LPCN 1154 for Depression

R&D Event, July 9th 2025

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Introduction	**Dr. Mahesh Patel** President and CEO Lipocine
Postpartum Depression Landscape	**Dr. Kristina Deligiannidis** Professor and Director, Women's Behavioral Health Zucker Hillside Hospital, Northwell Health, New York
LPCN 1154 Target Product/Label Attributes	**Dr. Anthony DelConte** Medical Director Lipocine
LPCN 1154 Development/Next Steps	**Dr. Ben Bruno** VP of Clinical Development Lipocine
Concluding Remark	**Dr. Mahesh Patel** President and CEO Lipocine
Q and A	**Moderated by LifeSci Advisors**

Forward-Looking Statements

This presentation contains "forward-looking statements" that are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and include statements that are not historical facts regarding our product candidates and strategic plans and related development efforts with the FDA, including with respect to LPCN 1154, our current intention to conduct a safety and efficacy study relating to LPCN 1154, the timing and potential results of the safety and efficacy study relating to LPCN 1154, the timing of our submission of a NDA with the FDA for LPCN 1154, the application of our proprietary platform in developing new treatments, the achievement of milestones within and completion of clinical trials, the timing and completion of regulatory reviews, outcomes of clinical trials of our product candidates, and the potential uses and benefits of our product candidates. Investors are cautioned that all such forward-looking statements involve risks and uncertainties, including, without limitation, the risks that we may not be successful in developing product candidates, we may not have sufficient capital to complete the development processes for our product candidates, including required studies, or we may decide to allocate our available capital to other product candidates, we may not be able to enter into partnerships or other strategic relationships to monetize our non-core assets, safety and efficacy studies, including those relating to LPCN 1154, may not be successful or may not provide results that would support the submission of a NDA, the FDA may not approve any of our products, risks related to our products, expected product benefits not being realized, clinical and regulatory expectations and plans not being realized, new regulatory developments and requirements, risks related to the FDA approval process including the receipt of regulatory approvals and our ability to utilize a streamlined approval pathway for LPCN 1154, the results and timing of clinical trials, patient acceptance of Lipocine's products, the manufacturing and commercialization of Lipocine's products, and other risks detailed in Lipocine's filings with the SEC, including, without limitation, its Form 10-K and other reports on Forms 8-K and 10-Q, all of which can be obtained on the SEC website at www.sec.gov. Lipocine assumes no obligation to update or revise publicly any forward-looking statements contained in this presentation, except as required by law.

Lipocine Pipeline

Development Candidate (*Indication*)	Pre-Clinical	Phase 1	Phase 2	Pivotal	Next Steps/Status
LPCN 1154 *Postpartum Depression*					Phase 3 Topline results Q2/26
LPCN 2401 *Obesity Management - adjunct to GLP-1*					POC study as adjunct to GLP-1 Expected patient dosing Q3/25
LPCN 1148 *Decompensated Liver Cirrhosis*					P2 study completed
LPCN 2101 *Women With Epilepsy*					IND cleared for P2
LPCN 1107 *Prevention of Preterm Birth*					EOP2 meeting completed
LPCN 2203 *Essential Tremor*					P1 study completed
LPCN 1144 *Non-Cirrhotic NASH*					P2 study completed

TLANDO® is available in the U.S. and New Drug Submission filed in Canada

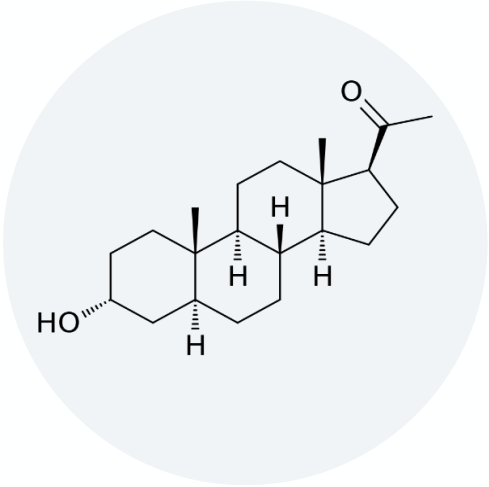
TLANDO® licensed for commercialization in Brazil, S. Korea, GCC countries

LPCN 1154 - Oral Bioidentical Neuroactive Steroid (NAS) for PPD

Overcoming brexanolone oral delivery challenges

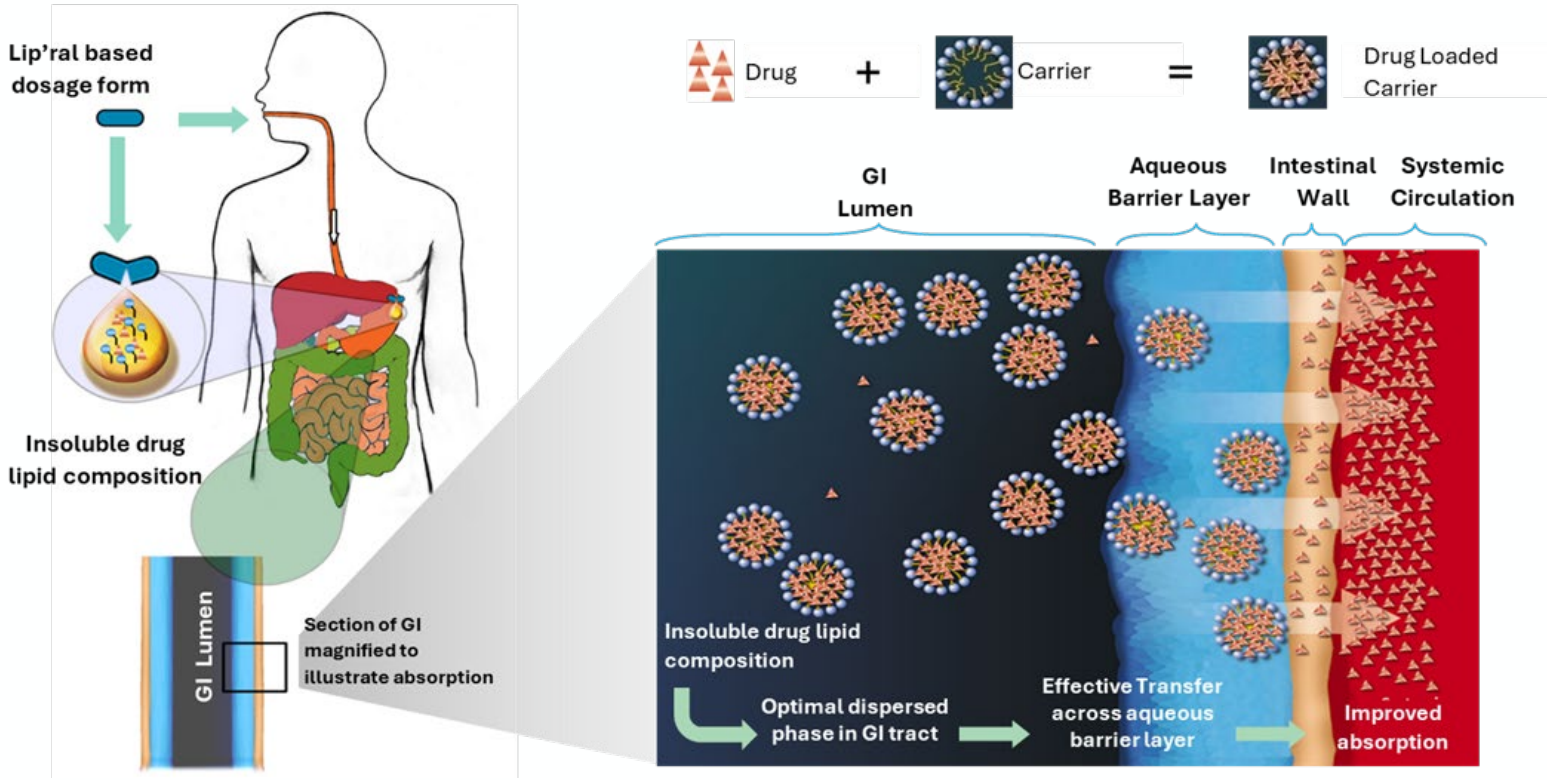
Brexanolone

Brexanolone (allopregnanolone) is a positive allosteric modulator (PAM) of the $GABA_A$ receptor



Molecular Weight:	318.5 g/mol
Lipophilic:	Log P ≈ 5.0
Poor aqueous solubility:	Saq <1.0 µg/mL

Oral enablement



Source: Giliyar et al. Drug Delivery Technology, Jan 2006, Vol 6 No.1

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PPD Treatment Landscape

Dr. Kristina Deligiannidis

Dr. Kristina Deligiannidis

Relationships and affiliations

Research/grant/contract funding

- National Institutes of Health
- CDC/NIOSH
- New York State Office of Mental Health (contract)
- Feinstein Institutes for Medical Research, Northwell
- SAGE therapeutics (contracted research)
- Woebot Health (contracted research)
- Gerbera Therapeutics (contracted research)
- Premier Healthcare Solutions, Inc. (contracted research)

Royalties

- NIH Employee Invention

Consulting

- Lipocine Inc
- Sage Therapeutics
- Biogen
- Brii Biosciences
- Gerbera Therapeutics
- Neurocentria
- Reunion Neuroscience, Inc.
- GH Research

Perinatal depression is common and costly

- Perinatal mental health disorders are among the most common complications of pregnancy and the year after delivery (1 in 5) *(Wisner KL et al, 2013; Fawcett EJ et al, 2019; Masters GA et al, 2022).*
- Globally, mean prevalence rates of depression during pregnancy or after delivery (**perinatal depression**) = 26.3% *(Al-abri K et al, 2023)*
- Cost of not treating perinatal depression/anxiety among US births in 2017 = **$14.2 billion** with the average cost per affected mother-child dyad through age 5 =**$31,800**
  - Reduced economic productivity
  - Increased number preterm births
  - Increased maternal health expenditures (inpatient, ambulatory, emergency services, prescriptions)

(Luca DL et al, 2020; Pollack LM et al, 2022)

Perinatal depression is under-diagnosed and undertreated

- Numerous professional organizations, including the U.S. Preventative Services Task Force (USPSTF) and American Psychiatric Association (APA), recommend screening for depression in pregnant and postpartum individuals *(JAMA 2016; APA position statement 2018)*
- American College of Obstetricians and Gynecologists (ACOG) recommends screening individuals for depression and anxiety symptoms using a standardized, validated tool at the initial prenatal visit, later in pregnancy and at a postpartum visit *(ACOG Clinical Practice Guideline June 2023, Obst Gynecol)*

increased screening and initiation of pharmacotherapy by OBGYNs

- Prevalence of health care provider inquiry about depression during prenatal visits increased significantly during 2016–2018, from 76.2% to 79.3% and during the postpartum visit increased significantly from 84.1% to 88.0% ($p<0.05$) during 2016–2018 *(Bauman BL et al, 2020 CDC MMWR weekly report)*

- 73% of postpartum women initiate treatment *(Avalos LA et al, 2022)* but far fewer receive adequate (dose and duration) treatment *(Cox, EQ et al, 2016)*

Perinatal depression is associated with adverse maternal, obstetrical, infant and child developmental outcomes

- Decreased maternal functioning *(Field, T, 2010)*
- Psychosis, suicidal ideation and suicide attempt are psychiatric emergencies that lead to psychiatric hospitalization, maternal death *(Rodriguez-Cabezas et al, 2019)*
- Bidirectional relationship between depression and gestational diabetes mellitus *(Fischer et al, 2023)*
- Preterm birth (Grigoriadis S et al, 2013), stillbirth/neonatal death and hypertensive disorders of pregnancy *(Staub et al, 2012, Thombre et al, 2015, Delanerolle et al, 2022)*
- Increased requirement for surgical delivery *interventions (Wang SY & Chen CH, 2010)* and cesarean delivery *(Bansil P et al, 2010)*
- Inadequate maternal-infant bonding prenatally and post-delivery *(Rossen et al, 2016; Betcher et al, 2020, Dagher et al, 2021)*
- Lactation failure or unplanned weaning *(Dennis CL & McQueen K, 2009; Stuebe AM et al, 2014)*
- Impaired child cognitive, behavioral and emotional development *(Tuovinen S et al, 2018; Leis JA et al, 2014; Pearson RM et al, 2013)*

Postpartum depression is not the baby-blues

The baby blues is not a clinical diagnosis, is experienced by approximately 80% of women in the first 2 weeks following delivery and although can include fluctuating mood changes, self-resolves without treatment and does not impair functioning.

A patient example:

"Abby" is a 34-year-old married female with a past psychiatric history of depression and anxiety presented for clinical care 8 weeks after delivering her 2nd child via c-section…

(PII and PHI was altered to maintain confidentiality; description is a conglomeration of patient presentations and does not represent any single patient experience)

Psychotherapies and serotonergic/traditional antidepressants have been the cornerstone of postpartum depression treatment for decades

- **Psychotherapies:** used as a main treatment modality for mild to moderate perinatal depression *(Grote NK et al, 2010; Ammerman RT et al, 2013; Dimidijian S et al, 2014; Goodman JH 2014)*
- **Serotonergic antidepressants:** used alone or in combination for moderate/severe unipolar perinatal depression; FDA approved for major depressive disorder
- Meta-analysis of 11 postpartum RCTs showed that there may be a benefit of SSRIs over placebo in response ((55% versus 43%; pooled risk ratio (RR) 1.27, 95% CI 0.97 to 1.66) and remission (42% versus 27%; RR 1.54, 95% CI 0.99 to 2.41) at 5 to 12 weeks' follow-up. *(Brown JVE et al, Cochrane Database Syst Rev, 2021)*

Challenges with use of traditional serotonergic antidepressants for postpartum depression

Slow onset of action, takes on average 6-8 weeks for patients to experience depression improvement, are prescribed for several months or years

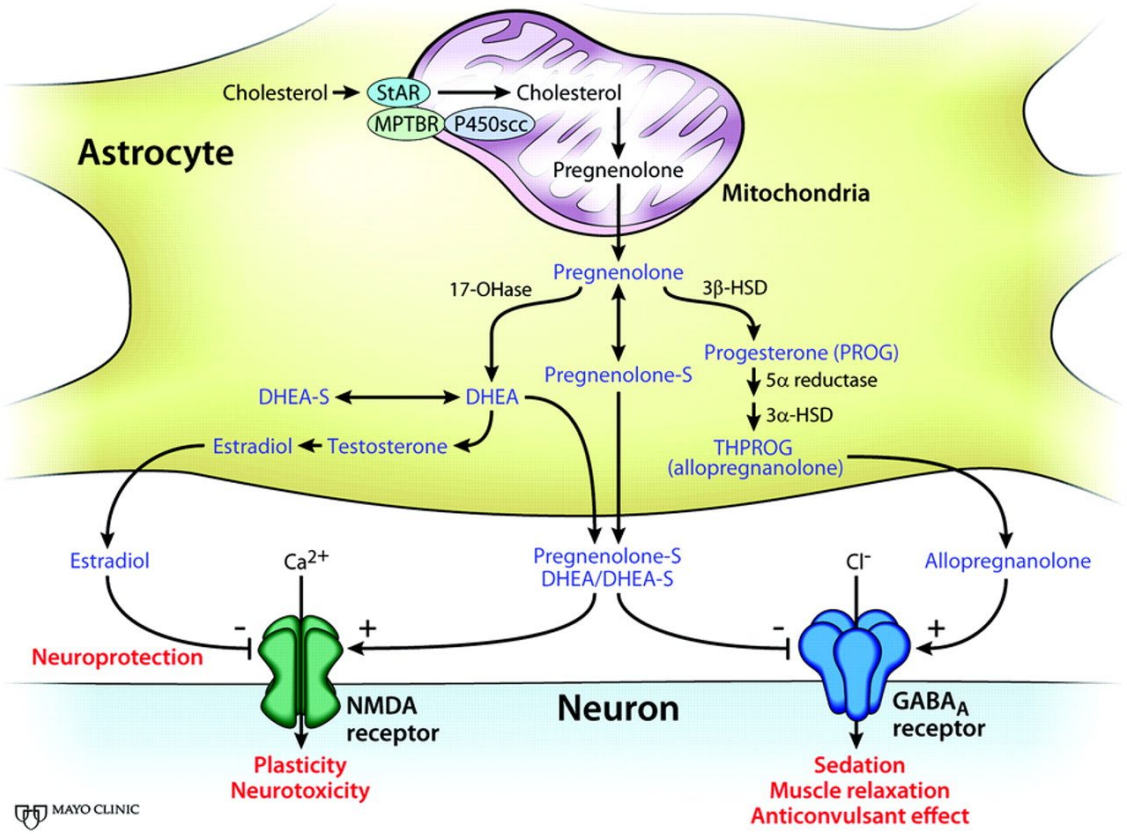
Low rates of response (55%) and remission (42%)

86% of patients report at least one side effect with 55% reporting one or more bothersome side effects after taking an SSRI for 75 days of treatment *(Kelly K et al, 2008)*

- Weight gain
- Sexual dysfunction
- Insomnia
- Gastrointestinal disturbances
- Emotional blunting

Neuroactive steroids are pregnenolone metabolites which modulate GABAergic and glutamatergic neurotransmission

- Natural or synthetic steroids which act on the brain by serving as transcription factors in the regulation of gene expression or by interacting with membrane-bound neurotransmitter receptors *(Paul SM & Purdy RH 1992)*
- Natural NAS are made in the ovaries, placenta, testes, adrenal glands and brain (astrocytes, oligodendrocytes, Purkinje cells and hippocampal neurons)
- Many NAS are positive allosteric modulators (PAMs) of the GABAA-R, enhancing tonic or phasic GABAergic inhibition via facilitating negatively charged Cl- ion flow *(Callachan H et al 1987)*
- CNS NAS have important roles in HPA response in both acute and chronic stress conditions *(Maguire J 2019; Crowley & Girdler, 2014)*



NAS enhance tonic and phasic inhibition through synaptic and extrasynaptic $GABA_ARs$

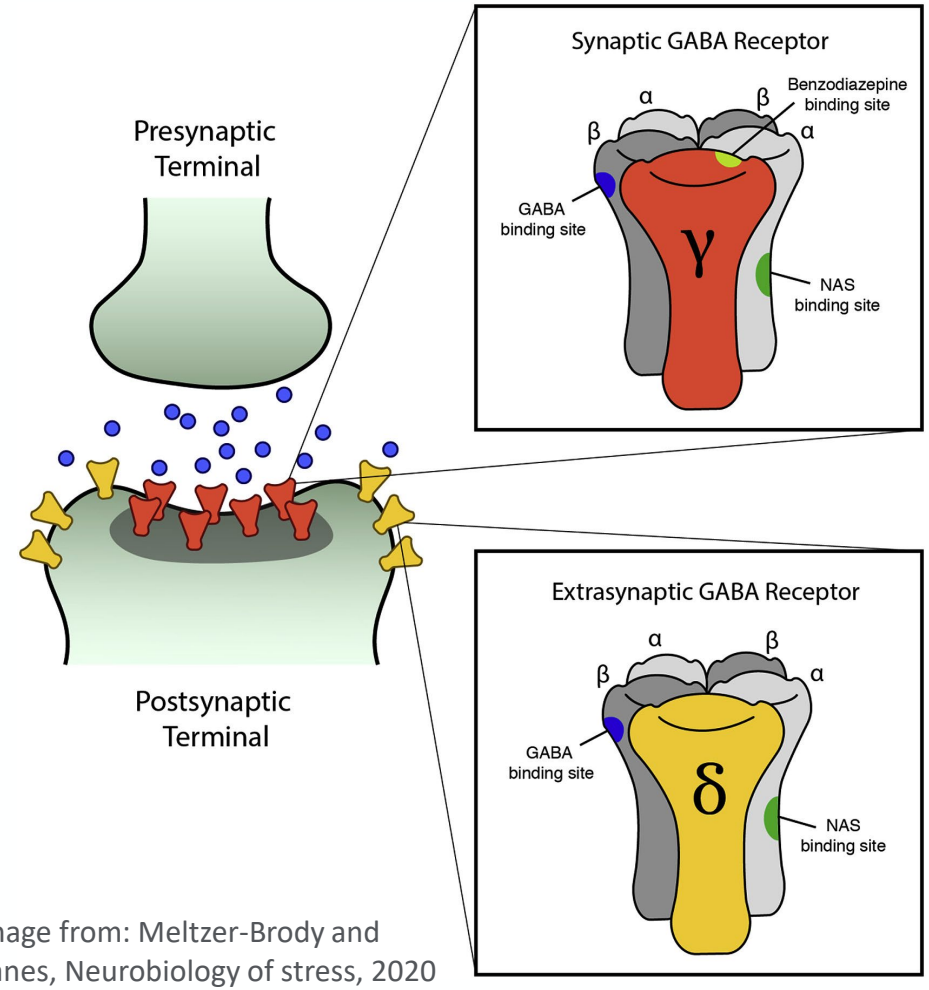


Image from: Meltzer-Brody and Kanes, Neurobiology of stress, 2020

Postsynaptic GABA-A receptors, which are pentameric chloride channels composed of 2α2βγ subunits, mediate the phasic portion of GABAergic inhibition, while extrasynaptic GABA-A receptors, pentamers composed of 2α2βδ subunits, primarily contribute to tonic inhibition *(Reddy DS, 2011)*

Unlike benzodiazepines, NAS bind to both synaptic and extrasynaptic receptors and do not bind to the benzodiazepine binding site

Preclinical data suggests that δ-containing extrasynaptic receptors are important in PND pathophysiology and NAS antidepressant effects

Under stress conditions, failure of the brain's GABA system to adapt to current or abnormal NAS levels may lead to brain circuit dysfunction= clinical depression

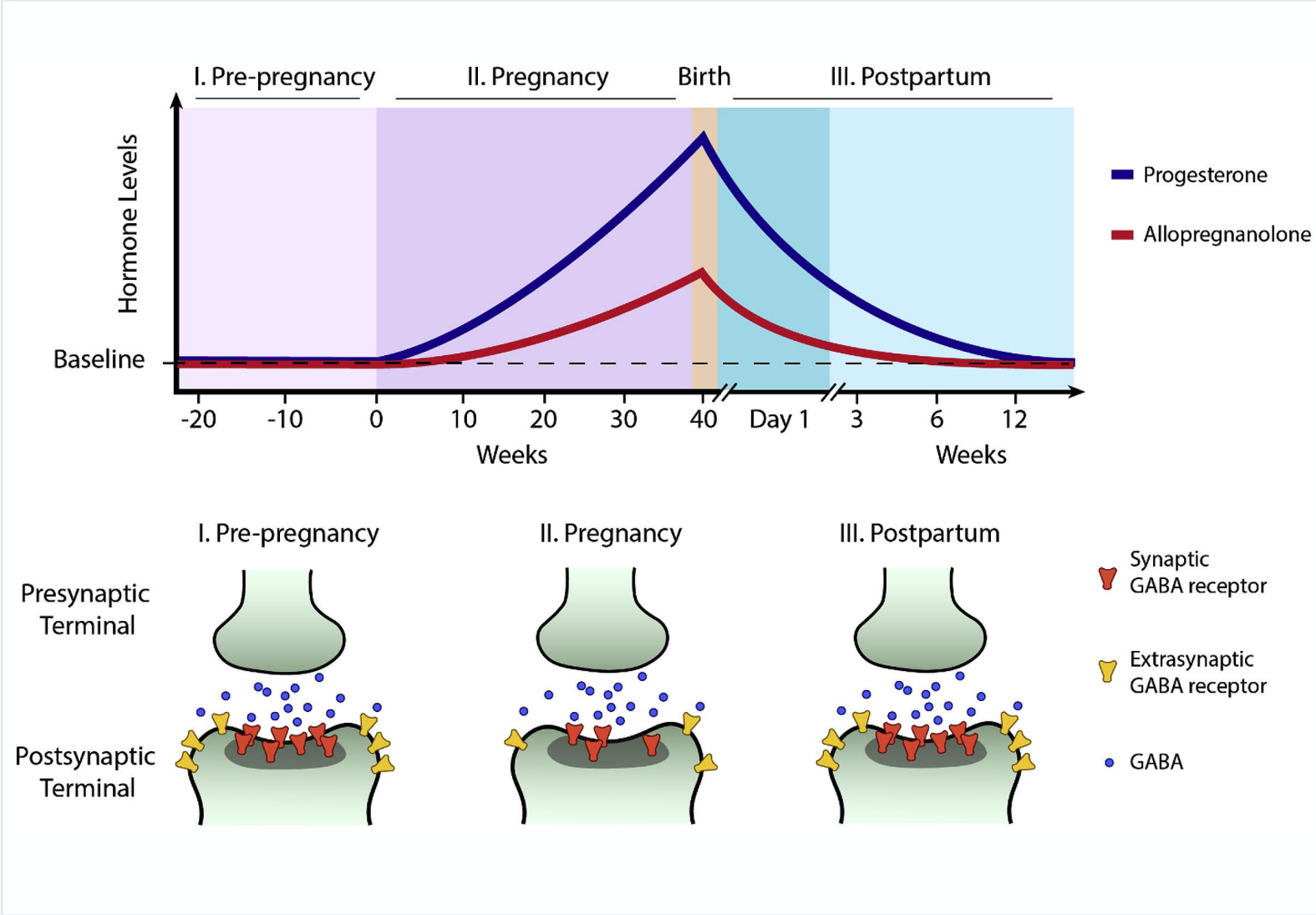
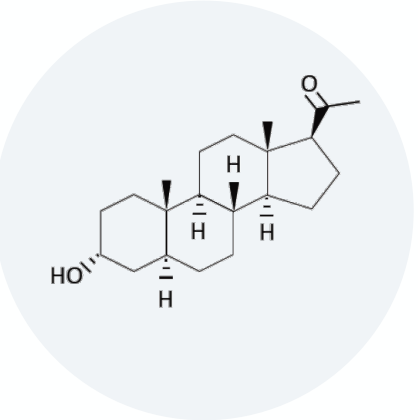


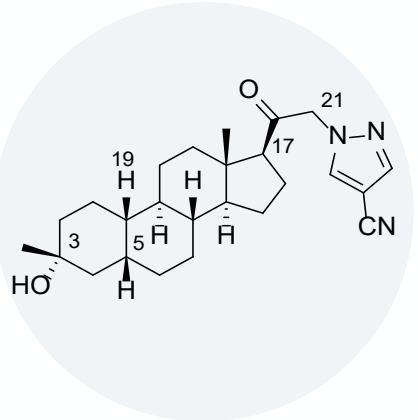
Figure 2: Meltzer-Brody S & Kanes S. *Neurobiology of Stress.* 2020.

Brexanolone as a first-in-class antidepressant

- The breakthrough FDA-approval of brexanolone in 2019 represented a first-in-class antidepressant that had rapid-acting antidepressant actions which were maintained even after the acute treatment course was complete.
- However, brexanolone administration was mainly inpatient, requiring patients to come into the hospital for a 72-hour stay. Cost (both for medication and inpatient stay) and the logistics of administration would **ultimately limit access to patients.**
- Loss of or altered state of consciousness during the brexanolone infusion occurred in 4% so brexanolone could only be prescribed at certified facilities through a Risk Evaluation and Mitigation Strategy (REMS) safety program.
- The company that developed brexanolone, then developed zuranolone, a synthetic structural analog of allopregnanolone which could be **dosed orally once daily x 14 days**, at home. It was FDA approved in 2023.
- Brexanolone was withdrawn from the clinical market and has not been available as of January 2025.



allopregnanolone; brexanolone



zuranolone

Clinical characteristics of neuroactive steroid antidepressants

- Rapid onset of action, within days, treatment course not to be repeated
- No (up/down) titration required for oral neuroactive steroids
- A different side effect profile as compared to serotonergic antidepressants, whose side effects are mainly limited to the time around the short, acute treatment period and not chronic like SSRIs
  - Weight gain, sexual dysfunction, insomnia, emotional blunting: not reported
  - Brexanolone IV: boxed warning for excessive sedation and sudden loss of consciousness
  - Zuranolone: boxed warning for impaired ability to drive or engage in other potentially hazardous activities
  - Brexanolone IV: most common adverse events: sedation (13%), dizziness/presyncope/vertigo (12%); loss of consciousness (3-5%)
  - Zuranolone: most common adverse events: sedation (36%), dizziness (13%), diarrhea (6%), fatigue (5%)

Kanes S et al, 2017, Meltzer-Brody S et al, 2018; Deligiannidis K et al 2021, 2023;Melter-Brody S et al, 2024;
https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=f18e53b0-d0bb-422d-8de7-ab64b7292b29;
https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=b40f3b2a-1859-4ed6-8551-444300806d13

Use of antidepressants during lactation/breastfeeding

The National Library of Medicine at the NIH maintains the **Drugs and Lactation Database (LactMed)** found at: https://www.ncbi.nlm.nih.gov/books/NBK501922/

A relative infant dose (RID) less than 10% of maternal dosage is acceptable per FDA.

Antidepressant RIDs:	**(%)**
Brexanolone	**1-2**
Bupropion	0.2-2.0
Citalopram	3-10
Desvenlafaxine	5.5-8.1
Duloxetine	<1
Escitalopram	5.2-7.9
Fluoxetine	0.6-14.6
Fluvoxamine	<2
Mirtazepine	0.5-3
Paroxetine	1.2-2.8
Sertraline	0.4-3
Venlafaxine	6-9
Zuranolone	**<1**

Summary from NIH LactMed:

Because of the low amounts of brexanolone/zuranolone in milk, brexanolone/zuranolone would not be expected to cause any adverse effects in breastfed infants.

If brexanolone/zuranolone is required by the mother, it is not a reason to discontinue breastfeeding.

Until more data are available, zuranolone should be used with careful infant monitoring for excessive sedation during breastfeeding, especially with higher dosages and in newborn and preterm infants.

Conclusions

- Perinatal depression/postpartum depression is common
- Untreated perinatal depression is associated with myriad adverse outcomes
- Neuroactive steroid antidepressants are rapid-acting medications
- Neurosteroid antidepressants require a shorter course of treatment than traditional antidepressants without titration
- Neurosteroid antidepressants are associated with time-limited side effects including sedation

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LPCN 1154 Target Product/Label Attributes

Dr. Anthony DelConte
Medical Director

PPD Screening & Treatment Incorporated into Multiple Guidelines

Early Diagnosis of PPD is key

- The American Academy of Pediatrics (AAP)[1] and the American College of Obstetricians and Gynecologists (ACOG)[2,3] have both issued guidelines that patients should be screened for PPD during pregnancy and postpartum
- The American College of Obstetricians and Gynecologists (ACOG) and DSM-5 do not require a "structured clinical interview" for a diagnosis of PPD[4]. Instead, they may use a validated self-reported or clinician administered questionnaire.
- ACOG recommends consideration of brexanolone or zuranolone in the postpartum period (i.e., within 12 months postpartum) for depression that has onset in the third trimester or within 4 weeks postpartum[5].

American Academy of Pediatrics

ACOG
The American College of Obstetricians and Gynecologists

1. *Clin Pediatr (Phila). 2022 Oct;61(10):699-706. doi: 10.1177/00099228221097272*
2. *Obstet Gynecol.* 2023;141(6):1232-1261. doi:10.1097/AOG.0000000000005200
3. *Obstet Gynecol.* 2023;141(6):1262-1288. doi:10.1097/AOG.0000000000005202
4. https://policycentermmh.org/one-year-later-how-insurers-are-covering-zurzuvae-the-first-postpartum-depression-pill/
5. https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2023/08/zuranolone-for-the-treatment-of-postpartum-depression

Market Research Insights

Physician Observations

- Patients with a history of MDD are more likely to develop PPD
- Many patients feel unprepared to discuss PPD and often feel embarrassed to mention their symptoms
- Both OBGYNs and Psychiatrists conduct screening, diagnose and treat PPD patients
- Typically, it is the OB/GYNs who first diagnose PPD
- Based on the severity of the condition and the OB/GYN's comfort level, patients may be referred to a psychiatrist to begin treatment
- Psychiatrists tend to treat more moderate to severe PPD patients
- HCPs would like to see PPD treatments with improved safety and efficacy and faster symptom relief

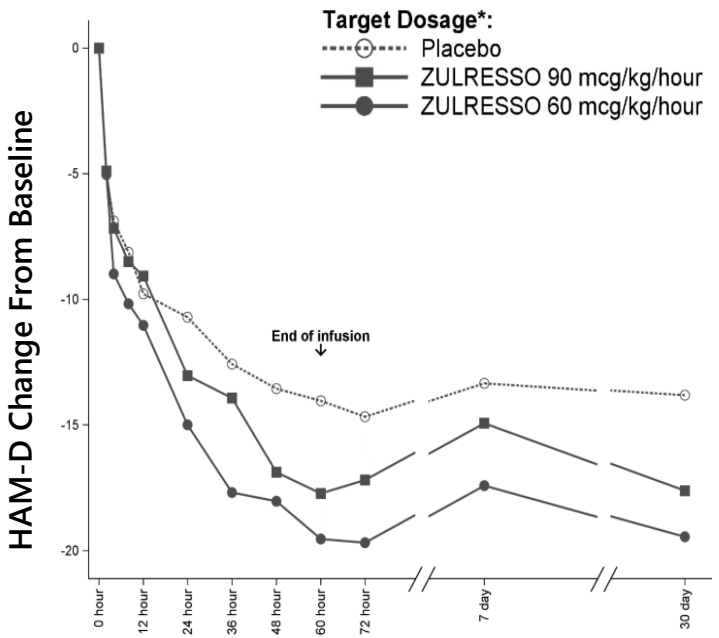
Market Research Insights

Patient Observations

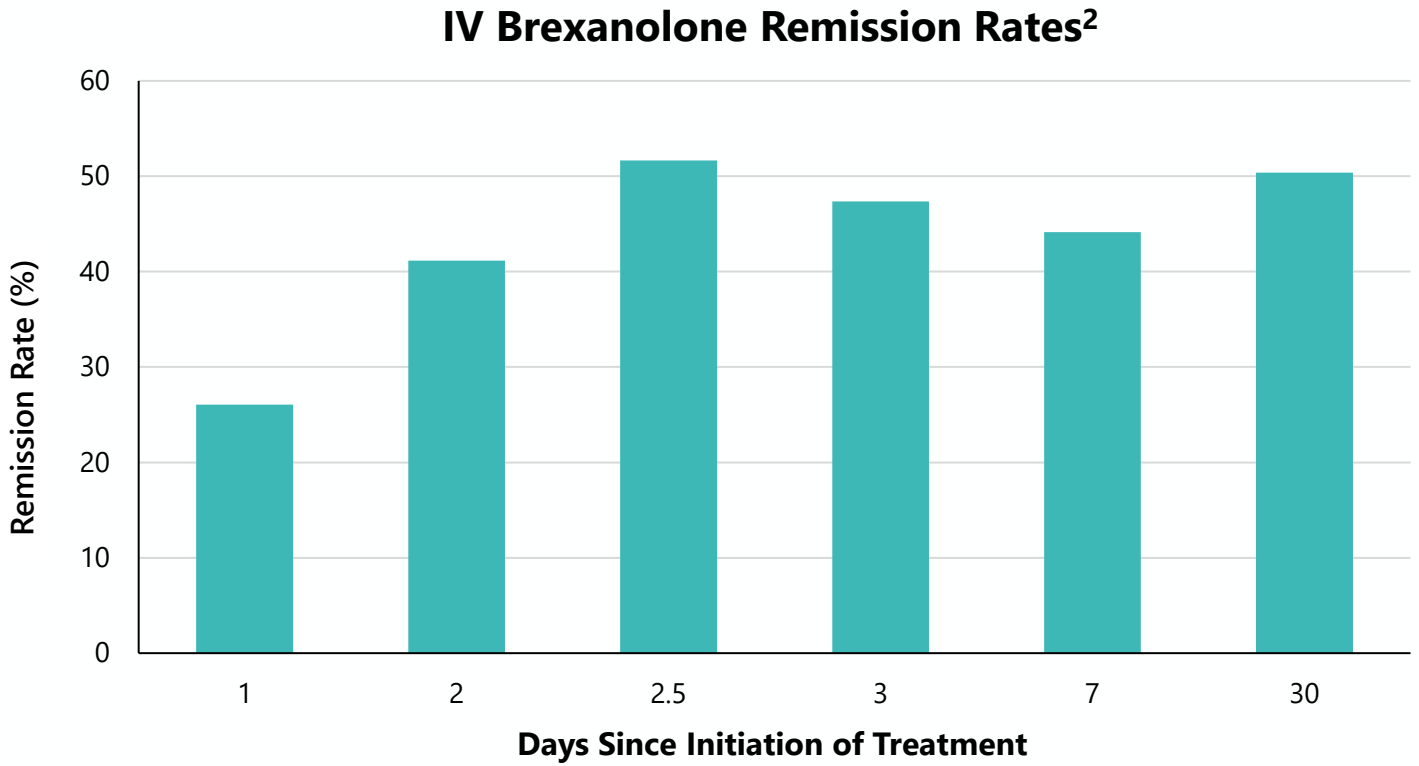
- Patients express concerns regarding potential side effects and the stigma associated with taking antidepressants
- Patients are often lost to follow-up leading to poor persistence and adherence
- Patients are the least satisfied with current options and would like to see more treatments with faster relief
- Limitations such as driving restrictions or a pause in breastfeeding are deterrents for many

Robust Efficacy of Brexanolone in PPD

Bioidentical Neuroactive Steroid (NAS)



Efficacious at lower (60 µg/kg/hr) and higher dose (90 µg/kg/hr)



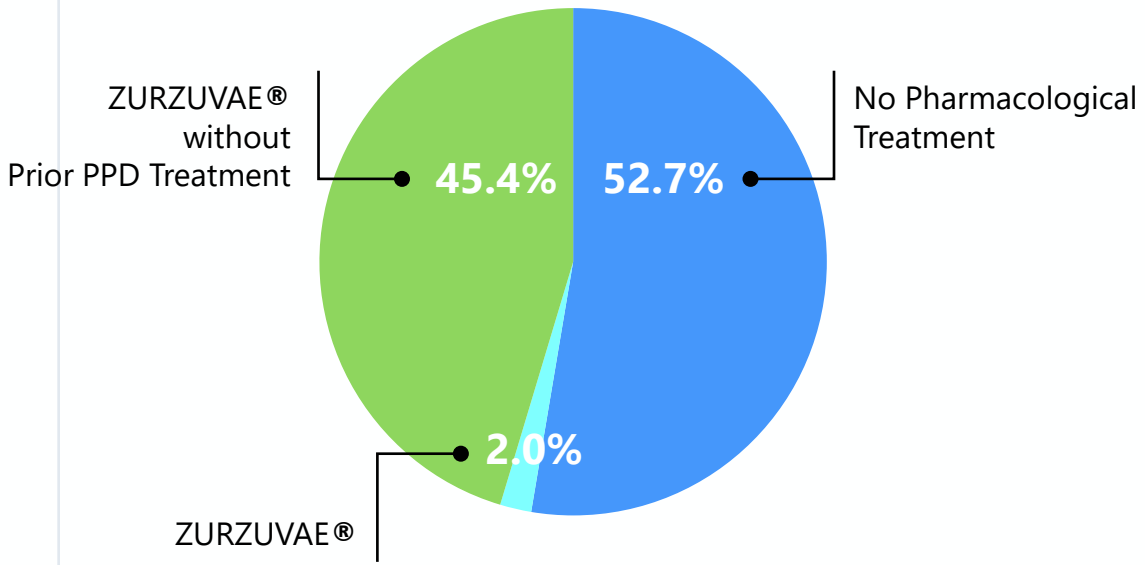
Remission defined as HAM-D scores ≤7 out of maximum of 52

1. Zulresso Label
2. Data compiled from Meltzer-Brody et al., Lancet 2018 and ZULRESSO sNDA MDR, 2021, 90 µg/kg/hr.

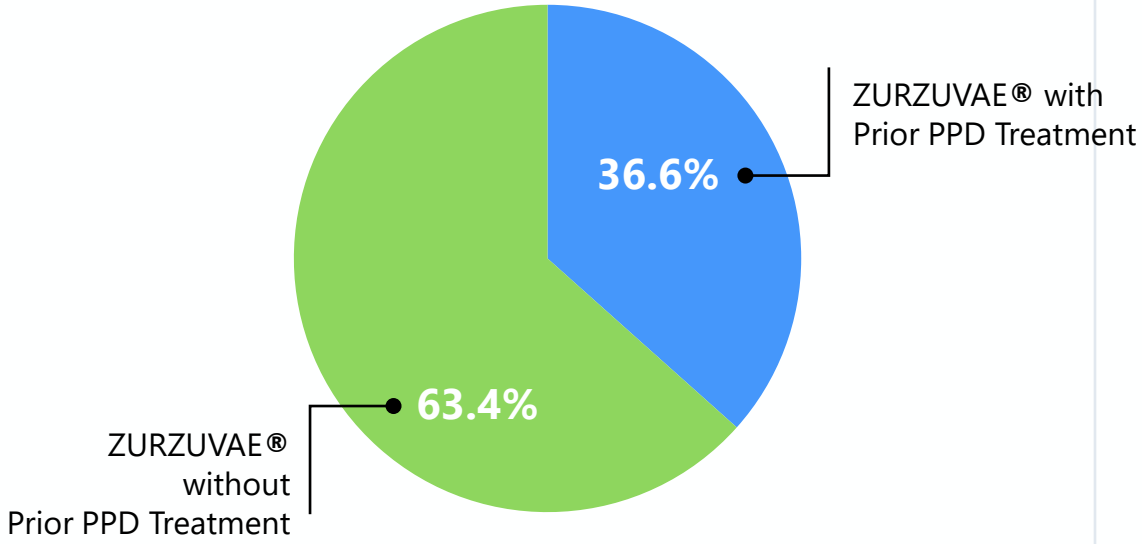
Users of Oral NAS for Treatment of PPD

Majority have had no prior PPD treatment - only 2% PPD patients currently treated with oral NAS

PPD Treatment Pathways



Previous PPD Treatment of ZURZUVAE® Users

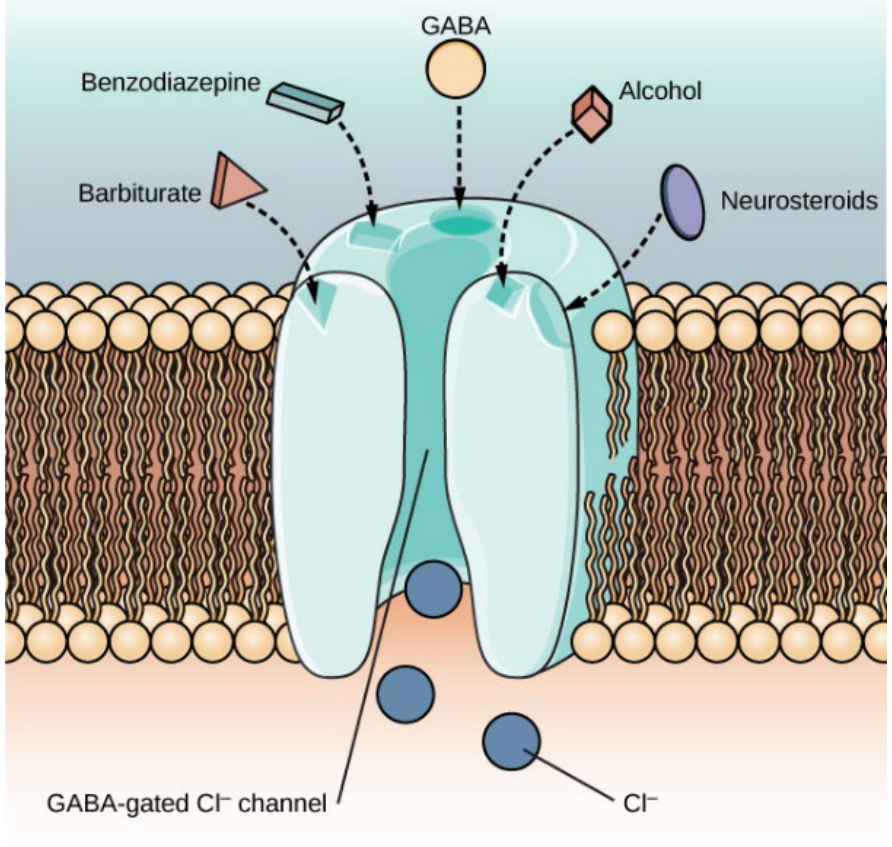


https://www.komodohealth.com/perspectives/drug-snapshot-postpartum-depression/
Published: November 15, 2024

LPCN 1154 Target Product Profile to Address Unmet Medical Need

Mechanism of Action and Target Attributes

- A positive allosteric modulator ("PAM") of the GABAA receptor
- Acting on both post-synaptic and extrasynaptic sites on $GABA_A$ receptor
- Chemically identical to endogenous allopregnanolone (brexanolone)
- Fixed oral solid dosage form
- No titration or taper required
- 48-hour outpatient dosing
- No monitoring requirement



https://opentext.wsu.edu/psych105nusbaum/chapter/substance-use-and-abuse/

LPCN 1154 - Oral Bioidentical NAS for PPD

Current therapies relative to LPCN 1154

SSRIs have slow onset, low remission & response rates

Zuranolone Strong concordance between the temporal profiles of zuranolone concentrations in plasma and breast milk although exposure is low

IV Brexanolone requires 60-hour IV infusion Approval was withdrawn as of April 14, 2025.

	SSRIs / SNRIs *Off-Label Use*	**Zuranolone** *(ZURZUVAE®)*	**Oral Brexanolone** *(LPCN 1154)*
Description	Synthetic SSRI/SNRI	Synthetic NAS Derivative	**Bioidentical NAS**
Administration	**Oral**	**Oral**	**Oral**
Onset of Action	Weeks	Days	**Hours**
Treatment Duration	Months	14 days	**48 hours**
Remission Rate at Day 3	N/A	Up to 19%	**Up to 61%***

*Projected based on Zulresso published reports (Brexanolone Briefing Book, November 2, 2018 and Meltzer-Brody et al. Lancet. 2018 Sep 22;392(10152):1058-1070)

1. Zulresso label
2. Brexanolone Briefing Book, November 2, 2018
3. In adolescent patients per sNDA 211371 S-007 Multi-disciplinary Review and Evaluation ZULRESSO)
4. Zurzuvae label
5. Kristina M. Deligiannidis et al., JAMA Psychiatry. 2021 Sep; 78(9): 1–9
6. https://www.ncbi.nlm.nih.gov/books/NBK594292/

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LPCN 1154 Development/ Next Steps

Dr. Benjamin Bruno
VP of Clinical Development

Clinical Development and Phase 1 Clinical Studies

Formulation Screening Studies

Two studies
N = 17, Postmenopausal Women

- Brexanolone is orally available in capsule and tablet formulations
- Tablet formulations allow for higher daily doses
- Brexanolone exposure increased with higher dose
- Higher exposure with post-meal administration

Dose Finding Studies

Two studies
N = 20, Postmenopausal women

Pilot crossover study including IV brexanolone

- Multi-dose oral regimens are well-tolerated and achieve similar exposure as IV

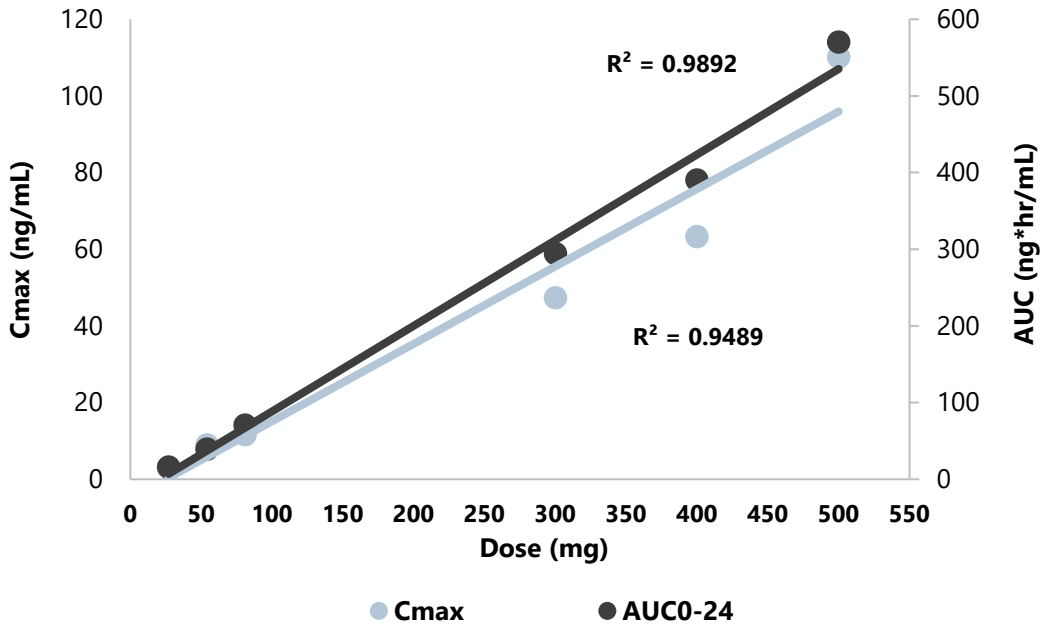
Pilot study with to-be-marketed dose and dosing regimen (single-arm)

- Well-tolerated, and resulted in comparable exposure as IV brexanolone

Clinical Development and Phase 1 Clinical Studies (Cont'd)

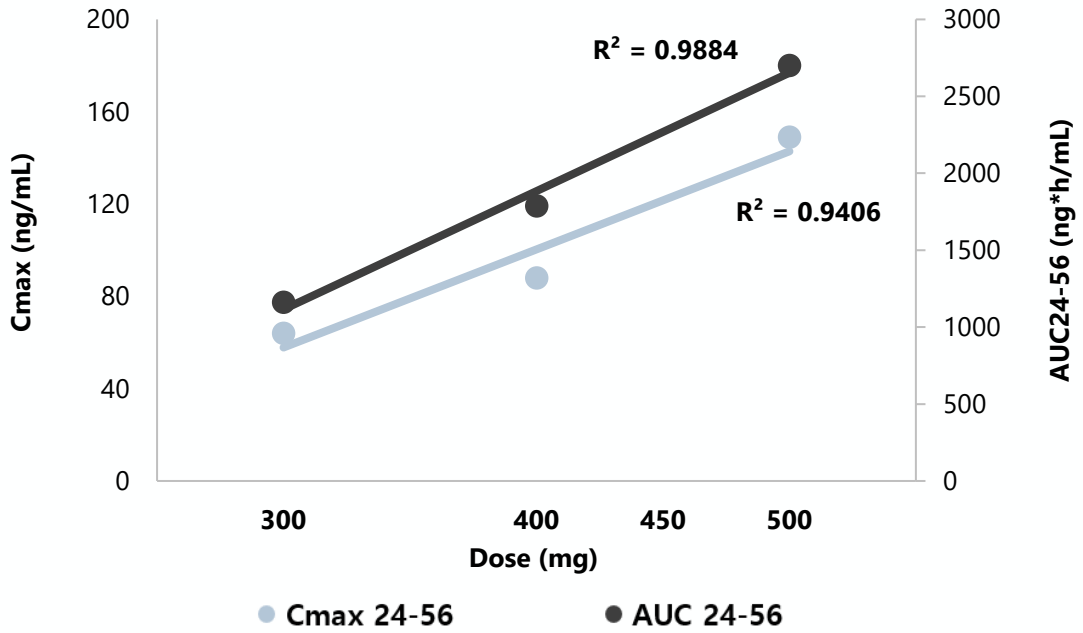
Dose linear exposure across all single and multidose regimens

Single Dose



Linear dose response for key PK parameters across all doses tested (27-500 mg) with post-meal administration

Multidose



Linear dose response for key PK parameters across all three multi-dose regimens tested

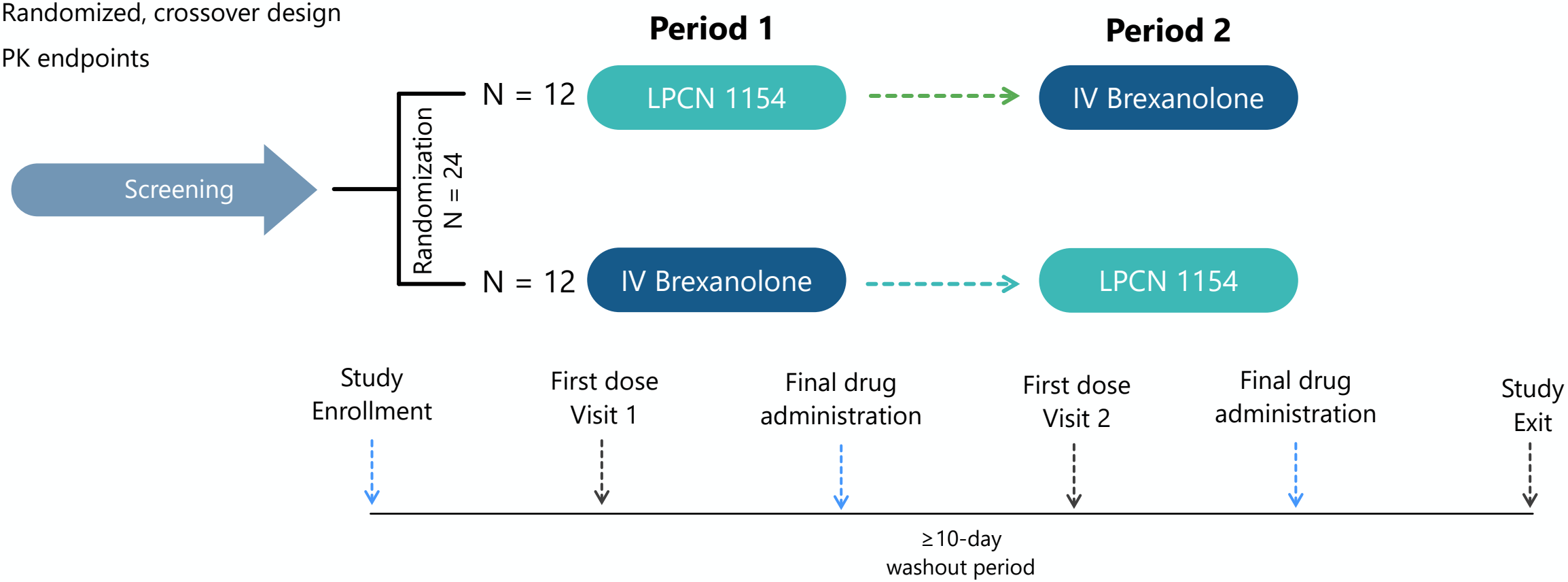
LPCN 1154 Dosing Regimen Confirmation Study

Study Design

24 post-menopausal women

Randomized, crossover design

PK endpoints



LPCN 1154 Dosing Regimen Confirmation Study Results

LPCN 1154 met standard bioequivalence criteria to IV Brexanolone

Comparative Exposure

PK Parameter	GMR (%) Test vs. Reference	90% CI LB Test vs. Reference	90% CI UB Test vs. Reference
C_{max}	**105**	92	118
$AUC_{0-\infty}$	**97**	89	107
AUC_{0-t}	**89**	81	98

- LPCN 1154 was well tolerated
  - No sedation or somnolence events observed
  - All events were mild to moderate
  - No severe or serious AEs
  - Reported study related events were venipuncture site related, arthralgia, fatigue, dizziness, back pain, hematoma, and pelvic pain
  - No event was reported by >2 participants

n=23; Outlier participant presented PK results for the IV administration period greater than 70 standard deviations away from the PK data set mean for all PK parameters included above

GMR = Geometric Mean Ratios, CI = Confidence Interval, LB = Lower Bound, UB = Upper Bound, t = 100 hours for AUC_{0-t}

Well Tolerated in the Completed Clinical Studies

No adverse events of excessive sedation or loss of consciousness

CNS Depressant Events

Total unique participants	58
Preferred Term	n (%)
Somnolence	7 (12.1)
Dizziness	3 (5.2)
Sedation	0 (0)
Excessive sedation	0 (0)
Loss of Consciousness	0 (0)
Presyncope	0 (0)
Vertigo	0 (0)

Non-CNS Depressant Adverse Events

Total unique participants	58
Preferred Term	n (%)
Venipuncture site reaction	6 (10.3)
Headache	5 (8.6)
Diarrhea	3 (5.2)
Arthralgia	2 (3.4)
Fatigue	2 (3.4)
Rash	2 (3.4)
Back pain	1 (1.7)
Decreased oxygen saturation	1 (1.7)
Elevated liver enzymes	1 (1.7)
Hematoma traumatic	1 (1.7)
Pelvic pain	1 (1.7)

Note: Data are reported as n (% total). TEAE, treatment-emergent adverse events. Studies from the developmental program of LPCN 1154 include 21-002, 22-001, 22-004, 23-002, 23-004, 23-005, and 23-007. Participants are counted only once per TEAE.

LPCN 1154 Phase 3 Safety and Efficacy Study

Based on FDA feedback – Outpatient setting with no medical monitoring requirement

Study design

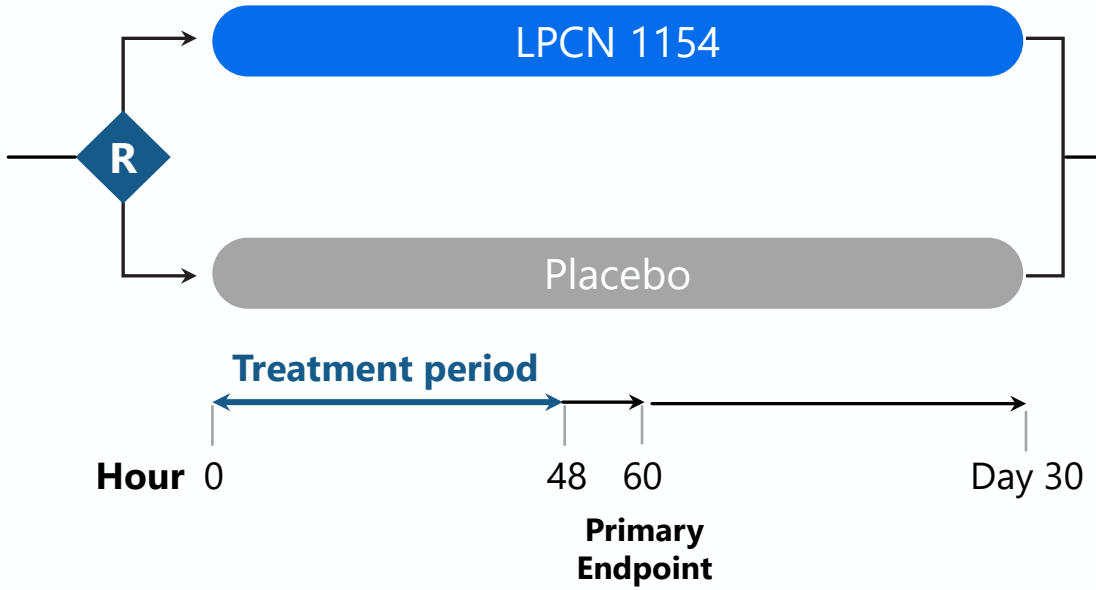
Two arm, outpatient, randomized, blinded, placebo-controlled in women with postpartum depression

Inclusion criteria

Severe PPD

Age ≥15 yrs

N= ~80 women



Endpoints

Primary endpoint:
HAM-D change from baseline at hour 60

Additional endpoints:
MADRS, HAM-A (anxiety), safety and tolerability, etc.

LPCN 1154 Phase 3 Safety and Efficacy Study

Rationale for Success

- Brexanolone has established efficacy (IV infusion)
- LPCN 1154 has demonstrated comparable exposure to IV infusion
- Study size, duration, and population similar to IV infusion P3 study

Study Updates

• Study initiated	March 2025
• First patient dosed	June 2025
• Expected first DSMB	2H 2025
• Expected topline results	Q2 2026

Regulatory status

Expected NDA submission mid-2026	Status
Clinical development plan	
Single Phase 3 randomized placebo control trial in women with PPD – Ongoing – Following FDA feedback, outpatient study without continuous healthcare provider supervision	**Ongoing**
Supporting dosing regimen confirmation study with comparator drug in PM women	**Completed**
Clinical pharmacology development plan	
Single and multiple dose pharmacokinetic studies in PM women, and women with PPD	**Completed**
Qualitative and quantitative metabolite evaluation	**Completed**
Food effect study between high fat meal and under fasting condition in PM women – Administration instructions in Phase 3 study: take with fat-containing food or snack	**Completed**
Nonclinical development plan	
Repeat dose local (gastro-intestinal) toxicology study in single species	**Pending**
In vitro plasma protein and GABA binding study	**Pending**
CMC development plan	
Registration batches with adequate stability	**Completed**

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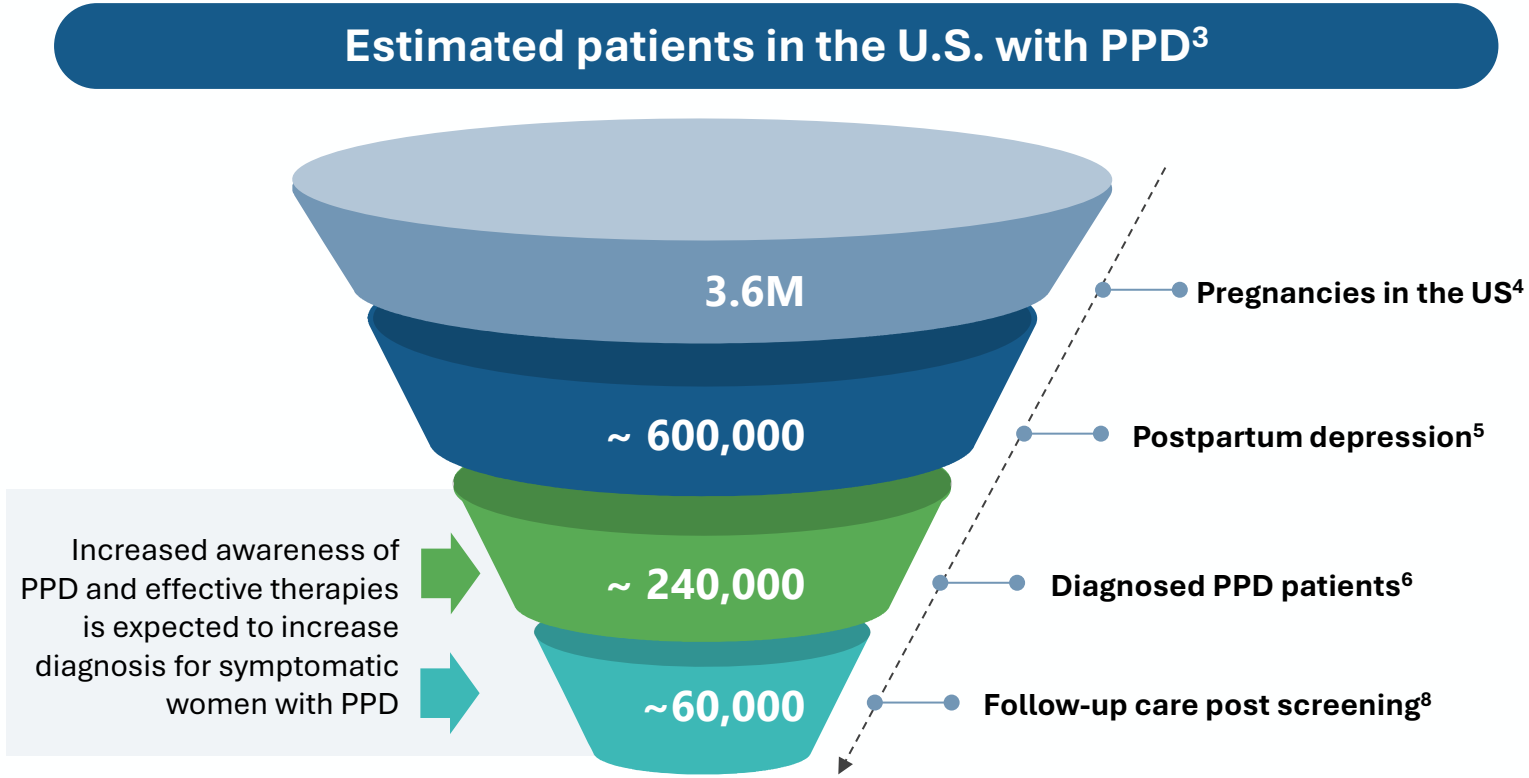
Concluding Remarks

Dr. Mahesh Patel
President and CEO

Postpartum Depression (PPD) - An Expanding Market Opportunity

Compelling pharmacoeconomic rationale[10]

- High economic burden
- Goal of medical intervention is to prevent harm to mother and infant
- Negative impact on family/society
- Among women reporting PPD symptoms, 64% reported comorbid anxiety symptoms[7]
- Suicide is a leading cause of maternal death in the first year following childbirth[1]
  - Up to 30% of women with PPD experience suicidal ideations[2]



ZURZUVAE® Rx price: $15,900

Projected peak ZURZUVAE® sales of $1.2B in 2033[9]

ZURZUVAE® is an FDA-approved oral treatment for adults with PPD

1. Chin et al. Curr Psychiatry Rep, 2022; 24(4):239-275
2. Mauri et al. Arch Womens Ment Health. 2012; 15(1): 39-47
3. Foster Rosenblatt market research 2023 (Lipocine internal data)
4. National Vital Statistics Report vol 72, num 1, 2023; Vital Statistics Rapid Release, report 26, 2023
5. Van Niel et al. Cleveland Clinic J of Medicine. 2020;87(5):273-277
6. Cox et al. J Clin Psychiatry. 2016;77:9, Beck. AJN. 2006;106:5
7. Farr et al. J Womens Health (Larchmt). 2013 Oct 26;23(2):120–128
8. Goodman et al J Womens Health (Larchmt). 2010 Mar;19(3):477-90
9. Goldman Sachs on Sage Therapeutics estimate on February 2024
10. Leerink Center for Pharmacoeconomics, 2025 MEDACorp LLC.

LPCN 1154 “Best in Class” Oral Treatment for Depression

Key takeaways

- **Significant market opportunity**
- **Differentiated product attributes addressing unmet needs**
- **Streamlined pathway to NDA submission**
    - Dosing regimen confirmed
    - Phase 3 safety & efficacy study: *ongoing*
    - Topline data expected Q2/2026
- **Issued and pending patents worldwide**
- **Potential to expand for other depression indications**

LPCN 1154 Opportunities in Additional Depression Disorders

Prevalence

MDD: Per NIMH, in 2020, an estimated 21.0 million adults (8.4%) in the US had at least one major depressive episode[1]

The prevalence of comorbid anxiety disorder and MDD is as high as 60% [2]

TRD: Prevalence ~2.8 million in US [3]

PPD: An estimated 1 in 6 mothers suffer from PPD [4]

Significant Unmet Needs in Depression Disorders

Robust Efficacy

Adequate and durable remission/response; treat anxiety comorbidity

Rapid Relief

Days vs weeks

Good tolerability

No excessive sedation, no sexual dysfunction or weight gain side effects, no withdrawal side effects upon discontinuation

MDD = Major Depressive Disorder, PPD = Postpartum Depression, TRD = Treatment Resistant Depression

1. Monitoring System Survey–31 sites, 2018
2. Kaufman J, Charney D. Comorbidity of mood and anxiety disorders. Depress Anxiety. 2000;12:69-76.
3. J Clin Psychiatry. 2021 Mar 16;82(2):20m13699.
4. Van Niel et al. Cleveland Clinic J of Medicine. 2020;87(5):273-277

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Q&A