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ORIGINAL ARTICLE

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Triple-Combination Clindamycin Phosphate 1.2%/ Adapalene 0.15%/Benzoyl Peroxide 3.1% Gel for Acne in Adult and Pediatric Participants

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ABSTRACT

Background: Topical clindamycin phosphate 1.2%/adapalene 0.15%/benzoyl peroxide 3.1% gel (CAB) is the first fixed-dose triple-combination approved for the treatment of acne. This post hoc analysis investigated the efficacy and safety of CAB in pediatric (<18 years) and adult (≥18 years) participants.

Methods: In 2 multicenter, double-blind, phase 3 studies (NCT04214639 and NCT04214652), participants ≥9 years of age with moderate-to-severe acne were randomized (2:1) to 12 weeks of once-daily treatment with CAB or vehicle gel. Pooled data were analyzed for pediatric and adult subpopulations. Assessments included treatment success (≥2-grade reduction from baseline in Evaluator's Global Severity Score and a score of 0 [clear] or 1 [almost clear], inflammatory/noninflammatory lesion counts, Acne-Specific Quality of Life (Acne-QoL) questionnaire, treatment-emergent adverse events (TEAEs), and cutaneous safety/tolerability.

Results: At week 12, treatment success rates for both pediatric and adult participants were significantly greater with CAB (52.7%; 45.9%) than with vehicle (24.0%; 23.5%; $P<0.01$, both). CAB-treated participants in both subgroups experienced greater reductions from baseline versus vehicle in inflammatory (pediatric: 78.6% vs 50.4%; adult: 76.6% vs 62.8%; $P<0.001$, both) and noninflammatory lesions (pediatric: 73.8% vs 41.1%; adult: 70.7% vs 52.2%; $P<0.001$, both). Acne-QoL improvements from baseline to week 12 were significantly greater with CAB than with a vehicle. Most TEAEs were of mild-to-moderate severity; no age-related trends for safety/tolerability were observed.

Conclusions: CAB gel demonstrated comparable efficacy, quality of life improvements, and safety in pediatric and adult participants with moderate-to-severe acne. As the first fixed-dose, triple-combination topical formulation, CAB represents an important new treatment option for patients with acne.

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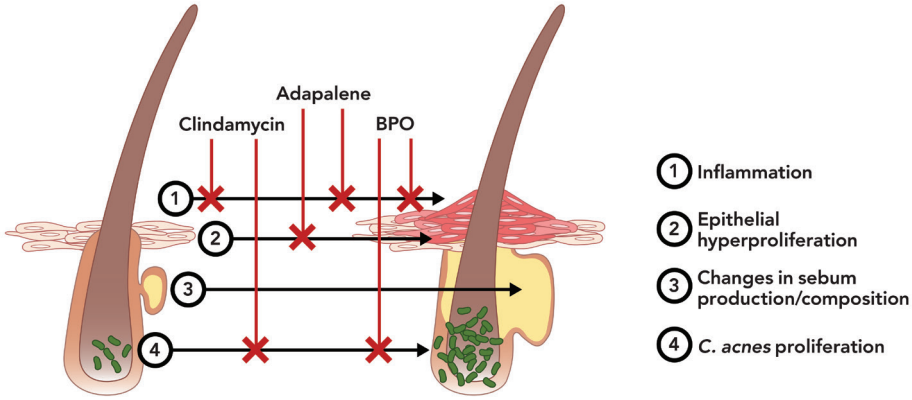
INTRODUCTION

Although acne affects patients of all ages, there are age-related differences in clinical presentation as well as patients' experience with acne and acne treatments.[1] Acne onset typically corresponds to hormonal changes during puberty, and shifts toward earlier puberty are associated with increasing acne prevalence among preteen children.[2,3] There are numerous topical and systemic treatment options available for acne, though not all are approved for patients under 12 years of age.[4] Even with approved treatments, effectiveness among preadolescent (aged 7-12 years or menarche in girls[3]) and teenaged patients may be hampered by poor treatment adherence as well as a greater likelihood of severe acne and treatment-related irritation than adults.[1,5,6] Adult acne may be a continuation of adolescent acne or may appear de novo, particularly among women in response to hormonal changes associated with menstruation, pregnancy, and perimenopause.[7,8] Although adults may experience a greater impact of acne on quality of life (QoL),[9] they are less likely to receive a prescription treatment for acne than patients

FIGURE 1. Pathogenesis of acne and treatment with triple-combination CAB gel.



Active ingredients in CAB address 3 of the 4 pathogenic factors in acne: adapalene normalizes epithelial hyperproliferation; clindamycin and benzoyl peroxide reduce *C. acnes* viability; all three active ingredients have anti-inflammatory properties.[4,16-18]
Image ©2023. Courtesy of Ortho Dermatologics.
BPO, benzoyl peroxide; CAB, clindamycin phosphate 1.2%/adapalene 0.15%/BPO 3.1%.

under 18 years of age.[10] Even with treatment, adult acne—particularly among females—may take longer to respond to treatment and may be more likely to relapse.[11] Thus, there is an ongoing need for acne treatments that are safe, effective, and encourage treatment adherence in patients of all ages.

Acne pathophysiology is a multifactorial process involving hyperproliferation of the epithelium, changes in sebum production and composition, proliferation of *Cutibacterium acnes*, and inflammation (Figure 1).[12] Combination therapies leveraging multiple mechanisms of action to target multiple pathophysiological pathways may be more effective and are recommended for acne treatment.[4,13] Simplifying the treatment regimen by delivering multiple active ingredients as a fixed combination may further increase efficacy as well as improve adherence.[14] Clindamycin phosphate 1.2%/adapalene 0.15%/BPO 3.1% polymeric mesh gel (CAB; Cabtreo®; Ortho Dermatologics) is the only fixed-dose, triple-combination topical product FDA-approved for acne treatment.[15] CAB addresses three of the four pathophysiological mechanisms in acne: adapalene normalizes epithelial proliferation; clindamycin and BPO reduce *C. acnes* viability; and all three active ingredients have anti-inflammatory properties.[4,16-18] These ingredients are delivered in a single, easy-to-use aqueous gel that is pH-balanced for the skin and contains propylene glycol, a hydrating humectant.[19]

The benefits of triple-combination therapy for acne were demonstrated in a phase 2 study, in which the efficacy of CAB was significantly superior to the vehicle as well as all 3 dual-combinations of the active ingredients (clindamycin phosphate/adapalene, clindamycin phosphate/BPO, and adapalene/BPO).[20] These results were confirmed in two phase 3 studies, in which the efficacy of CAB was significantly greater than vehicle.[19] For these post hoc analyses, data from the phase 3 studies were pooled to evaluate the efficacy and safety of CAB in pediatric (defined here as <18 years) and adult (≥18 years) participants.

MATERIALS AND METHODS

Study Design and Participants

Data were pooled from 2 identical multicenter, randomized, double-blind, vehicle-controlled parallel-group phase 3 studies (NCT04214639 and NCT04214652), the details of which have been published previously.[19] Briefly, eligible participants were aged ≥9 years with moderate-to-severe acne (Evaluator's Global Severity Score [EGSS] of 3 or 4; Table 1), 30 to 100 facial inflammatory lesions, 35 to150 noninflammatory lesions, and ≤2

TABLE 1.

Evaluator's Global Severity Score		
Score	**Grade**	**Description**
0	Clear	Normal, clear skin with no evidence of acne vulgaris
1	Almost Clear	Rare noninflammatory lesions present, with rare noninflamed papules (papules must be resolving and may be hyperpigmented, though not pink-red)
2	Mild	Some noninflammatory lesions are present, with few inflammatory lesions (papules/pustules only; no nodulocystic lesions)
3	Moderate	Noninflammatory lesions predominate, with multiple inflammatory lesions evident: several to many comedones and papules/pustules, and there may be 1 nodulocystic lesion
4	Severe	Inflammatory lesions are more apparent, many comedones and papules/pustules, there may be up to 2 nodulocystic lesions

facial nodules at screening. Participants were randomized (2:1) to CAB gel or vehicle, to be applied to the face once daily for 12 weeks. CeraVe® hydrating cleanser (L'Oreal, New York, NY), CeraVe® moisturizing lotion, and sunscreen were provided as needed for optimal moisturization, cleaning, and protection of the skin. Study protocols were approved by institutional review boards or ethics committees at all investigation sites, and the studies were conducted in accordance with the principles of Good Clinical Practice and the Declaration of Helsinki. All participants or their legal guardians provided written informed consent.

Efficacy and Safety Assessments

Efficacy evaluations included inflammatory and non-inflammatory lesion counts and treatment success, defined as the percentage of participants achieving ≥2-grade reduction from baseline in EGSS and a score of 0 (clear) or 1 (almost clear). Assessments were performed at baseline and weeks 2, 4, 8, and 12. At baseline and week 12, participants also completed the Acne-Specific Quality of Life (Acne-QoL) questionnaire, which covers four domains: self-perception, role-emotional, role-social, and acne symptoms.[21] There are 5 questions in all domains except role-social, which has 4 questions. Questions within each domain are scored from 0 (extremely) to 6 (not at all); increases in domain scores relative to baseline indicate improved quality of life. Investigator-assessed cutaneous safety (scaling, erythema, hypopigmentation, hyperpigmentation) and participant-assessed tolerability (itching, burning, stinging) were scored at all post-screening visits using a 4-point scale (0=none, 1=mild, 2=moderate, 3=severe). Treatment-emergent adverse events (TEAEs) were monitored throughout the study.

Statistical Analysis

This post hoc analysis assessed participants divided into two age subgroups: <18 or ≥18 years. The intent-to-treat (ITT) population included all randomized participants who were provided study drug and the safety population included all randomized participants who used the study drug at least once. Treatment success was analyzed using a logistic regression test (using Firth's Penalized Likelihood) with a factor of treatment group. Differences in least-squares mean percent changes in lesion counts were determined using analysis of covariance (ANCOVA) with a factor of treatment group and covariate of baseline lesion count; where significant skewness was observed, a nonparametric method was used to rank-transform the data prior to ANCOVA. Multiple imputation was used to impute missing values using the Markov Chain Monte Carlo method. Acne-QoL domain scores were transformed from 0-6 to 1-7 prior to ANCOVA with a factor of the treatment group and covariate of baseline domain score; there was no imputation of missing values. All statistical analyses were performed using SAS® version 9.4 or later. Statistical significance was based on two-tailed tests of the null hypothesis resulting in $P \leq 0.05$.

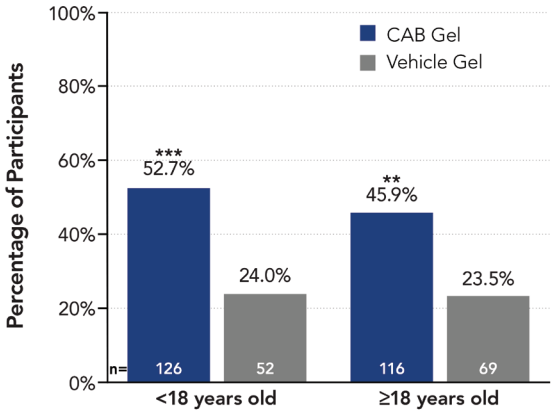
Treatment compliance, defined as participants missing ≤5 consecutive days of dosing and applying 80 to 120% of expected applications, and cutaneous safety/tolerability assessments were summarized using descriptive statistics. TEAEs were recorded and classified using Medical Dictionary for Regulatory Activities terminology with no imputations for missing data.

RESULTS

Participant Demographics and Baseline Characteristics

In the two phase 3 studies, a total of 363 participants were randomized to treatment,[19] of whom 178 were aged <18 years (mean=14.9 years [includes 5 participants 10-11 years old]) and 185 were aged ≥18 years (mean=25.6 years). All participants were included in both the ITT and safety populations.

FIGURE 2. Treatment success[a] at week 12 by age group (ITT population, pooled).



**P<0.01; ***P≤0.001 vs vehicle.
[a]Defined as the percentage of participants achieving ≥2-grade reduction from baseline in Evaluator's Global Severity Score and a score of 0 (clear) or 1 (almost clear).
CAB, clindamycin phosphate 1.2%/adapalene 0.15%/benzoyl peroxide 3.1% gel; ITT, intent to treat.

TABLE 2.

Participant Demographics, Baseline Characteristics, and Compliance (ITT Population, Pooled)

	<18 years old		≥18 years old	
	CAB (n=126)	Vehicle (n=52)	CAB (n=116)	Vehicle (n=69)
Age, mean (SD), y	14.9 (1.6)	14.8 (1.6)	25.9 (6.7)	24.9 (6.2)
Age, median (range), y	15.0 (10-17)	15.0 (11-17)	24.5 (18-48)	23.0 (18-44)
Sex, female, n (%)	53 (42.1)	23 (44.2)	91 (78.4)	45 (65.2)
Ethnicity, Hispanic/Latino, n (%)	27 (21.4)	12 (23.1)	30 (25.9)	11 (15.9)
Race, n (%)				
White	95 (75.4)	45 (86.5)	74 (63.8)	53 (76.8)
Black/African American	17 (13.5)	3 (5.8)	23 (19.8)	11 (15.9)
Asian	7 (5.6)	1 (1.9)	14 (12.1)	4 (5.8)
Other[a]	7 (5.6)	3 (5.8)	5 (4.3)	1 (1.4)
Inflammatory lesion count, mean (SD)	37.1 (7.6)	38.9 (10.4)	36.6 (7.9)	36.2 (8.3)
Noninflammatory lesion count, mean (SD)	51.0 (19.8)	51.6 (18.8)	47.7 (14.1)	44.5 (11.5)
Evaluator's Global Severity Score, n (%)				
3 – moderate	111 (88.1)	48 (92.3)	105 (90.5)	67 (97.1)
4 – severe	15 (11.9)	4 (7.7)	11 (9.5)	2 (2.9)
Compliance, %[b]	92.7	96.2	88.8	95.3

[a]Includes American Indian or Alaska Native, Native Hawaiian or Other Pacific Islander, and Not Reported/Multiple.
[b]A participant was considered compliant with the dosing regimen if they did not miss >5 consecutive days dosing and applied 80–120% of expected applications while participating in the study.
CAB, clindamycin phosphate 1.2%/adapalene 0.15%/benzoyl peroxide 3.1% gel; ITT, intent to treat; SD, standard deviation.

TABLE 3.

Treatment-Emergent Adverse Events Through Week 12 (Safety Population, Pooled)

Participants, n (%)	<18 years old		≥18 years old	
	CAB (n=126)	Vehicle (n=52)	CAB (n=116)	Vehicle (n=69)
Reporting any TEAE	32 (25.4)	3 (5.8)	34 (29.3)	7 (10.1)
Serious AEs	0	0	0	0
Discontinued due to a TEAE[a]	3 (2.4)	0	4 (3.4)	0
Maximum Severity of TEAEs reported				
Mild	18 (14.3)	2 (3.8)	22 (19.0)	6 (8.7)
Moderate	13 (10.3)	1 (1.9)	10 (8.6)	1 (1.4)
Severe	1 (0.8)	0	2 (1.7)	0
Relationship to study drug				
Related	23 (18.3)	0	25 (21.6)	2 (2.9)
Unrelated	9 (7.1)	3 (5.8)	9 (7.8)	5 (7.2)
Most common treatment-related TEAEs[b]				
Application site pain	16 (12.7)	0	15 (12.9)	1 (1.4)
Application site dryness	3 (2.4)	0	4 (3.4)	0
Application site irritation	1 (0.8)	0	4 (3.4)	0
Erythema	3 (2.4)	0	3 (2.6)	0
Xerosis	0	0	3 (2.6)	1 (1.4)

[a]Includes participants who discontinued study drug or prematurely discontinued from the study.
[b]Reported in ≥2% of participants in any treatment group.
AE, adverse event; CAB, clindamycin phosphate 1.2%/adapalene 0.15%/benzoyl peroxide 3.1% gel; TEAE, treatment-emergent adverse event.

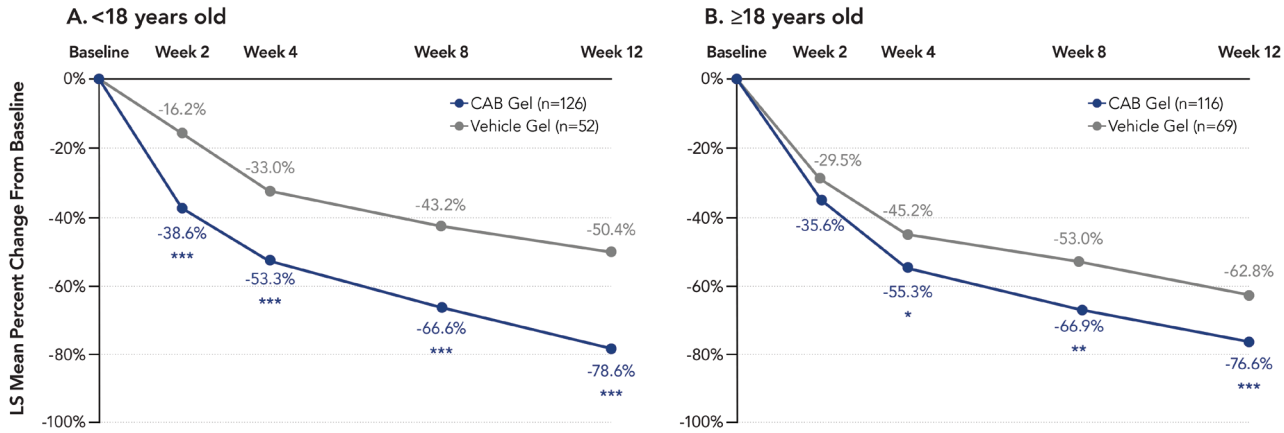
A higher percentage of participants in the ≥18 years subgroup self-identified as Black/African American or Asian than in the <18 years subgroup (18.4% vs 11.2% and 9.7% vs 4.5%, respectively), though similar percentages of participants in both subgroups identified as Hispanic/Latino (Table 2). Baseline disease characteristics were generally similar between age groups, though a lower percentage of adult participants randomized to the vehicle had severe acne (EGSS 4) than the pediatric subgroup. Overall, >90% of participants were compliant with treatment.

Efficacy

Rates of treatment success were greater with CAB treatment than with vehicle for participants in both age groups. At week 12, over half of participants <18 years and over 45% of participants ≥18 years achieved treatment success, compared with less than a quarter of vehicle-treated participants in either age group (P<0.01, both; Figure 2). Differences in rates of treatment success with CAB were not statistically significant between age groups.

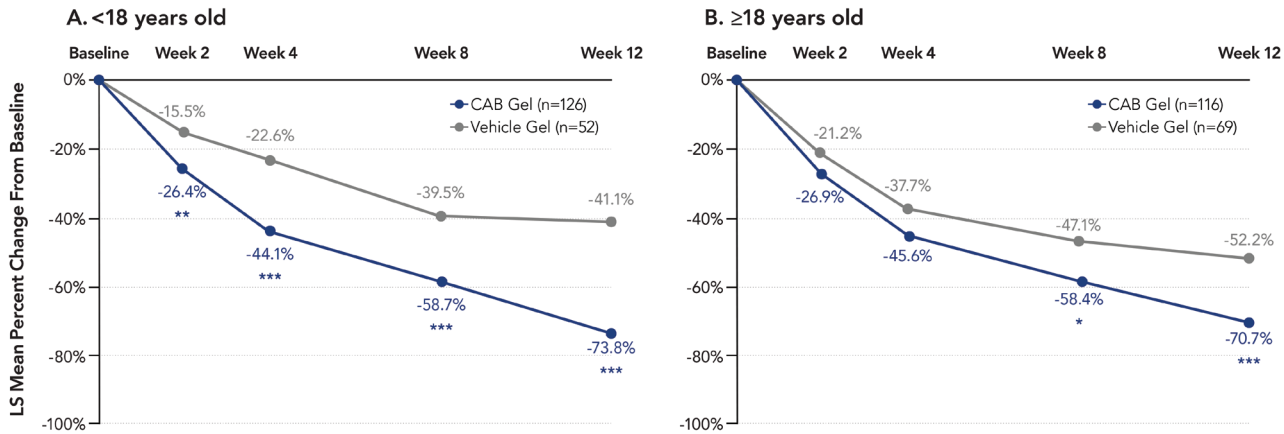
At week 12, CAB-treated participants experienced >70% reductions from baseline in both inflammatory and noninflammatory lesions. For both age groups, lesion reductions were significantly greater with CAB treatment than with vehicle (P<0.001, all; Figures 3 and 4). For participants <18 years, significantly greater reductions in inflammatory and noninflammatory lesions with CAB versus vehicle were observed as early as week 2. For participants ≥18 years, significantly greater reductions with CAB versus vehicle were first seen at weeks 4 and 8 for inflammatory and noninflammatory lesions,

FIGURE 3. Inflammatory lesion reductions by age group and study visit (ITT population, pooled).



*P<0.05; **P<0.01; ***P<0.001 vs vehicle.
CAB, clindamycin phosphate 1.2%/adapalene 0.15%/benzoyl peroxide 3.1%; ITT, intent to treat; LS, least squares.

FIGURE 4. Noninflammatory lesion reductions by age group and study visit (ITT population, pooled).



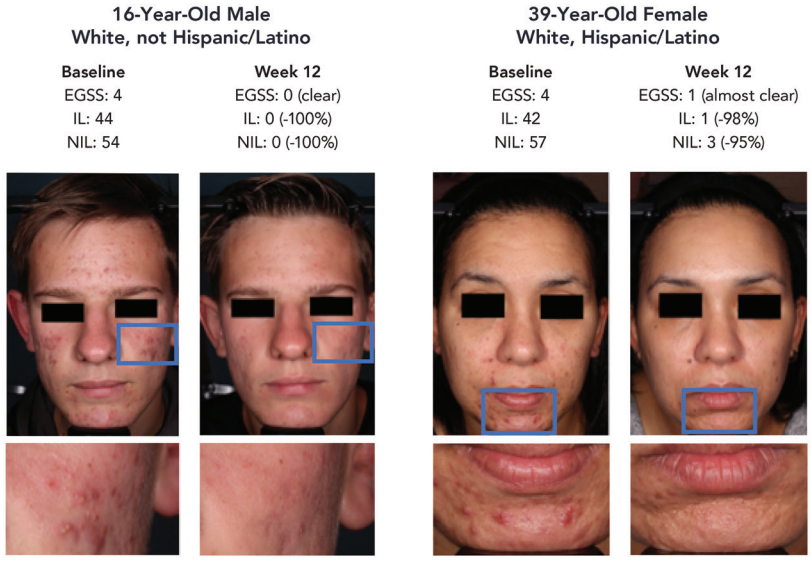
*P<0.05; **P<0.01; ***P<0.001 vs vehicle.
CAB, clindamycin phosphate 1.2%/adapalene 0.15%/benzoyl peroxide 3.1%; ITT, intent to treat; LS, least squares.

respectively. Reductions from baseline in both inflammatory and noninflammatory lesions were similar for CAB-treated participants in both age groups at all study visits, though vehicle responses were numerically greater among participants aged ≥18 years. Representative images of CAB-treated participants from each age group are in Figure 5.

Quality of Life

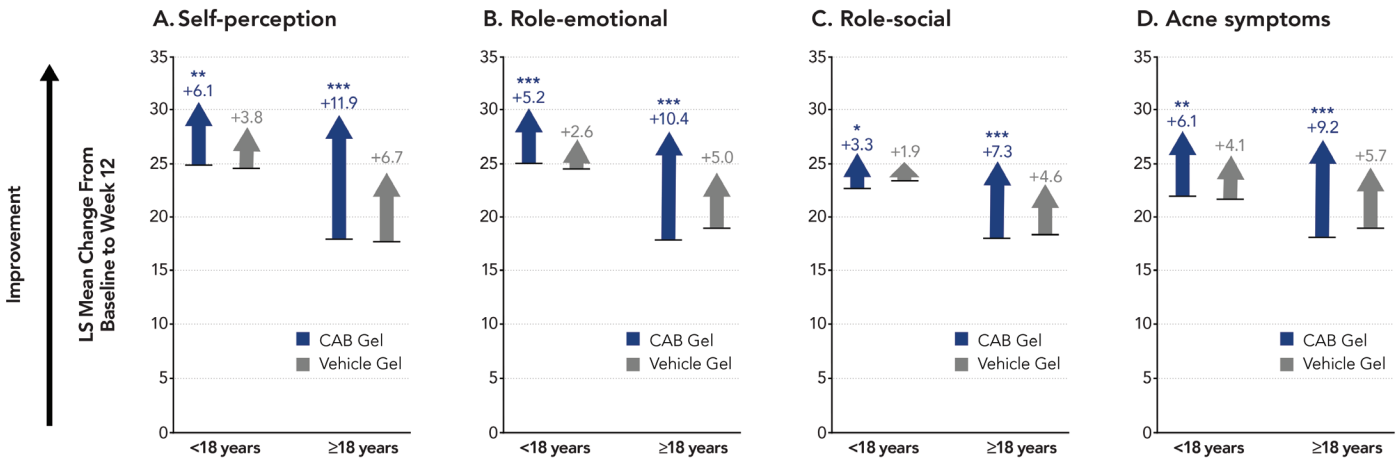
Improvements in quality of life from baseline to week 12 were greater with CAB than with vehicle for participants in both age groups. At baseline, Acne-QoL scores were lower (worse) for adults than for pediatric participants. Mean increases from baseline in all Acne-QoL domain scores with CAB treatment

FIGURE 5. Acne improvements with CAB gel.



Individual results may vary. Blue boxes indicate areas magnified below.
EGSS, Evaluator's Global Severity Score; CAB, clindamycin phosphate 1.2%/adapalene 0.15%/benzoyl peroxide 3.1%; IL, inflammatory lesions; NIL, noninflammatory lesions.
Photographic images © 2023. Courtesy of Ortho Dermatologics Study Investigators.

FIGURE 6. Acne-QoL improvements by age group at week 12 (ITT population, pooled).



*P<0.05; **P<0.01; ***P≤0.001 vs vehicle (change from baseline).
Maximum score is 35 for all domains except for role-social, with a maximum score of 28. There was no imputation of missing data. Horizontal black lines indicate domain scores at baseline. N values: <18 years CAB n=117, vehicle n=50; ≥18 years CAB n=97, vehicle n=61.
Acne-QoL, Acne-Specific Quality of Life questionnaire; CAB, clindamycin phosphate 1.2%/adapalene 0.15%/benzoyl peroxide 3.1%; ITT, intent to treat.

ranged from 3.3-6.1 for participants <18 years and 7.3 to 11.9 for participants ≥18 years (versus 1.9 to 4.1 and 4.6 to 6.7, respectively, with the vehicle; Figure 6). Differences in domain score increases between adult and pediatric participants were not statistically significant.

Safety and Tolerability

Rates of TEAEs with CAB were similar for both age groups (<18 years: 25.4%; ≥18 years: 29.3%) and were higher than with vehicle (Table 3). TEAE severity was also similar across age groups, with most TEAEs of mild or moderate severity. Treatment-related TEAEs occurring in ≥2% of participants in any treatment group were application site pain, dryness, and irritation; erythema; and xerosis. Rates of erythema and application site pain, dryness, and irritation were similar for CAB-treated participants in both age groups; all participants experiencing xerosis were in the ≥18 years group. There were no serious AEs. Rates of discontinuation of the study drug or from the study due to TEAEs were low and similar for CAB-treated participants in both age groups (<18 years, 2.4%; ≥18 years, 3.4%).

Rates, severity, and changes in cutaneous safety and tolerability assessments were similar overall with CAB treatment in both age groups (data not shown). Among participants treated with CAB, 88 to 100% of participants had a rating of 0 (none) for scaling, hypopigmentation, itching, burning, and stinging, both at baseline and at week 12. Transient increases in rates of scaling, itching, burning, and stinging in CAB-treated participants began at week 2 but resolved back to or near baseline rates by week 12. At all post-baseline study visits, maximum scores for these signs/symptoms were 0 (none), 1 (mild), or 2 (moderate) for 96.8% to 100% of participants in both age groups. The mean scores for these assessments remained <0.5 and the mean worst scores were <1. Erythema and hyperpigmentation were the most commonly reported signs at baseline (<18 years: 38.1% and 27.8%, respectively; ≥18 years: 37.1% and 40.5%, respectively), but results from week 12 (erythema: 33.9% and 24.0%; hyperpigmentation: 22.0% and 28.1%) indicate improvement with CAB gel in both age groups.

DISCUSSION

Acne impacts individuals of all ages, highlighting the need for treatments that are safe and effective for both pediatric and adult patients. In this post hoc analysis, treatment with CAB, a novel fixed-dose, triple-combination clindamycin phosphate 1.2%/adapalene 0.15%/BPO 3.1% polymeric gel, was associated with treatment success rates and rapid reductions in inflammatory and noninflammatory lesions that were significantly greater than with vehicle in participants aged <18 years or ≥18 years.

Some important limitations of these studies bear consideration. Because acne resolution often takes longer than 12 weeks, CAB treatment duration in these studies may not represent a real-world time course for acne treatment. Moreover, the studies were not powered for statistical analysis of between-group differences within pediatric and adult subgroups. Nevertheless, week 12 treatment success rates and lesion reductions from baseline were significantly greater with CAB treatment than with vehicle for both age groups. These differences are particularly notable given the low numbers of participants enrolled in each treatment arm.

The efficacy of CAB among pediatric and adult participants in these phase 3 studies was consistent with findings from the phase 2 study, in which 52.5% of participants achieved treatment success and >70% reductions in both inflammatory and noninflammatory lesions were observed.[20] In particular, pediatric participants in the phase 2 and pooled phase 3 studies were remarkably similar in their high rates of treatment success (55.8% and 52.7%, respectively) as well as percent reductions in inflammatory (78.3% and 78.6%) and noninflammatory lesions (70.0% and 73.8%).[22] In the phase 2 study, both in the overall study population and in a subgroup of pediatric participants, CAB was also superior to dyad combinations of the active ingredients for rates of treatment success (dyads, range: 27.8% to 33.9%; $P<0.01$, all) as well as percent reductions in inflammatory (61.7% to 69.2%; $P<0.05$, all) and noninflammatory lesions (53.7% to 61.1%; $P<0.05$, all in the overall population; $P<0.01$ vs clindamycin/BPO in the pediatric subgroup).[20,22]

The greater efficacy of triple-combination CAB versus component dyads in the phase 2 study is consistent with the prediction that efficacy can be improved by targeting additional pathophysiological pathways in acne. Moreover, a meta-analysis of acne treatments found that triple-combination therapies—such as CAB—that include an antibiotic (oral or topical), retinoid (topical), and BPO were among the top two most efficacious of all treatments assessed for both treatment success and total lesion count reductions, further highlighting the additional benefit of triple-combination versus dual-combination therapy for acne.[13]

The real-world effectiveness of topical acne treatments is hampered by low rates of treatment adherence, particularly among younger patients.[6,23] Even with mild acne, visible improvements may require 1 to 2 months of treatment, and maximum benefits for several additional months, potentially leading patients to believe that their treatment is ineffective and discontinue use.[23,24] Combining topical medications can improve efficacy, but at the cost of increased treatment complexity, which further dampens adherence.[23] The rapid achievement of lesion reductions with CAB in a single, easy-to-use fixed-combination gel may promote treatment adherence, potentially contributing further to treatment effectiveness.

One concern with combining topical medications is that with additional active ingredients comes an increased risk of adverse drug effects. This is particularly relevant for pediatric patients, for whom topical medications may be more irritating.[5] Irritation with topical treatments is largely attributable to a drug that is not delivered into the skin[25]; to address this, CAB is formulated with micronized BPO and adapalene for better skin penetration.[19] The polymeric gel vehicle may also reduce irritation potential as it allows for uniform distribution of the active ingredients along with a hydrating humectant; is pH-balanced for the skin; and includes no alcohol, preservatives, or surfactants. In these phase 3 studies, rates of TEAEs and treatment-related TEAEs, as well as TEAE severity with CAB treatment were similar across age groups, though somewhat lower among pediatric participants, and consistent with the phase 2 overall study population.[20] Rates of discontinuation due to a TEAE were low in both groups (<4%). In the phase 2 study, CAB demonstrated a more favorable tolerability profile than a dyad BPO/adapalene gel. The anti-inflammatory properties of clindamycin may contribute to CAB tolerability by mitigating retinoid- and/or BPO-associated cutaneous irritation.[17,20,26]

Acne is associated with significant depreciation of quality of life, particularly among adult patients.[1,9] Consistent with this, mean Acne-QoL domain scores in the present studies were lower (worse) at baseline for adult versus pediatric participants (range: 16.9 to 18.8 versus 21.5 to 24.6, respectively). Nonetheless, CAB treatment led to significantly greater increases in all Acne-QoL domain scores than vehicle in both subgroups. Domain score increases were numerically smaller among pediatric participants, likely owing to a ceiling effect due to their higher baseline scores, but differences between age groups in the magnitude of improvement were not statistically significant. Overall, significantly greater increases from baseline with CAB versus vehicle in all Acne-QoL domain scores in both age groups demonstrate QoL benefits with CAB treatment.

CONCLUSION

CAB gel is the only fixed-dose topical medication for acne that delivers three recommended active ingredients with once-daily use. In 2 phase 3 studies, pediatric and adult participants with moderate-to-severe acne treated with CAB gel experienced >70% reductions in inflammatory and noninflammatory lesions and significant improvements in quality of life, with approximately half of participants achieving treatment success. The favorable safety and efficacy profile of CAB demonstrates its potential as an effective option for the treatment of acne in patients of all ages.

DISCLOSURES

Hilary Baldwin has served as an advisor, investigator, and on speakers' bureaus for Almirall, Cassiopea, Foamix, Galderma, Ortho Dermatologics, Sol Gel, and Sun Pharma. Linda Stein Gold has served as investigator/consultant or speaker for Ortho Dermatologics, LEO Pharma, Dermavant, Incyte, Novartis, AbbVie, Pfizer, Sun Pharma, UCB, Arcutis, and Lilly. Julie Harper has received honoraria from Aclaris, Almirall, BioPharmX, Cassiopea, Cutanea, Dermira, Foamix, Galderma, LaRoche-Posay, Ortho Dermatologics, and Sun. Andrew Alexis has received Grants (funds to institution) from LEO Pharma, Amgen, Galderma, Arcutis, Dermavant, Abbvie, and Castle; advisory board/consulting from LEO Pharma, Galderma, Pfizer, Sanofi-Regeneron, Dermavant, Beiersdorf, Ortho, L'Oreal, BMS, Bausch health, UCB, Vyne, Arcutis, Janssen, Allergan, Almirall, Abbvie, Amgen, VisualDx, Eli Lilly, Swiss American, Cutera, Cara, EPI, Incyte, Castle, Apogee, Canfield, Alphyn; speaker fees from Regeneron, SANOFI-Genzyme, BMS, L'Oreal, Janssen, and Johnson & Johnson; equipment (loan to institution) from Aerolase; and royalties from Springer, Wiley-Blackwell, and Wolters Kluwer Health. Valerie Callender has served as an investigator, consultant, or speaker for Acne Store, Almirall, Aerolase, AbbVie, Allergan Aesthetics, Avava, Avita Medical, Beiersdorf, Cutera, Dermavant, Eli Lilly, Epi Health, Galderma, Janssen, Jeune Aesthetics, L'Oréal, Ortho Dermatologics, Pfizer, Prollineum, Regeneron, Scientis, Sente, SkinBetter science, SkinCeuticals, Symatese, UCB, and UpToDate. Leon Kircik has served as either a consultant, speaker, advisor, or investigator for Allergan, Almirall, Epi Health, Galderma, Novartis, Ortho Dermatologics, and Sun. Eric Guenin is an employee of Ortho Dermatologics and may hold stock and/or stock options in its parent company. Lawrence Eichenfield has received honoraria for consulting services from Abbvie, BMS, Dermata, Dermira, Dermavant, Eli Lilly, Forte Pharma, Galderma, Incyte, J&J, Novartis, Pfizer, Regeneron Pharmaceuticals, Inc., Sanofi Genzyme, and Ortho Dermatologics; and study support (to institution) from Abbvie, Amgen, Bausch Health, Dermata, Dermira, Eli Lilly and Company, Galderma, Incyte, Pfizer, Regeneron Pharmaceuticals, Inc. and Sanofi Genzyme.

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