LONGBOARD PHARMACEUTICALS

PACIFIC Study Topline Data

JANUARY 2, 2024

Forward-Looking Statements

This presentation contains forward-looking statements about Longboard Pharmaceuticals, Inc. ("we," "Longboard" or the "Company"), including statements regarding: the potential of LP352 (including to be best-in-class, to change the DEE landscape, to serve as the cornerstone of a potential world-class epilepsy franchise, to have intellectual property protection through 2041, and to move rapidly into a global Phase 3 program); the competitive landscape, commercial opportunities and analogs; our development approach; the prevalence of unmet need associated with, and market opportunity for, DEEs; and other statements that are not historical facts, including statements that may include words such as "will", "may", "can", "would", "intend", "plan", "expect", "believe", "potential", "opportunity" and similar words. For such statements, we claim the protection of the Private Securities Litigation Reform Act of 1995. These forward-looking statements are subject to a number of risks, uncertainties and assumptions, including, but not limited to: topline data may not reflect the complete or final results of a particular study or trial, and are subject to change; nonclinical and clinical data are voluminous and detailed, and regulatory agencies may interpret or weigh the importance of data differently and reach different conclusions than Longboard or others, request additional information, have additional recommendations or change their guidance or requirements before or after approval; our limited operating history; our history of incurring net losses and expectation that we will continue to incur net losses for the foreseeable future, and that we may never be profitable; our need for additional funding and related risks for our business, product development programs and future commercialization activities; the timing and success of clinical trials and preclinical studies we conduct; the ability to obtain and maintain regulatory approval to conduct our clinical trials (in the manner we propose or at all) and, ultimately, to market our product candidates; the ability to commercialize our product candidates; our ability to compete in the marketplace; risks regarding our license and dependencies on others; our ability to obtain and maintain intellectual property protection and freedom to operate for our product candidates; our ability to manage our growth; and other risks and factors disclosed in our filings with the U.S. Securities and Exchange Commission, including our most recently filed Annual Report on Form 10-K, subsequently filed Quarterly Reports on Form 10-Q, and in our other filings. We operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. The forward-looking events and circumstances discussed in this presentation may not occur and actual results could differ materially and adversely from those anticipated or implied in the forward-looking statements. Except as required by law, we assume no responsibility for the accuracy and completeness of the forward-looking statements, and we undertake no obligation to update any forward-looking statements after the date of this presentation to conform these statements to actual results or to changes in our expectations.

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This presentation discusses product candidates that have not yet been approved for marketing by the U.S. Food and Drug Administration (the "FDA").

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Bexicaserin Has the Potential to Change the DEE Landscape

53.3%

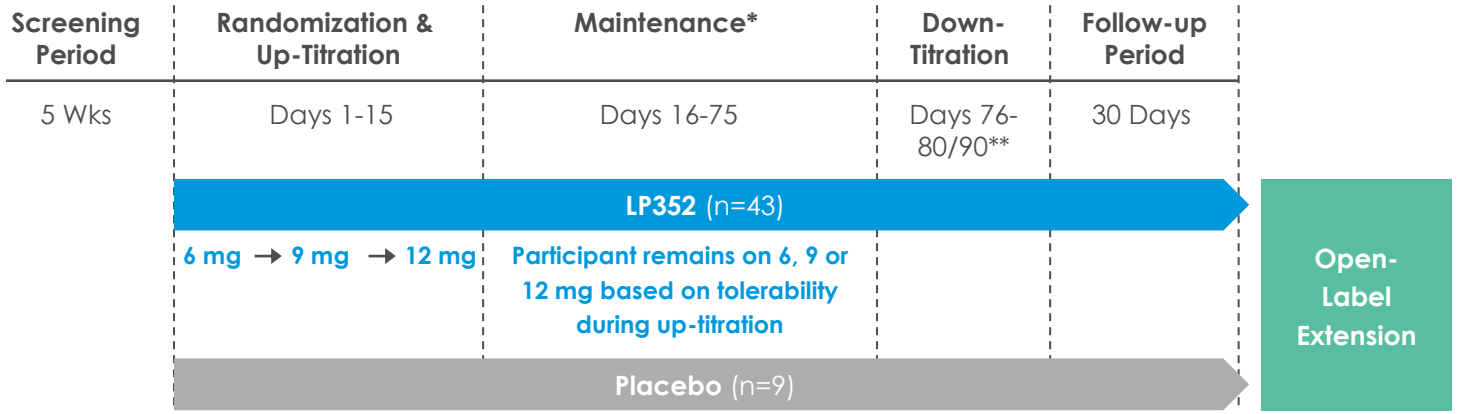
Median Reduction in Seizures*

- **72.1%** ↓ **Dravet**
- **48.1%** ↓ **LGS**
- **61.2%** ↓ **DEE Other**

- **Bexicaserin provides the cornerstone to potentially build a world-class epilepsy franchise**
- Studies to date highlight bexicaserin as potentially **best-in-class**
- **Composition of matter IP protection through 2041**** provides the opportunity to maximize the full potential of LP352
- Rapidly moving forward with preparations for a **global Phase 3 program**

*In the PACIFIC Study
**Composition of matter through 2036 with potential for PTE / PTA (2041)

Bexicaserin (LP352) Ph 1b/2a PACIFIC Study in Participants with DEEs



Key Inclusion Criteria:

- DEEs with average of ≥ 4 motor seizures per 4-week period during the 12 weeks prior to screening and ≥ 4 motor seizures in the 4-week period of screening
- DEEs (multiple syndromes) including LGS, Dravet syndrome, SCN2A-related epilepsies, CDD, among others

Key Exclusion Criteria:

- Use of fenfluramine & lorcaserin

Basic Information:

- **Sites:** 34 sites
- **Ages:** ≥ 12 to ≤ 65 yrs old

No Echocardiograms Required in PACIFIC

PACIFIC
Developmental and Epileptic Encephalopathies Study

Double-blind, placebo-controlled study to assess the safety, tolerability, pharmacokinetics and efficacy of bexicaserin

Study Objectives:

Evaluate reduction in countable motor seizures across a broad group of epilepsies

Identify potential indications for pivotal studies

Analyze concentration response to understand dosing in different seizure types and disorders

* Maintenance Dose of bexicaserin (TID): 6 mg, 9 mg, 12 mg or placebo TID
** Up to a 15-day down-titration/taper period (reducing dose every 5 days) depending on the last maintenance dose
Definitions: LGS = Lennox-Gastaut Syndrome, CDD = CDKL5 Deficiency Disorder

Diagnostic Eligibility Criteria: Dravet Syndrome, Lennox-Gastaut Syndrome (LGS) and Other DEEs

PACIFIC Developmental and Epileptic Encephalopathies Study

All participants: Treatment-resistant countable motor seizures with average of ≥ 4 observed/countable motor seizures per 4-week period during 12 weeks before screening while on stable ASM treatment

	Dravet Syndrome	LGS	DEE Other
Onset	Between 3–19 months of age	Before 8 years of age	Unprovoked seizures before 5 years of age
Seizure Type	Generalized tonic-clonic, unilateral clonic or bilateral clonic seizures	Tonic or tonic/atonic seizures & more than 1 type of generalized seizure (tonic-clonic, tonic-atonic, atonic, tonic, myoclonic or drop)	Combined focal and generalized seizure types, or multiple generalized seizure types
Developmental History	Initially normal, then delayed	Delayed	Delayed
EEG		Consistent with LGS diagnosis*	Slow or disorganized
Additional Criteria	One of the following: • Emergence of another seizure type after the first • Induced by warm temperatures, fevers, or visual stimuli • Genetic test consistent with Dravet	More than 1 type of generalized seizure for ≥6 months before screening	No history of idiopathic generalized seizures

*Abnormal inter-ictal EEG background activity with inter-ictal slow spike-and-wave pattern ≤2.5 Hz or inter-ictal generalized paroxysmal fast activity

Topline Participant Disposition & Safety Results Summary

Demographics, Baseline Characteristics & Concomitant Medications

Parameter n(%)	Statistics	Bexicaserin (N=43)	Placebo (N=9)	Overall (N=52)
Age (Years)	Mean	23.8	26.7	24.3
	Standard Deviation	9.62	7.73	9.31
	Median	23.0	23.0	23.0
	Min, Max	12, 55	19, 41	12, 55
Sex	Male	21 (48.8)	7 (77.8)	28 (53.8)
	Female	22 (51.2)	2 (22.2)	24 (46.2)
Weight (kg)	Median	55.20	72.76	59.36
	Min, Max	29.2, 96.0	45.8, 110.7	29.2, 110.7
BMI (kg/m^2)	Median	22.4	28.1	23.0
	Min, Max	17, 35	19, 34	17, 35
Concomitant Medications	Clobazam	21 (48.8)	2 (22.2)	23 (44.2)
	Cannabidiol	14 (32.6)	3 (33.3)	17 (32.7)
	Lamotrigine	13 (30.2)	4 (44.4)	17 (32.7)
	Levetiracetam	16 (37.2)	1 (11.1)	17 (32.7)

Participant Disposition

n(%)	Overall		Dravet Syndrome		LGS		DEE Other	
	Bexicaserin	Placebo	Bexicaserin	Placebo	Bexicaserin	Placebo	Bexicaserin	Placebo
Safety Set	43 (100)	9 (100)	4 (9.3)	0	24 (55.8)	5 (55.6)	15 (34.9)	4 (44.4)
Full Analysis Set	35 (81.4)	9 (100)	3 (7.0)	0	17 (39.5)	5 (55.6)	15 (34.9)	4 (44.4)
Participants Completed	32 (74.4)	9 (100)	3 (7.0)	0	15 (34.9)	5 (55.6)	14 (32.6)	4 (44.4)
Participants Discontinued	11 (25.6)	0	1 (2.3)	0	9 (20.9)	0	1 (2.3)	0
Adverse Event	9 (20.9)	0	1 (2.3)	0	7 (16.3)	0	1 (2.3)	0
Consent withdrawn	1 (2.3)	0	N/A	N/A	1 (2.3)	0	N/A	N/A
Lost to follow-up	1 (2.3)	0	N/A	N/A	1 (2.3)	0	N/A	N/A

Definitions: LGS = Lennox-Gastaut Syndrome
Note: Percentages are based on the number of subjects in the Enrolled (Safety) Set
Safety Set includes all subjects who signed informed consent or those who had their legally authorized representative sign for them
Full Analysis Set includes all subjects in the Safety Set who complete Part 1 (titration) and have at least 1 post-baseline seizure measurement during Part 2 (maintenance)

86% of Bexicaserin Treated Participants Achieved 12 mg Dose

Highest tolerated dose achieved for the Maintenance Period

	n(%)	Bexicaserin (LP352)	Placebo	Overall
All Participants		35	9	44
	6 mg	1 (2.9)	0	1 (2.3)
	9 mg	4 (11.4)	0	4 (9.1)
	12 mg	**30 (85.7)**	**9 (100)**	**39 (88.6)**
Dravet Syndrome		3	0	3
	6 mg	0	0	0
	9 mg	1 (33.3)	0	1 (33.3)
	12 mg	2 (66.7)	0	2 (66.7)
LGS		17	5	22
	6 mg	0	0	0
	9 mg	1 (5.9)	0	1 (4.5)
	12 mg	16 (94.1)	5 (100)	21 (95.5)
DEE Other		15	4	19
	6 mg	1 (6.7)	0	1 (5.3)
	9 mg	2 (13.3)	0	2 (10.5)
	12 mg	12 (80.0)	4 (100)	16 (84.2)

Safety Results Summary

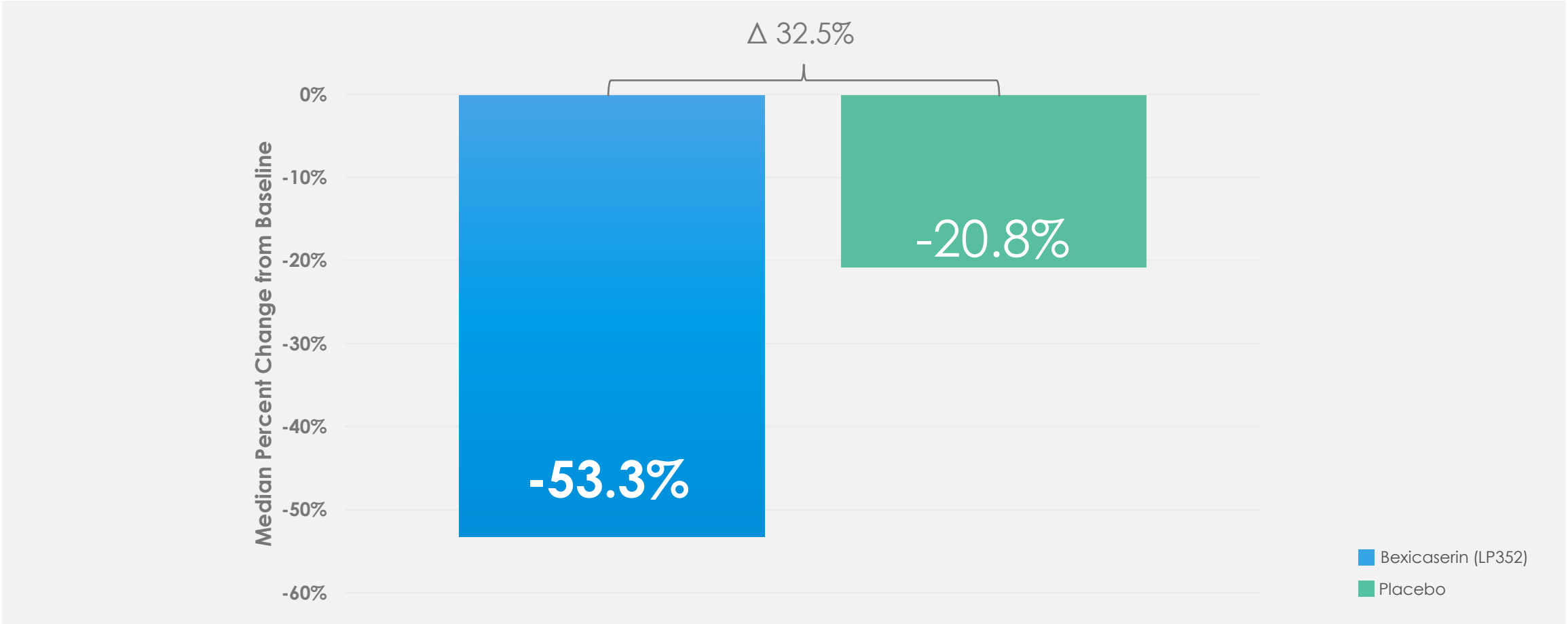
n(%)	Bexicaserin (N=43)	Placebo (N=9)	Overall (N=52)
Participants with any TEAEs	35 (81.4)	8 (88.9)	43 (82.7)
Drug-Related TEAEs	28 (65.1)	3(33.3)	31 (59.6)
TEAEs Leading to Discontinuation	9 (20.9)	0	9 (17.3)
TEAEs Leading to Discontinuation (Titration)	7 (16.3)	0	7 (13.5)
TEAEs Leading to Discontinuation (Maintenance)	2 (4.7)	0	2 (3.8)
Participants with any SAEs	3 (7.0)	0	3 (5.8)
Number of Deaths	0	0	0

- The most common AEs* observed were somnolence, decreased appetite, constipation, diarrhea, lethargy, tremor, urinary tract infection, fatigue, pyrexia and agitation
- SAEs were ankle fracture, constipation and increased seizures
- Vast majority of participants stayed on bexicaserin once they achieved the maintenance phase
- **Favorable safety and tolerability results**

Definitions: TEAE = Treatment Emergent Adverse Event; SAE = Serious Adverse Event, AE = Adverse Event
*Over 5% of bexicaserin participants and greater than placebo

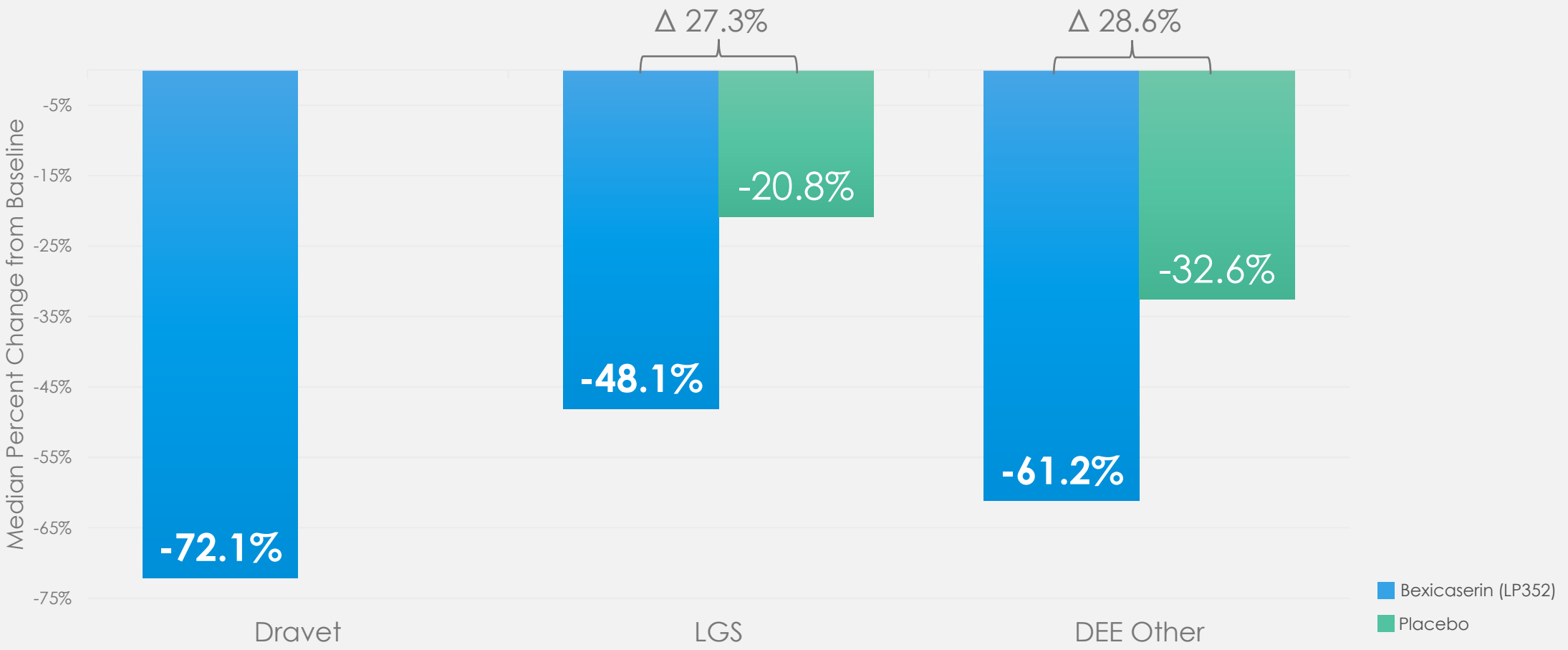
Topline Efficacy Results

Bexicaserin Achieved Median Seizure Reduction of 53.3% in Countable Motor Seizures Compared to 20.8% for Placebo Across the DEE Study Population



Bexicaserin Achieved Placebo Adjusted Mean Seizure Reduction of 66.8% (p value = .0501)

Bexicaserin Achieved Median Seizure* Reduction Across Dravet, LGS, DEE Other Cohorts



*Countable Motor Seizures

PACIFIC Results Pave the Way for Global Phase 3 Program

PACIFIC demonstrated meaningful efficacy results across a broad DEE population as well as in individuals with LGS and Dravet

Bexicaserin (LP352) achieved a median percent reduction from baseline in seizure frequency during the treatment period of:

- **53.3%** in broad DEE population (32.5% placebo-adjusted)
- **72.1%** in Dravet cohort
- **48.1%** in LGS cohort (27.3% placebo-adjusted)
- **61.2%** in DEE Other cohort (28.6% placebo-adjusted)

Results were demonstrated on top of a contemporary polytherapy background with multiple ASMs including cannabidiol (**32.7% of participants were receiving cannabidiol**)

Favorable safety and tolerability results

- **No echocardiograms required** in PACIFIC study
- Metabolized via UGT pathway – potentially reduces risk of Drug-Drug Interactions

100% of PACIFIC participants who completed the study **entered the Open Label Extension Study**

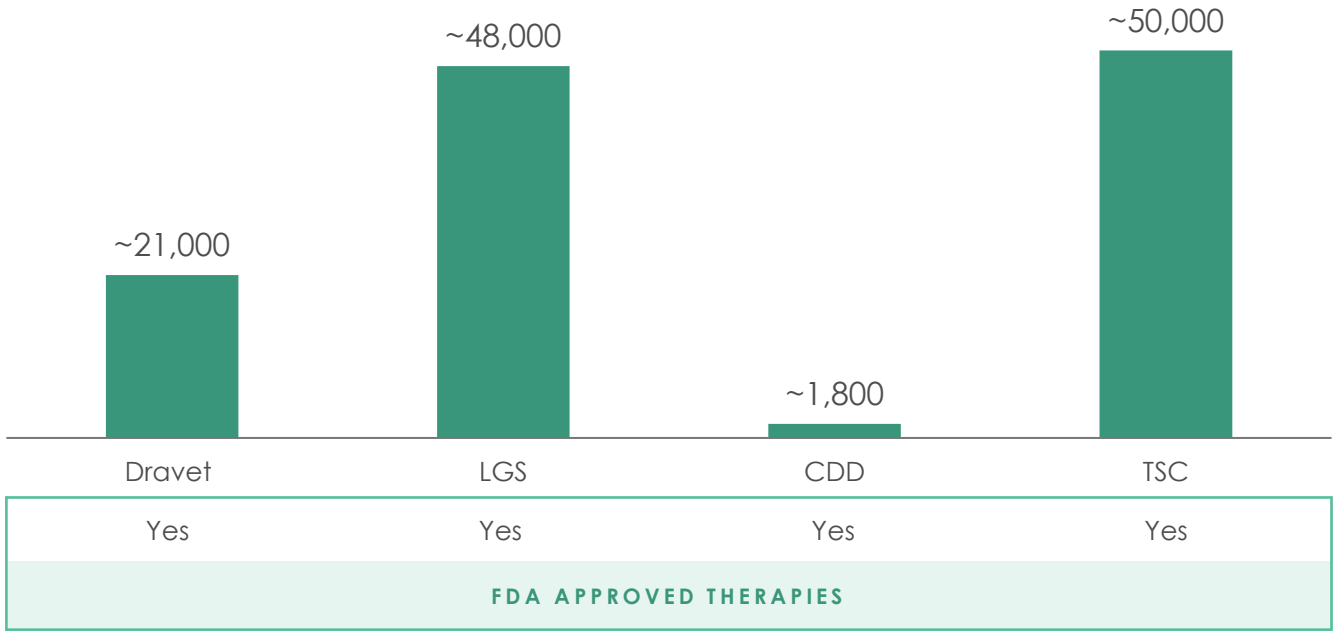
- Awaiting analysis of the full PACIFIC dataset
- Utilizing key learnings for incorporation into the global Phase 3 program

*Definitions: ASMs = Anti-Seizure Medications; UGT = Uridine Diphosphate Glucuronosyltransferase

Summary & Next Steps

4 DEE Syndromes Have Approved Therapies; 20+ Have None

"Approved 4" DEE Prevalence (US)



Other DEEs

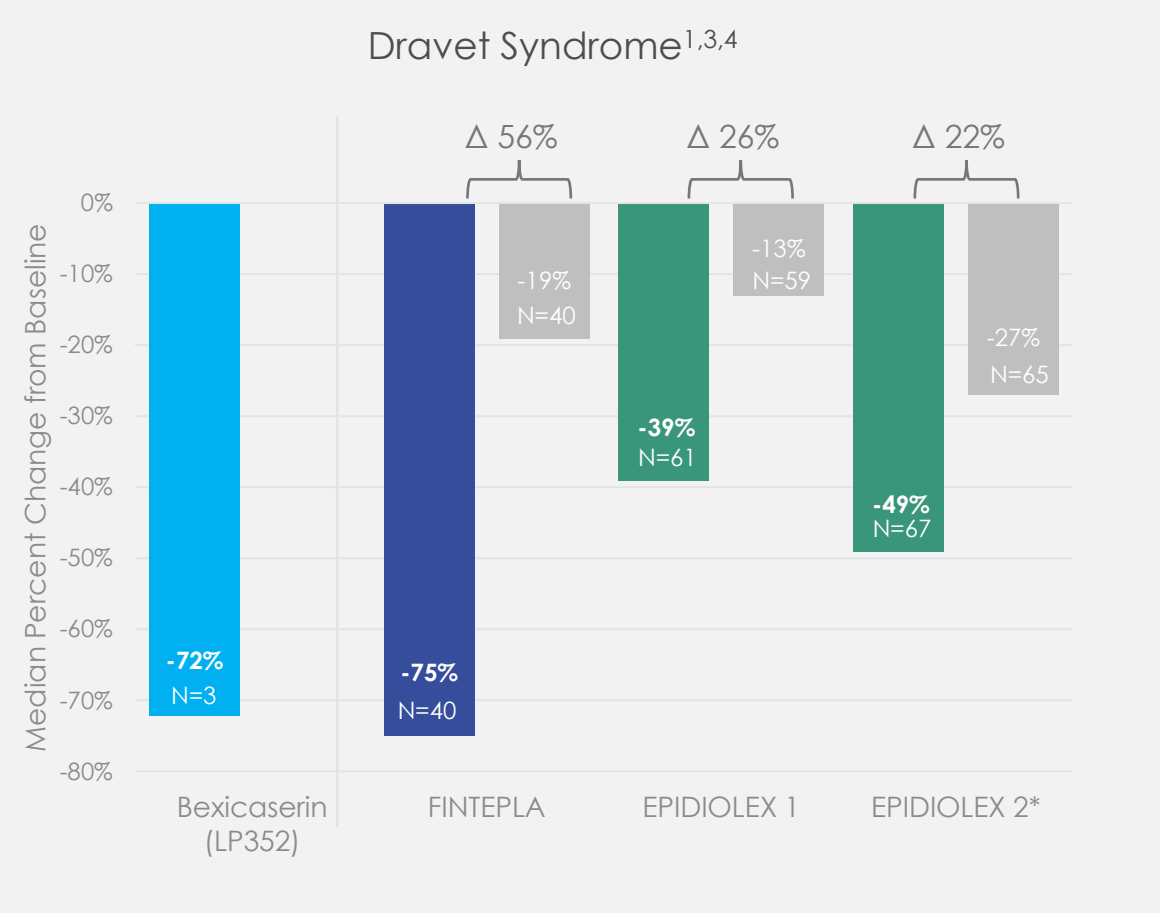
- DUP15q
- SCN2A related epilepsies
- SCN8A related epilepsies
- KCNQ2 related epilepsies
- KCNQ3 related epilepsies
- Angelman syndrome
- Landau-Kleffner Syndrome
- Early Myoclonic Encephalopathy
- KCNT1 related epilepsies
- SynGAP1 related epilepsies
- Rett Syndrome
- Ohtahara Syndrome
- PCDH19
- EE w/ Continuous Spike-Wave
- West Syndrome
- Myoclonic Atonic Epilepsy
- Ring14
- Ring20
- Others

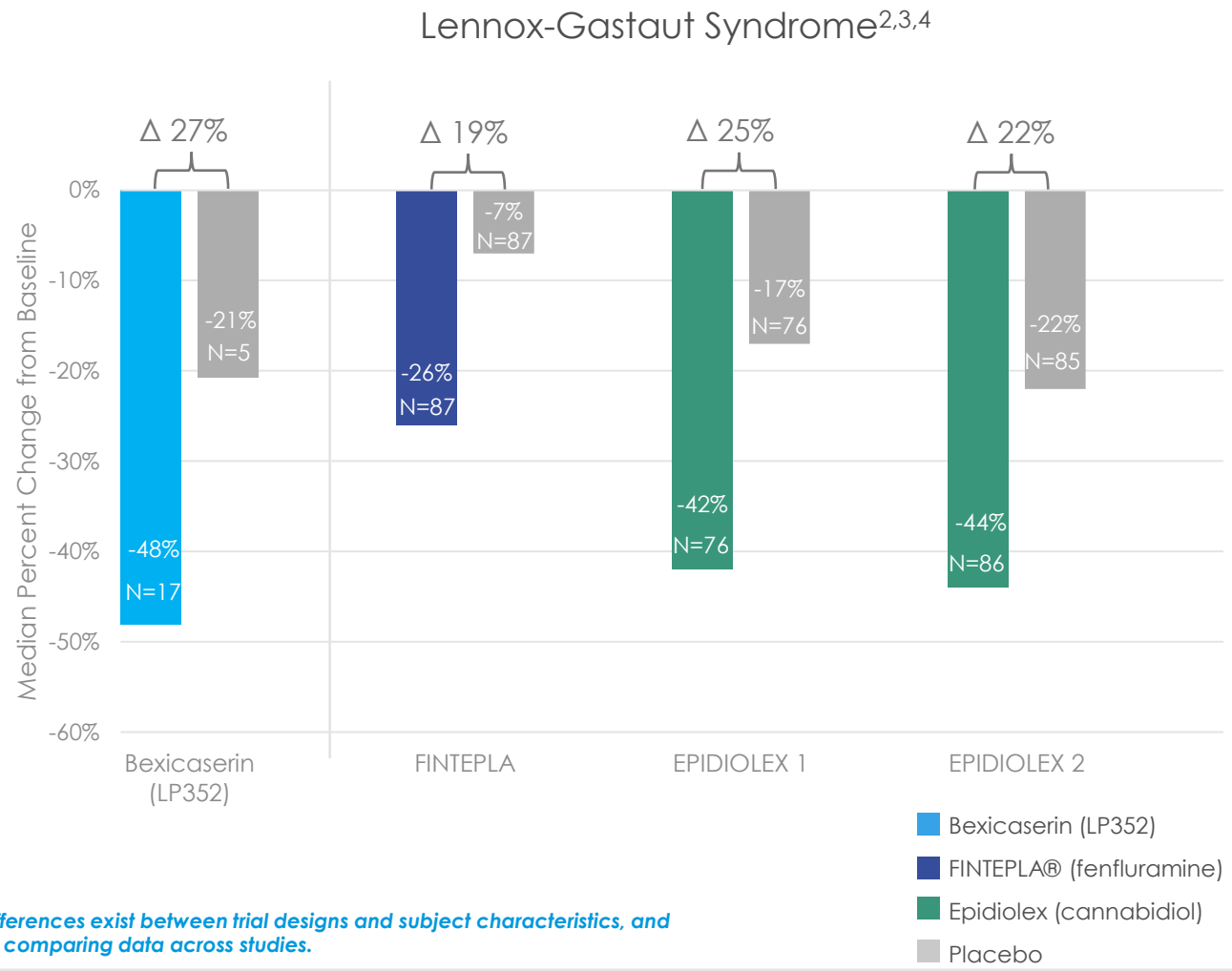
NO SPECIFICALLY APPROVED THERAPIES

The prevalence of all "Other DEEs" could exceed the total of the "Approved 4" combined

Sources: Dravet Syndrome Foundation, LGS Foundation
Definitions: LGS = Lennox-Gastaut Syndrome, CDD = CDKL5 Deficiency Disorder, TSC = Tuberous Sclerosis Complex; DEE = Developmental and Epileptic Encephalopathy

Competitive Landscape: Median Seizure Reduction for Bexicaserin and Approved Compounds in Dravet and LGS





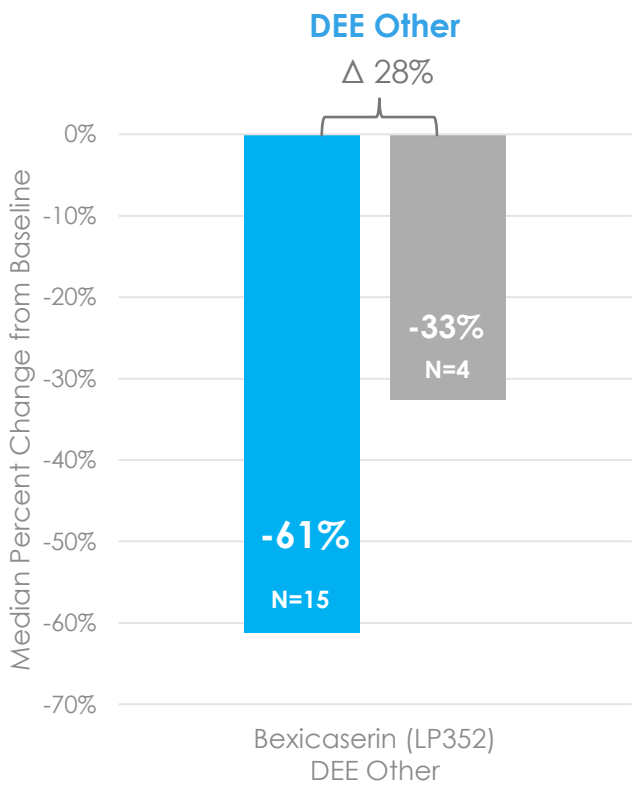
FOR ILLUSTRATIVE PURPOSES ONLY: Not a head-to-head comparison. Differences exist between trial designs and subject characteristics, and caution should be exercised when comparing data across studies.

1. Fenfluramine - Lagae, et al The Lancet 2019; 2. Fenfluramine - Knupp, et al JAMA Neurology 2022; 3. Epidiolex HCP website Dravet & LGS, Miller et al JAMA Neurology 2020; 4. PACIFIC Study Topline Data

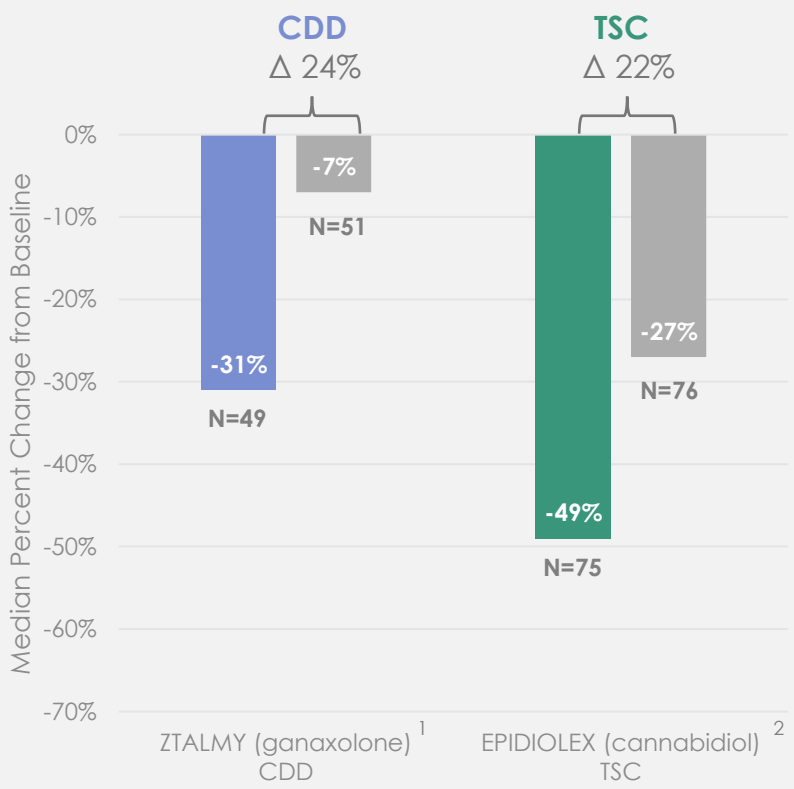
* Estimated percentage reduction in seizure frequency

Significant Unmet Need in DEEs (Beyond Dravet and LGS)

"DEE Other" in PACIFIC



"Other DEEs" with Specifically Approved Therapies



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1. Knight,et al, The Lancet Neurology 2022; 2. Epidiolex HCP website TSC

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Thank you

Nasdaq: LBPH

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