. These statements are based on the current beliefs and expectations of the management of ASLAN Pharmaceuticals Limited (the "Company"). These forward-looking statements may include, but are not limited to, statements regarding the Company's business strategy, the Company's plans to develop and commercialize its product candidates, the safety and efficacy of the Company's product candidates, including their potential to be best-in-class, the Company's plans and expected timing with respect to clinical trials, clinical trial enrolment and clinical trial results for its product candidates, the Company's plans and expected timing with respect to regulatory filings and approvals, the size and growth potential of the markets for the Company's product candidates, and the potential for farudodstat and eblasakimab as treatments for autoimmune disease and atopic dermatitis, respectively. The Company's estimates, projections and other forward-looking statements are based on management's current assumptions and expectations of future events and trends, which affect or may affect the Company's business, strategy, operations or financial performance, and inherently involve significant known and unknown risks and uncertainties, which include, unexpected safety or efficacy data observed during preclinical or clinical studies; clinical site activation rates or clinical trial enrolment rates that are lower than expected; the impact of the COVID-19 pandemic on the Company's business and the global economy; general market conditions; changes in the competitive landscape; and the Company's ability to obtain sufficient financing to fund its strategic and clinical development plans. Actual results and the timing of events could differ materially from those anticipated in such forward-looking statements as a result of these risks and uncertainties, which include, without limitation the risk factors described in the Company's US Securities and Exchange Commission filings and reports (Commission File No. 001-38475), including the Company's Form 20-F filed with the U.S. Securities and Exchange Commission (the "SEC") on March 25, 2022. This presentation discusses product candidates that are under clinical study, and which have not yet been approved for marketing by the US Food and Drug Administration. No representation is made as to the safety or effectiveness of these product candidates for the use for which such product candidates are being studied. Caution should be exercised when comparing data across trials of different products and product candidates. Differences existing between trial designs and patient populations and characteristics. The results across such trials may not have interpretative value on our existing or future results. All statements other than statements of historical fact are forward-looking statements. The words "believe," "view," "may," "might," "could," "will," "aim," "estimate," "continue," "anticipate," "intend," "expect," "plan," or the negative of those terms, and similar expressions that convey uncertainty of future events or outcomes are intended to identify estimates, projections and other forward-looking statements. Estimates, projections and other forward-looking statements speak only as of the date they were made, and, except to the extent required by law, the Company undertakes no obligation to update or review any estimate, projection or forward-looking statement.

Company highlights

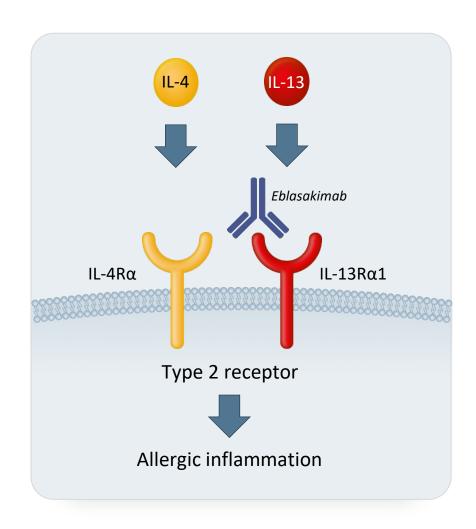
- Targeting major inflammatory disease markets with significant unmet need
- Eblasakimab, also known as ASLAN004, is a potential first-in-class antibody targeting the IL-13 receptor that has the potential to improve upon current biologics used to treat allergic disease
 - There are few safe and effective treatments for moderate-to-severe atopic dermatitis (AD), expected to be a \$24B market by 2029¹. Despite dupilumab advancing the standard of care, physicians / patients still seek additional options.
 - Topline data from recently completed multiple ascending dose (MAD) study conclusively establishes proof of concept for *eblasakimab* in AD, and supports a potentially differentiated safety and efficacy profile
 - Phase 2b study initiated in January 2022, evaluating 2-weekly and 4-weekly regimens
- Farudodstat, also known as ASLAN003, is a second generation **DHODH inhibitor with the potential to be best-in-class** for autoimmune disease
 - Stronger in vitro potency and lower potential for hepatotoxicity compared to other DHODH inhibitors
 - Exploring applications in skin autoimmune diseases such as alopecia areata (AA)
- Strong cash position (\$87M²) with runway to late 2023



Developing innovative therapies to treat inflammatory disease

Program	Target	Discovery	Preclinical	Phase 1	Phase 2	Anticipated milestones
Eblasakimab		Atopic dermatitis (AD)				 Phase 1b biomarker and PRO data in 2H 2022 Phase 2b topline data in 1H 2023
(ASLAN004)	IL-13Rα1	Type 2-driver	n disease			
Farudodstat (ASLAN003)	DHODH	Autoimmune	skin disease			

Eblasakimab is the only monoclonal antibody in the clinic targeting the IL-13 receptor

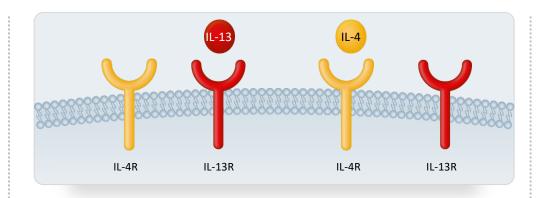


- IL-4 and IL-13 are central to triggering allergy and symptoms of atopic dermatitis
- By targeting the IL-13 receptor, eblasakimab blocks the Type 2 receptor complex, preventing signaling through both IL-4 and IL-13

Potential for improved efficacy, safety and dose regimen:

- Selectively targets the Type 2 receptor. Blocking the Type 1 receptor may lead to unwanted effects
- Stronger binding to receptor than *dupilumab* relative to its respective ligand

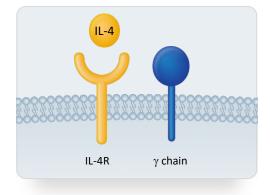
Eblasakimab selectively blocks the Type 2 receptor



Type 2 receptor

Blocks IL-13 signalling

Blocks IL-4 signalling



Type 1 receptor

Blocks IL-4 signalling

Eblasakimab

Specific and complete blockade of Type 2 receptor

Lebrikizumab

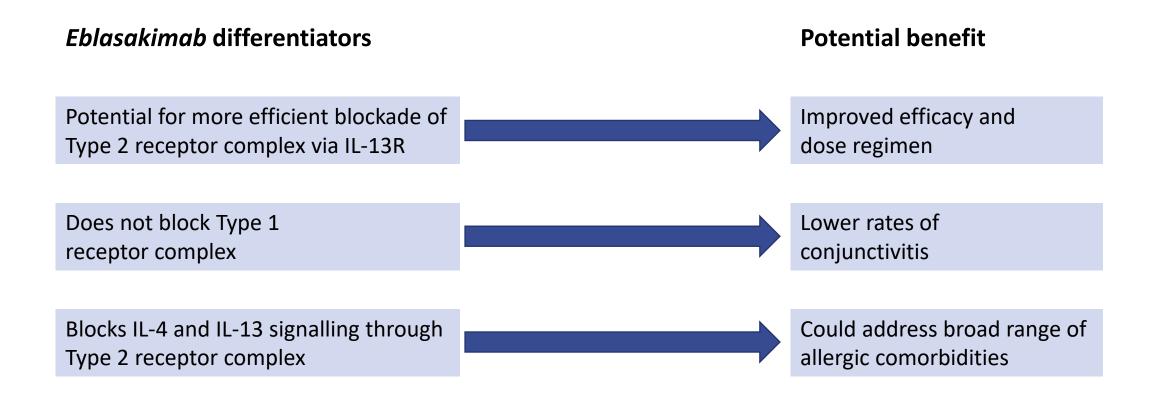
Partial blockade of Type 2 receptor signalling

Dupilumab

Broad blockade of Type 1 and Type 2 receptors



What makes *eblasakimab* different?





Atopic Dermatitis: patient journeys and unmet needs

Dr Peter Lio



JUNE 22, 2022 PETER A LIO, MD

ASSISTANT PROFESSOR CLINICAL DERMATOLOGY & PEDIATRICS
NORTHWESTERN UNIVERSITY FEINBERG SCHOOL OF MEDICINE

M Northwestern Medicine® Feinberg School of Medicine





AD BACKGROUND

- Incredibly common, chronic inflammatory disease
- Up to 20% of children and up to 10% adults in developed countries
- Massive suffering for both patient and family

Eczema/Atopic Dermatitis:

DEFINITION

A red, **itchy**, <u>scaly</u>/flaky, sometimes oozing rash that can affect kids and adults

Usually chronic, but some kids grow out of it or at least get better in time

BURDEN OF AD IS HIGH

Increasing US Prevalence^{1,2}

12% to 13% in children and adolescents and 7% in adults

- 90% of cases present by 5 years of age
- Among adults, 17% of cases develop after adolescence

Increasing Costs³

~\$5.3 billion/year

 Doesn't include time, emotional cost, and presenteeism

Impact on QoL⁴

Greater than Type 1 diabetes

Not "just a rash"

Sleep Deprivation^{2,3-6}

- Exhaustion
- Mood changes
- Impaired psychosocial functioning

Social Isolation^{2,3,5}

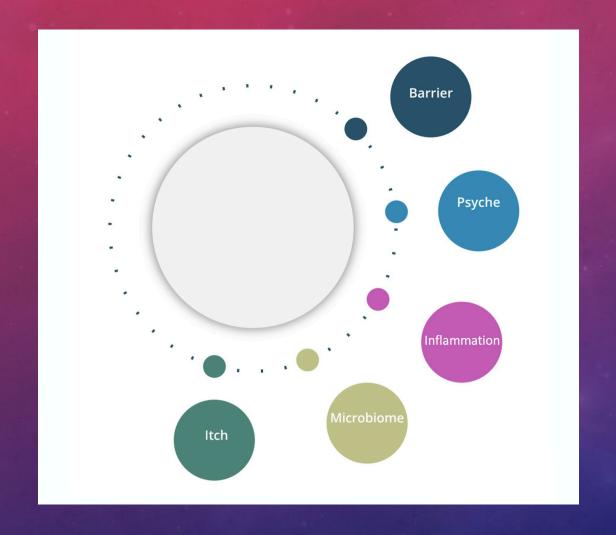
- School avoidance
- Depression

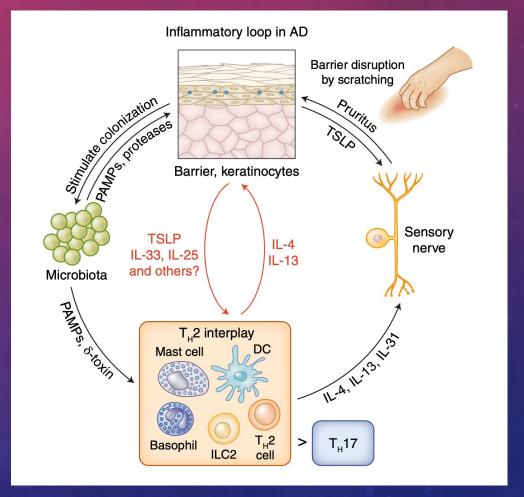
Restricted Choices^{3,5}

 Clothing, holidays, socializing, owning pets, and participating in sports

- 1. Avena-Woods C. (2017). Overview of atopic dermatitis. The American journal of managed care, 23(8 Suppl), S115-S123.
- 2. Silverberg J. I. (2019). Comorbidities and the impact of atopic dermatitis. Annals of allergy, asthma & immunology: official publication of the American College of Allergy, Asthma, & Immunology, 123(2), 144–151.
- 3. Drucker, A. M., Wang, A. R., Li, W. Q., Sevetson, E., Block, J. K., & Qureshi, A. A. (2017). The Burden of Atopic Dermatitis: Summary of a Report for the National Eczema Association. The Journal of investigative dermatology, 137(1), 26–30.
- 4. Silverberg, J. I., Gelfand, J. M., Margolis, D. J., Boguniewicz, M., Fonacier, L., Grayson, M. H., Simpson, E. L., Ong, P. Y., & Chiesa Fuxench, Z. C. (2018). Patient burden and quality of life in atopic dermatitis in US adults: A population-based cross-sectional study. Annals of allergy, asthma & immunology: official publication of the American College of Allergy, Asthma, & Immunology, 121(3), 340–347.
- 5. Lewis-Jones S. (2006). Quality of life and childhood atopic dermatitis: the misery of living with childhood eczema. *International journal of clinical practice*, 60(8), 984–992.
- 6. Arkwright, P. D., Motala, C., Subramanian, H., Spergel, J., Schneider, L. C., Wollenberg, A., & Atopic Dermatitis Working Group of the Allergic Skin Diseases Committee of the AAAAI (2013). Management of difficult-to-treat atopic dermatitis. The journal of allergy and clinical immunology. In practice, 1(2), 142–151.

CAUSES OF AD





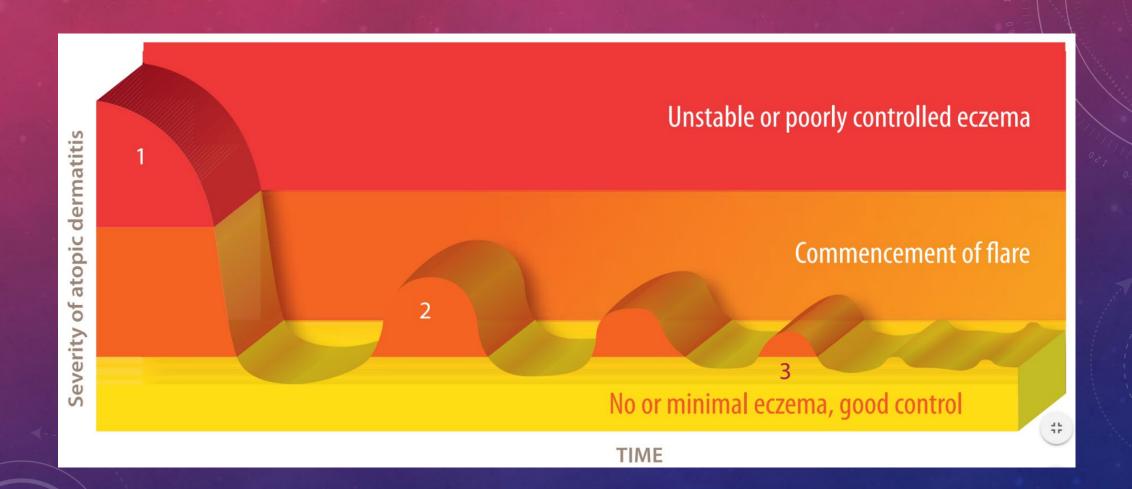
AD SEVERITY SPECTRUM

Spectrum:
Differential
diagnosis
can be
difficult

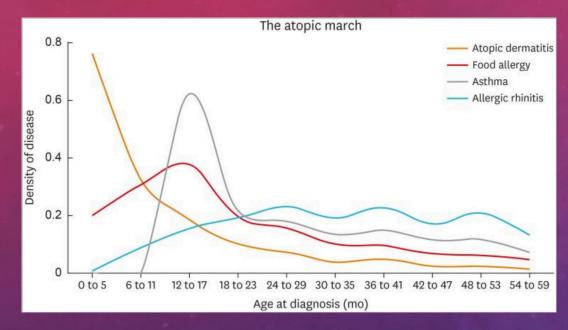
mild moderate severe

- For mild disease, simple approach can suffice
- "Use this when you need it"
- For moderate and severe, this doesn't work
- "But I ALWAYS need it!"
- Poor outcomes:
 - Failure to adhere to the regimens
 - Side effects

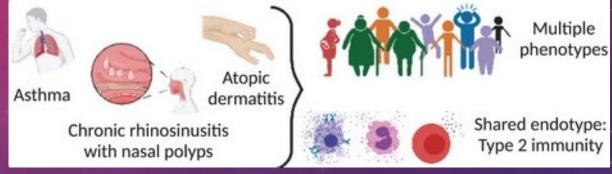
TREATMENT GOAL



ATOPIC MARCH



Childhood AD can be start of the allergic march with conditions affected by Type-2 inflammation



- Adults with AD are 3 times more likely to have asthma
- In a cross-sectional study of over 2200 children,
 - ~80% had some form of allergy
 - ~40% had asthma and allergic rhinitis

^{1.} Appiah, M. M., Haft, M. A., Kleinman, E., Laborada, J., Lee, S., Loop, L., Geng, B., & Eichenfield, L. F. (2022). Atopic Dermatitis: Review of Comorbidities and Therapeutics. Annals of allergy, asthma & immunology: official publication of the American College of Allergy, Asthma, & Immunology, S1081-1206(22)00446-X. Advance online publication.

^{2.} Hill, D. A., & Spergel, J. M. (2018). The atopic march: Critical evidence and clinical relevance. Annals of allergy, asthma & immunology: official publication of the American College of Allergy, Asthma, & Immunology, 120(2), 131–137
3. Hassoun, D., Malard, O., Barbarot, S., Magnan, A., & Colas, L. (2021). Type 2 immunity-driven diseases: Towards a multidisciplinary approach. Clinical & Experimental Allergy, 51(12), 1538–1552. https://doi.org/10.1111/cea.14029

A PATIENT'S JOURNEY- TREATMENT OPTIONS

Topical Agents

TCS, TCI, Topical PDE4 inhibitors
Topical JAKs

Conventional Immunosuppressants

*Cyclosporin, *Methotrexate, *Mycophenolate Mofetil, *Azathioprine



Dupilumab, Tralokinumab

JAKi Systemic Immunosuppressants

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^{1.} Sidbury, R., Davis, D. M., Cohen, D. E., Cordoro, K. M., Berger, T. G., Bergman, J. N., Chamlin, S. L., Cooper, K. D., Feldman, S. R., Hanifin, J. M., Krol, A., Margolis, D. J., Paller, A. S., Schwarzenberger, K., Silverman, R. A., Simpson, E. L., Tom, W. L., Williams, H. C., Elmets, C. A., Block, J.A., Harrod, C.G., Eichenfield, Bego L. F. (2014). Guidelines of care for the management of atopic dermatitis. *Journal of the American Academy of Dermatology, 71*(2), 327–349.

2. Boguniewicz, M., Fonacier, L., Guttman-Yassky, E., Ong, P. Y., Silverberg, J., & Farrar, J. R. (2018). Atopic dermatitis yardstick: Practical recommendations for an evolving therapeutic landscape. *Annals of allergy, asthma & immunology : official publication of the American College of Allergy, Asthma, & Immunology, 120*(1), 10–22.e2.

ADVERSE EVENTS

- Every drug has different levels of adverse events
- Characterising patient-specific adverse event profile can be the next frontier in precision medicine

System Agent	Common AEs (Clinical Trial Incidence of ≥ 1/100)	
Clobetasol propionate	Burning, stinging, skin dryness, irritation, erythema, folliculitis, pruritus, skin atrophy, telangiectasia	
Ruxolitinib	Bruising, dizziness, headache, UTI, herpes zoster, increased weight, flatulence, anemia, thrombocytopenia, neutropenia	
Dupilumab	Nasopharyngitis, headache, URTI, injection site reactions, conjunctivitis, AD exacerbation, skin infections, herpes viral infections	
Tralokinumab	Nasopharyngitis, URTI, headache, AD exacerbation, injection site reactions, arthralgia, syncope, pruritis, conjunctivitis, skin infections	
Abrocitinib	Nasopharyngitis, nausea, headache, herpes simplex, Increased blood creatinine phosphokinase, dizziness, fatigue, UTI, acne, vomiting, impetigo, oropharyngeal pain, hypertension, influenza, gastroenteritis, dermatitis contact, abdominal pain upper, abdominal discomfort, herpes zoster, thrombocytopenia	
Upadacitinib	UTRI, acne, herpes simplex, headache, increased blood creatinine phosphokinase, cough, hypersensitivity, folliculitis, nausea, abdominal pain, pyrexia, increased weight, herpes zoster, influenza, fatigue, neutropenia, myalgia, influenza like illness	
Cyclosporin	Serum creatinine increase, hypertension, GI upset, infections, headache, fatigue, paranesthesia, lower limb oedema, hypertrichosis, gingival hyperplasia, anemia, leukopenia, pancytopenia, thrombocytopenia, ESR increase, liver enzyme increase, magnesium decrease, fever, malaise, AD exacerbation, dyslipidemia, tremor, flushing, metallic taste	
Methotrexate	GI upset, infections, liver enzyme increase, skin infections, AD exacerbation, anaemia, leukopenia, pancytopenia, fatigue, headache, renal impairment, fever, malaise	

AD, atopic dermatitis; AE, adverse event; CK, creatine kinase, ESR, erythrocyte sedimentation rate; GI, gastrointestinal; HSV, herpes simplex virus; HZV, herpes zoster virus; LRTI, lower respiratory tract infection; URTI, upper respiratory tract infection

^{1.} Adapted from Alexander, H., Patton, T., Jabbar-Lopez, Z. K., Manca, A., & Flohr, C. (2019). Novel systemic therapies in atopic dermatitis: what do we need to fulfil the promise of a treatment revolution?. F1000Research, 8, F1000 Faculty Rev-132. 2. Nie, D., Tegtmeyer, K., Zhao, J., & Lio, P. A. (2020). Developing patient-specific adverse effect profiles: the next frontier for precision medicine in dermatology. The Journal of dermatological treatment, 31(3), 211–212.

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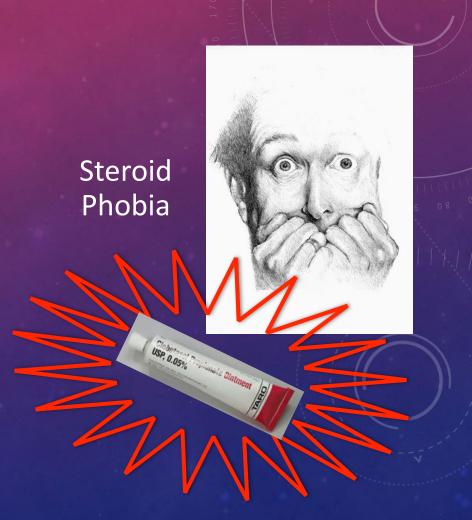
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TOPICAL CORTICOSTEROIDS

- Used for >60 years and works for actively inflamed skin
- Intermittent use vs maintenance therapy
- Effects of extensive and long-term use of TCS has multiple side effects including skin atrophy, lichenification
- Fear of side effects → steroid phobia → low adherence to application → poor outcome
- In patients with good adherence, many experience Topical Steroid Withdrawal (TSW)



TOPICAL STEROID WITHDRAWAL (TSW)

A systematic review of topical corticosteroid withdrawal ("steroid addiction") in patients with atopic dermatitis and other dermatoses

Tamar Hajar, MD, ^a Yael A. Leshem, MD, ^a Jon M. Hanifin, MD, ^a Susan T. Nedorost, MD, ^b Peter A. Lio, MD, ^c Amy S. Paller, MD, ^c Julie Block, BA, ^d and Eric L. Simpson, MD, MCR, ^a (the National Eczema Association Task Force) *Portland, Oregon; Cleveland, Obio; Chicago, Illinois; and San Rafael, California*

Background: The National Eczema Association has received increasing numbers of patient inquiries regarding "steroid addiction syndrome," coinciding with the growing presence of social media dedicated to this topic. Although many of the side effects of topical corticosteroids (TCS) are addressed in guidelines, TCS addiction is not.

- 10-15% of people on TCS develop TSW
- Looks similar to eczema and hence is under-diagnosed
- Takes months to years to recover

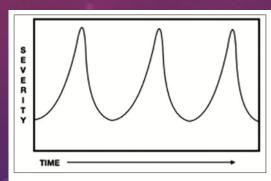


Figure 1: Untreated or undertreated pattern with recurrent disease flares of similar severity.

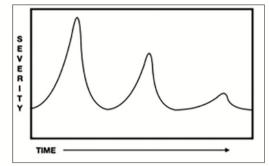


Figure 2: Damping pattern that suggests improved control and decreased TCS use.

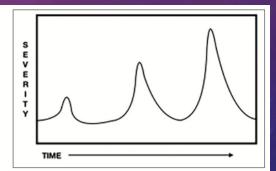


Figure 3: Escalating pattern that suggests worsening control and may herald TSW.

"Topical corticosteroid withdrawal should be suspected in patients presenting with prolonged usage, erythema, and burning or itch. Patient education and follow up is important to address improper usage."

TSW CAN BE A SEVERELY DEBILITATING CONDITION

TABLE 1: KEY FEATURES TO DIAGNOSIS TSW ¹					
Burning	The most frequently reported symptom of TSW, seen in 65% of patients ⁴				
Confluent Erythema	Severe and widespread erythema, beginning in areas of disease involvement and spreading to areas of skin where TCS have not been applied; the most common sign reported in TSW, leading to the name "red skin syndrome", seen in 92% of patients ⁴				
History of frequent and prolonged TCS use, especially on the face	Up to 97% of cases involve the face, 98.6% of cases involve mid- or high-potency TCS, and 85.2% of cases involve application >12 months ^{1,4}				

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BIOLOGICS

- Dupilumab has been a revolutionary therapy in treatment of AD
- Opened the space for biologics in AD
- Stopping dupilumab can have a remittive effect: different to TCS

PATIENTS DISCONTINUING BIOLOGICS

- Primary failure /loss of response
- Adverse events
- Access issues

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THERAPEUTIC HOTLINE: LETTER



Remittive effect of Dupilumab in atopic dermatitis

DEFINING THE DUPILUMAB NON-RESPONDER POPULATION

2019

American Journal of

Clinical Dermatology

DOI: 10.1007/s40257-019-00436-8 · Corpus ID: 85544150

Management Recommendations for Dupilumab Partial and Non-durable Responders in Atopic Dermatitis

A. Hendricks, P. Lio, V. Shi · Published 1 August 2019 · Medicine · American Journal of Clinical Dermatology

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Non-responders (NR)

Partial-responders (PR)

Non-durable responders (NDR)

DEFINING THE DUPILUMAB NON-RESPONDER POPULATION

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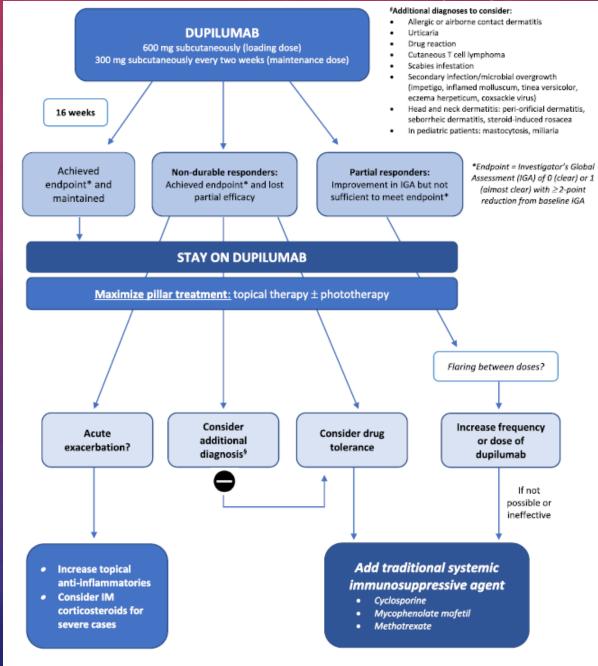
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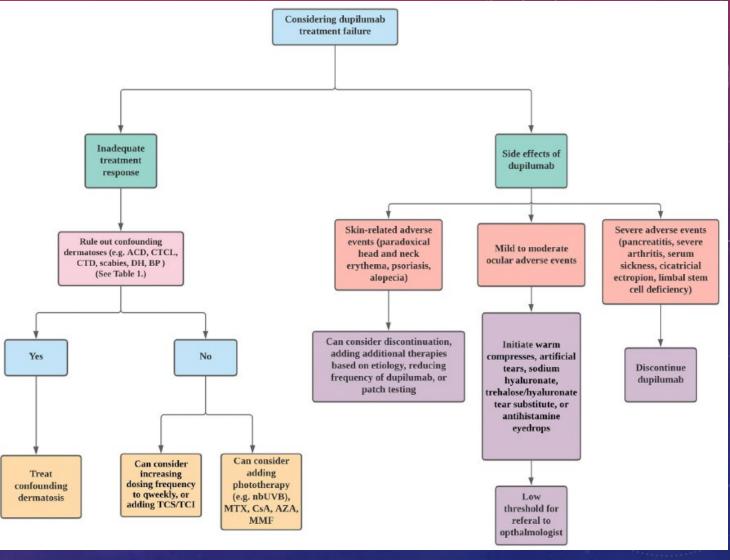
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DEFINING THE DUPILUMAB NON-RESPONDER POPULATION

2022





ACD, Allergic contact dermatitis; AZA, azathioprine; BP, bullous pemphigoid; CsA, cyclosporine A; CTD, connective tissue disease; CTCL, cutaneous T-cell lymphoma; DH, dermatitis herptiformis; MMF, mycophenolate mofetil; MTX, methotrexate; qweekly, every week nbUVB, narrowband ultraviolet B; TCI, topical calcineurin inhibitors; TCS, topical corticosteroids.

DUPILIMAB ASSOCIATED CONJUNCTIVITIS (DAC)

- Dupilumab Associated Conjunctivitis (DAC) has been characterised as a specific adverse event related to treatment
- A review of 2629 patients treated with dupilumab showed a higher incidence of conjunctivitis in dupilumab-treated patients (8.6-22.1%) vs placebo (2.1-11.1%)¹
- Patients with severe AD at baseline were more likely to report higher incidence of DAC
- Pathogenesis of conjunctivitis in dupilumabtreated patients is not well understood although several theories have been postulated



A Clinician's Guide to the Recognition and Management of Dupilumab-Associated Conjunctivitis

Gauray Agnihotri 1, Katherine Shi 2, Peter A Lio 3 4

Affiliations + expand

PMID: 31728936 PMCID: PMC6890653 DOI: 10.1007/s40268-019-00288-x

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2. Boguniewicz, M., Fonacier, L., Guttman-Yassky, E., Ong, P. Y., Silverberg, J., & Farrar, J. R. (2018). Atopic dermatitis yardstick: Practical recommendations for an evolving therapeutic landscape. *Annals of allergy, asthma & immunology*:

JAK INHIBITORS AND SAFETY CONCERNS

- Received recent approval in AD
- Effective therapies for flares and disease uncontrolled by biologics
- Black Box warnings
- Potential implications of long-term use for chronic condition such as AD

WARNING: SERIOUS INFECTIONS, MORTALITY, MALIGNANCY, MAJOR ADVERSE CARDIOVASCULAR EVENTS (MACE), and THROMBOSIS

See full prescribing information for complete boxed warning.

- Increased risk of serious bacterial, fungal, viral and opportunistic infections leading to hospitalization or death, including tuberculosis (TB). Discontinue treatment with CIBINQO if serious or opportunistic infection occurs. Test for latent TB before and during therapy; treat latent TB prior to use. Monitor all patients for active TB during treatment, even patients with initial negative latent TB test. (5.1)
- Higher rate of all-cause mortality, including sudden cardiovascular death, with another JAK inhibitor vs. TNF blockers in rheumatoid arthritis (RA) patients. CIBINQO is not approved for use in RA patients. (5.2)
- Malignancies have occurred with CIBINQO. Higher rate of lymphomas and lung cancers with another JAK inhibitor vs. TNF blockers in RA patients. (5.3)
- MACE has occurred with CIBINQO. Higher rate of MACE (defined as cardiovascular death, myocardial infarction, and stroke) with another JAK inhibitor vs. TNF blockers in RA patients. (5.4)
- Thrombosis has occurred with CIBINQO. Increased incidence of pulmonary embolism, venous and arterial thrombosis with another JAK inhibitor vs. TNF blockers. (5.5)

of pulmonary embolism, venous and arterial thrombosis with another JAK inhibitor vs. TNF blockers. (5.5)

Cibingo full prescribing information

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ICER: EFFECTIVENESS AND VALUE OF AD TREATMENTS

Stakeholder Input

Patient Groups, Clinical Experts, Payers, Manufacturers,
 Other

Treatments Reviewed

- Moderate to Severe AD: abrocitinib, baricitinib, upadacitinib, tralokinumab – compared to topical therapies (TCS/TCI) or dupilumab
- Mild to Moderate AD: Ruxolitinib cream compared to topical vehicle (placebo) or therapies (TCS/TCI)

Key Clinical Outcomes Evaluated

- Primary: EASI (EASI 75), IGA (IGA 0/1)
- Secondary PP-NRS (≥4 pt change from baseline), other
 PRO (sleep loss, anxiety, QoL), harms (SEs, discontinuation, infections, etc.)

Stakeholder Input Clinical **Outcomes Treatments** in scope

ICER Evidence Evaluation and Policy Recommendation

ICER REVIEW—HOT OFF THE PRESS!

TABLE 2	Health Car	e Perspective
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		Incremental cost-effectiveness ratios			
Treatment	Comparator	Cost per QALY ^b	Cost per evLYG ^b		
Abrocitiniba		\$148,300	\$148,300		
Baricitinib	Standard of care	\$71,600	\$71,600		
Tralokinumaba		\$129,400	\$129,400		
Upadacitinib	oi care	\$248,400	\$248,400		
Dupilumab		\$110,300	\$110,300		
Abrocitinib ^a		\$303,400	\$303,400		
Baricitinib		Less costly, less effective	Less costly, less effective		
Tralokinumaba	Dupilumab	Less costly, less effective	Less costly, less effective		
Upadacitinib		\$1,912,200	\$1,912,200		

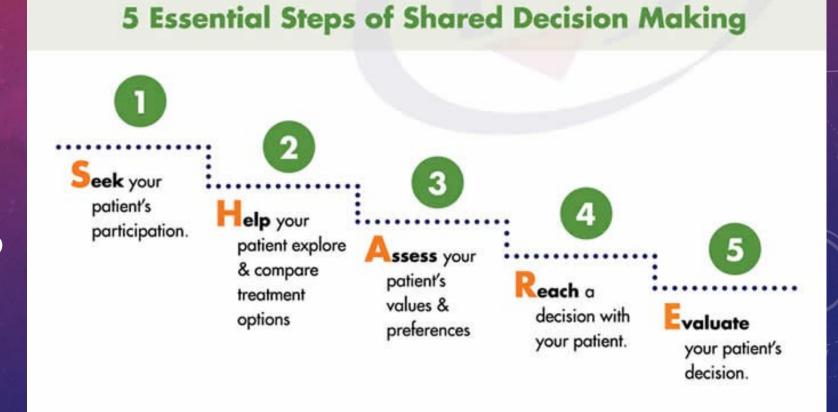
^aUsing placeholder price.

evLYG = equal value life-year gained; QALY = quality-adjusted life-year.

^bThe cost per QALY and cost per evLYG ratios were the same, given that the treatments have not been shown to lengthen life.

The SHARE Approach

THE ROLE OF PATIENTS IN CHOOSING TREATMENTS



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CONCLUSIONS

- The past 50 years have been relatively quiet for AD... but that does not seem to be predictive of the next 5-10!
- We are on the verge of a giant leap in both understanding and treating AD
- Current treatment options have varying efficacy and safety profiles and not all treatments are suitable for all populations
- Additional treatment options are needed for AD patients and emerging treatments have the potential to address the unmet needs that remain



Fireside Chat and QnA

ASLAN A⁴ Series: Aspects of Atopic Dermatitis and ASLAN004

Episode 1: 25 Oct 2021



Dr Jonathan Silverberg, MD PhD MPH Heterogeneity in AD

Episode 2: 20 Jan 2022



Dr April Armstrong, MD MPHA closer look: Key factors
impacting responses in AD
clinical trials

Episode 3: 22 June 2022



Dr Peter Lio, MDAD: Patient journeys and unmet needs



ASLAN A⁴ Series: Aspects of Atopic Dermatitis and ASLAN004

NASDAQ: ASLN

