

# Breakthrough In QoL Neurotherapeutics

## 2023 Executive Summary

### Parkinson's Clinical Sample

**PBM driven algorithms in Neural Therapeutics simultaneously restores multiple neurological and physical deficits for numerous health conditions: Parkinson's Disease is Illustrated.**

Retrospective patient data studies demonstrate 42% mean peak improvement across 142 combined complaints/deficits in function in 18 Parkinson's patients treated over 22 months or 1.79 years. Best case single-patient response was 97% mean peak improvement over 49 deficits with 40 deficits in remission at 14 months for Parkinson's disease.

**Program:** Developed by Loyd Frank Jarrell, Lasene clinical protocols adhere to accepted standards in care and use FDA Cleared photobiomodulation (PBM) technology (therapeutic laser) to produce high-yield health-related quality of life improvements in neurological and physical deficits found in multiple conditions.

**Science:** The history and evolution of photobiomodulation, inherent safety, and citations listed with the U.S. National Institute of Health / Library of Medicine supporting proof of concept in cellular biology is explained in a comprehensive "Lasene Therapeutics White Paper" at <https://Lasene.com/whitepaper>.

**Method:** Lasene is a proprietary system for the delivery of therapeutic PBM care. The assessment, treatment parameters, frequency, and workflow dynamics are optimized for use in both doctor and therapy clinics on a global scale. Patient screening, data collection, individualized and adaptive treatment maps, progress monitoring, data processing and data visualization for doctor, staff and research needs are automated.

**Results:** Retrospective analysis of short and long-term response curves for improved cognition, sleep and physical function demonstrates safety, efficacy, and consistency in outcomes for multiple deficits with signs of stabilization and remission in limited sets. In multiple deficit restoration of multiple activities. Complicating factors include advanced concomitant spinal stenosis, unmanaged triggers, adverse effects to medications and continued disease progression. Further protocol refinement may be advanced through collaborative data studies, institutional engagement, investments and foundation grants to further quality-of-life advancements for similar deficit centric therapeutic models.

**Resources:** Data Sets, Patient Comments and Citation List are included in the White Paper.

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# Breakthrough In QoL Neurotherapeutics 2023 White Paper

## Parkinson's Clinical Sample



9.22.2023 White Paper on Lasene Neurotherapeutics Dr. Frank Jarrell\*

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# INTRODUCTION

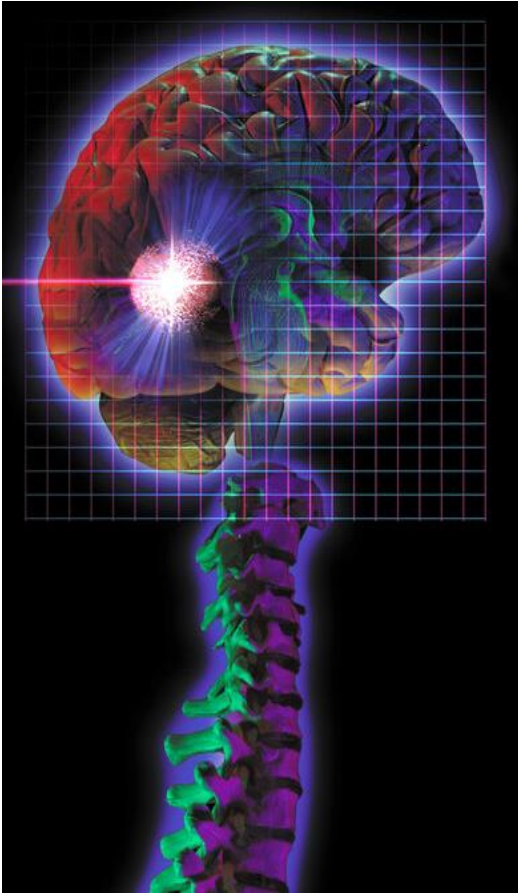


**Lasene Neural Therapeutics reduces and restores a broad array of functional deficits in neurology. A sample of retrospective clinical data for Parkinson’s demonstrates a mean-peak improvement of 52% across 142 complaints affecting health-related quality-of-life status without evidence of adverse events, side effects, contraindications to DBS, or modification to prescribed medications.**

**Citing** over one-hundred research studies listed with the U.S. National Institute of Health/National Library of Medicine, Lasene Therapeutics is rooted in formal research and supported by evidence based clinical data demonstrating photobiomodulation’s (PBM) role in improving neurodegeneration and neuro-protection. Algorithm driven, individualized patient treatment mapping and continuous progress monitoring identifies the changing landscape of QoL metrics over the full course of treatment.

**Lasene is positioned** as a high-yield, assistive therapy for managing QoL metrics within current health delivery models. Significant reduction in the impact of chronic neurological deficits on patient’s long-term suffering sets a stage for collaborative private and institutional research and development into further procedural benefits. Both therapeutic and pharmacological derivatives are possible through our rapidly growing data bank of over 300 continuously monitored neural deficits and their corresponding physiological benefits, forming a viable bridge between the PBM therapeutic pipeline and a potential for designing safer and more effective pharmacological solutions.





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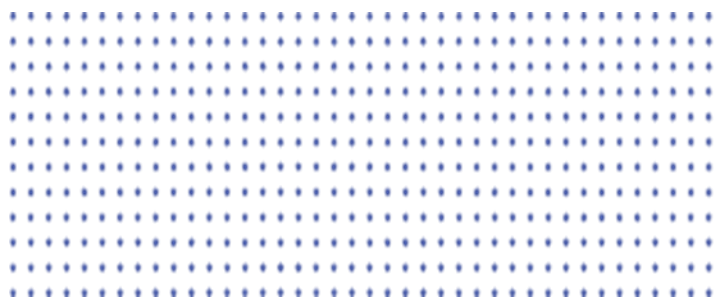
# PROGRAM

All programs include robust data capture and analysis, self-calibrating algorithmic treatment mapping and HIPAA compliant doctor, staff, patient, and research portals for efficient treatment solutions. These are the backbone to an “assistive partner” role with the provider in assessing, guiding, and monitoring each patient’s declared status and response to systematic neural deficit remediation over longer periods of time.

Each program is an individualized 3, 6, 9 or 12-month PBM series per clinically determined average response data. Programs are typically 24–35 sessions with optional follow-up. Sessions are 10-15 minutes each and are administered with an FDA Cleared, Class II medical device through non-experimental, clinical procedures. Treatments are typically delivered by the provider or a trained member of your staff after completion of a provided nationally recognized Photobiomodulation Technician Certification Program.



# SCIENCE



**PBM/Near Infrared Therapy (Nir)** originated in 1960

on the heels of industrial lasers. Initially used in research, the acronym “LASER” refers to “Light Amplification by Stimulated Emission of Radiation.” All electromagnetic energy emitted is defined as “radiation,” and alone, the term LASER does not imply ionizing radiation risk unless it falls within UV, X-ray, or gamma ray wavelengths.

**Initially defined** as “transdermal stimulation” due to the application method and transference through the skin, the earliest evidence of biological benefits appeared to be stimulatory in nature, however, it is currently understood to be “bio-modulatory” in that RNA/DNA activity defines all cellular responses. Surgical lasers that vaporize and cauterize a narrow line of target tissue were born from diffused therapeutic laser technology by increasing collimation or narrowing of the laser’s beam.

**For the first 55 years** of therapeutic laser development, most devices delivered single digit milliwatt doses (5-50mW); considered “therapeutically weak” by today’s standards (reference - solar radiation at 450mW Nir at sea level). Tissue benefits were marginal and both research and clinical benefits were mixed over the following five decades. Later unit designs increased dose density (watts/cm<sup>2</sup>) and grossly exceeded the skins thermal threshold or burn risk of 108 – 112 F’; leaving the clinician or technician with either a marginally effective, or dangerously overpowered device.

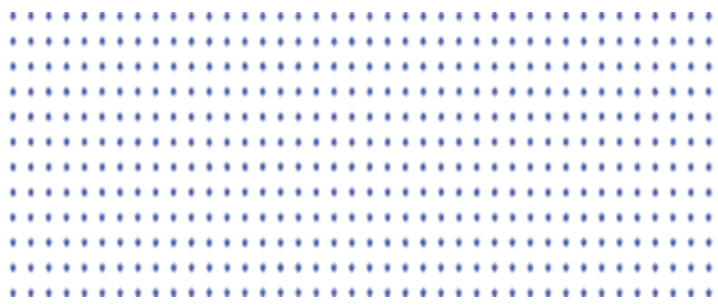
**Today’s designs** and advanced engineering deliver effective power densities with negligible to no thermal burn risk, making Nir/PBM laser treatment safer than ultrasound, diathermy, and cryotherapy modalities.

**Laser therapy** is now called photobiomodulation (PBM) due to its’ ability to modulate, not just stimulate cellular and tissue functions through internal cell dynamics. PBM results in gene regulated cell biomodulation that is controlled by intrinsic genetic expression and coding. Again, PBM/Nir laser therapy is non-ionizing radiation and by nature, RNA/DNA coding and gene expression are not altered by treatment. Interestingly, the benefits are predominantly products of PBM induced cellular respiration, or the production of adenosine triphosphate (ATP) that supports all aspects of a cells function.

**In summary**, safe and effective treatment protocols combined with specific FDA Cleared Nir/PBM technology delivers significant assistance to cell level restorative functions in neurologically compromised conditions.



# METHOD



**Our methods** deliver high-yield therapeutic gains across a wide spectrum of functional deficits in neurology. Our target is not the disease process itself, rather it is to increase the sum-total of neurological benefits derived through therapy that improves the patients' overall QoL status and reduces their long-term suffering. Our methods are assistive and are non-invasive in nature; to the benefit of both the patient and the provider.

## Technology

We use FDA Cleared high pulsed, low wattage laser technology specifically adapted to Lasene standards for maximizing therapeutic gains while simultaneously marginalizing all potential risk factors.

## Algorithms

Our algorithms are extensive, and our unique therapeutic system is non-experimental in slowing, restoring, and initiating remission in numerous QoL complaints for many serious, progressive conditions.

## Business

Lasene provides a practical business pathway to the patient through a comprehensive branding partnership for supporting both the clinical and business aspects of treating the patient's neurological needs.

## Support & Services

Lasene support and services include equipment, technician certification, doctor and staff education, patient processing, payment processing, progress data monitoring and processing, ongoing individualized and dynamic patient treatment maps, continuous visual data dashboards, notifications, scheduling, marketing assist, and technical support.



# DATA SETS

Lasene data sets are for demonstration and educational purposes only. All materials are U.S. Copyright and all data is non-identifiable information obtained with HIPAA compliant patient consent and does not represent, nor imply a promise to cure or treat a specific disease or condition. Sample data studies illustrate therapeutic benefits derived through Lasene QoL focused protocols. Parkinson's Disease is presented for demonstrating proof of concept and clinical efficacy.

## 1a. 1ct Parkinson's Patient / 97% Overall Mean Peak Response at 15 Months

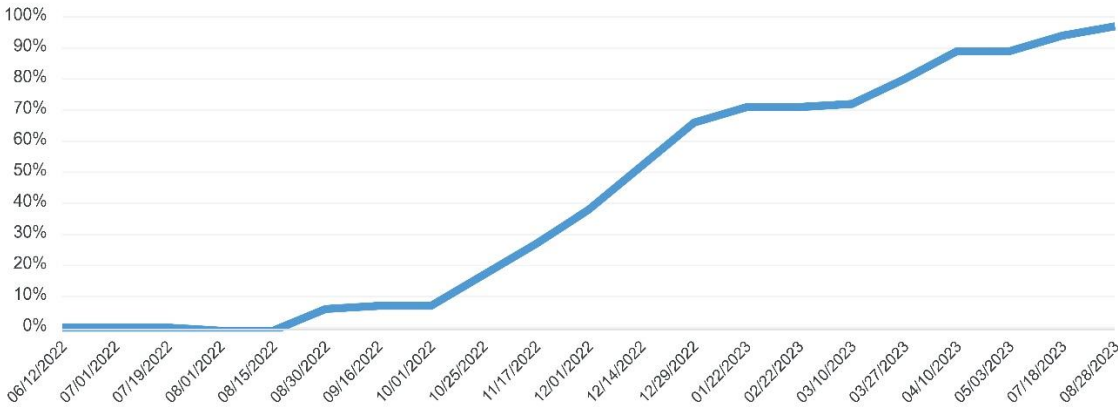
2023-09-21

Note: Total in group: 1, Total that answered these questions: 1

Dr. Frank Jarrell  
Lasene Director of Research  
& Development

Illustration 1a.

### Positive QoL



### Negative QoL

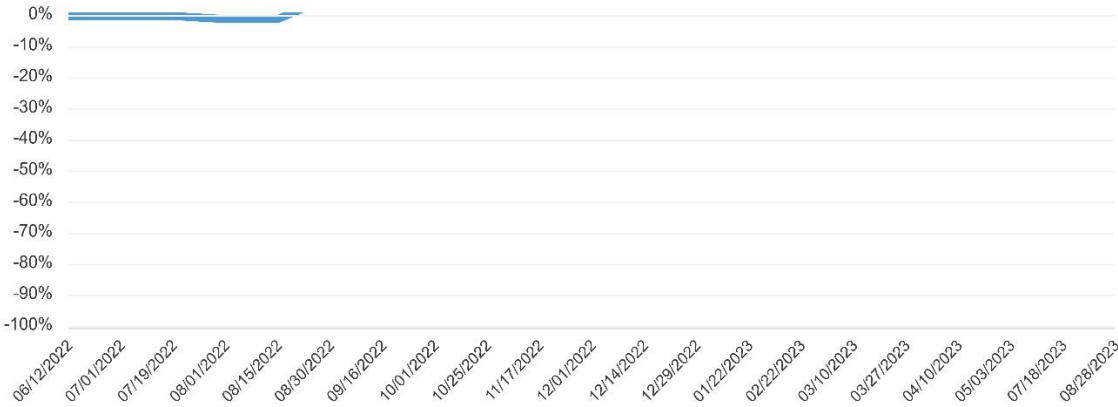


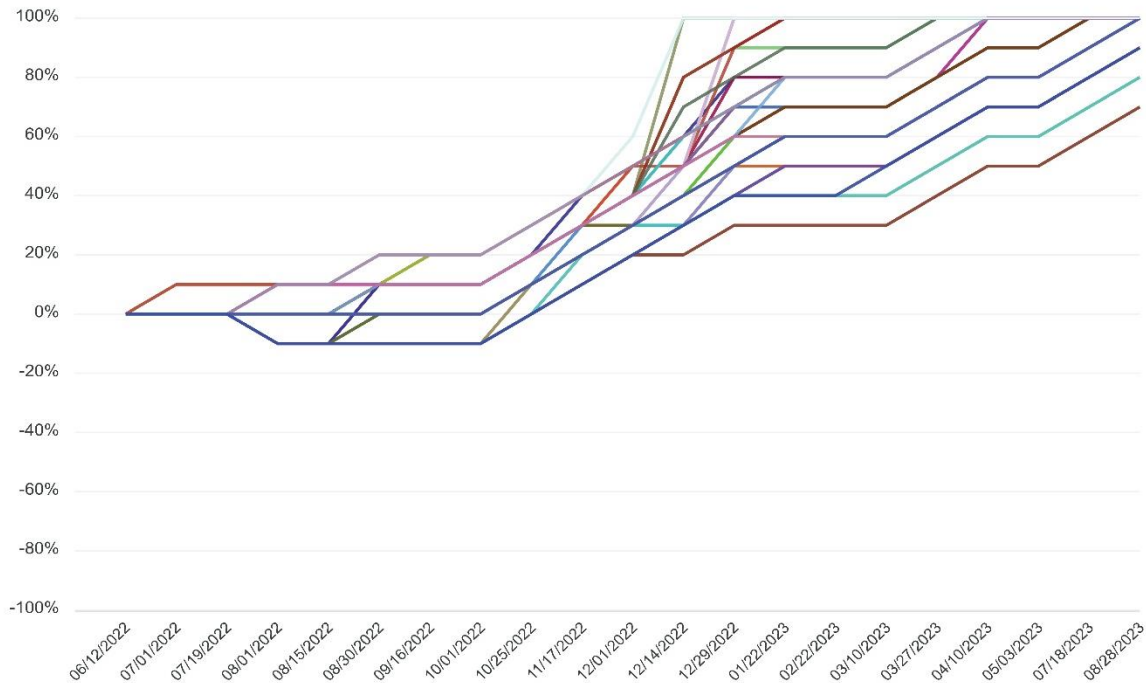
Illustration 1a. Lasene best case therapeutic response / Single PD Patient / 15 Months with Lasene Neural Therapeutics / Male / Age 68 / 49 reported neural deficits / Overall Line Graph Response Curve demonstrates 97% Mean Peak Improvement as of August 28, 2023.



# 1b. 1ct PD Patient, Net 97% Mean Peak Itemized Response Curve

Progress per Question

Illustration 1b.



- 1-1: Planning or following through with movements, or paralysis ● 1-5: Lack of spontaneity when interacting with others
- 1-19: Increased or decreased interest in sexual behavior ● 2-7: Drawing objects ● 3-7: Reading, writing or arithmetic
- 4-8: Increased or decreased interest in sexual behavior ● 6-1: Inability to judge distance and when to stop
- 6-2: Difficulty with rapid alternating movements ● 6-3: Tremors in hands when reaching for objects ● 6-4: Wide base gate or staggering
- 6-6: Slurred speech ● 6-8: Poor fine motor coordination ● 8-4: Poor posture ● 8-6: Chronic generalized stiffness
- 8-7: Intermittent weakness in the extremities, neck and/or back ● 8-9: Recurrent pain, numb, ting, burning in spine or extremities
- 8-10: Can't seem to hold a Chiropractic adjustment or PT manipulation ● 9-1: Progressive muscle weakness
- 9-3: Difficulties with speech or control of speech ● 9-4: Gate problems or ability to walk normally ● 9-5: Resting muscle tremors in the Arms
- 9-6: Resting muscle tremors in the Hands ● 10-1: Have difficulty relaxing ● 10-4: Go to sleep thinking about problems
- 10-5: Spend most waking hours making decisions or analyzing information ● 10-7: Wake from sleep more than once a night
- 10-8: Sleep less than 6.5 total hours each night ● 10-9: Sleep uninterrupted for less than 5.5 hours/night
- 10-10: Recover poorly after a full night's sleep ● 10-11: Rarely engaged in conversations on philosophy, ideology or creativity
- 10-12: Rarely learn something new ● 10-13: Rarely recall your dreams ● 10-14: Have difficulty feeling emotionally connected to people or animals
- 10-15: Rarely feel creative and intuitive at the same time ● 11-1: Sleep frequently or are you sleepy during the day
- 12-1: Losing or lost your sense of smell ● 13-1: Difficulty finding right words, slurring speech or slowed speech cadence
- 13-6: Loss of sexual arousal or behavior when compared to prior history ● 14-1: Progressive or specific muscle problems you are told are PD related
- 14-2: Postural or balancing problems standing or with movement ● 14-3: Gate freezing while walking or changing positions or directions
- 16-2: Muscle weakness, pain or tremors on one side ● 20-1: Tremors or increasing tremors ● 20-3: Tinnitus or ringing in the ears
- 21-4: Trouble with fine motor skills ● 21-5: Unexpected changes or extremes in sexual behavior
- 22-1: Often sleepy or do you sleep frequently during the day (EDS) ● 22-2: Sleep apnea ● 23-1: Chronic anxiety

**Illustration 1b:** Same Parkinson's patient as 1a / 15 months Lasene Neural Therapeutics / Overall Split Line Graph Response Curve / Lasene best case therapeutic response/ Male / Age 68 / 49 reported neural deficits 97% Mean Peak improvement as of August 28, 2023.

## 2a. 18 PD Patients, 42% Mean Peak Improvement over 142 Complaints

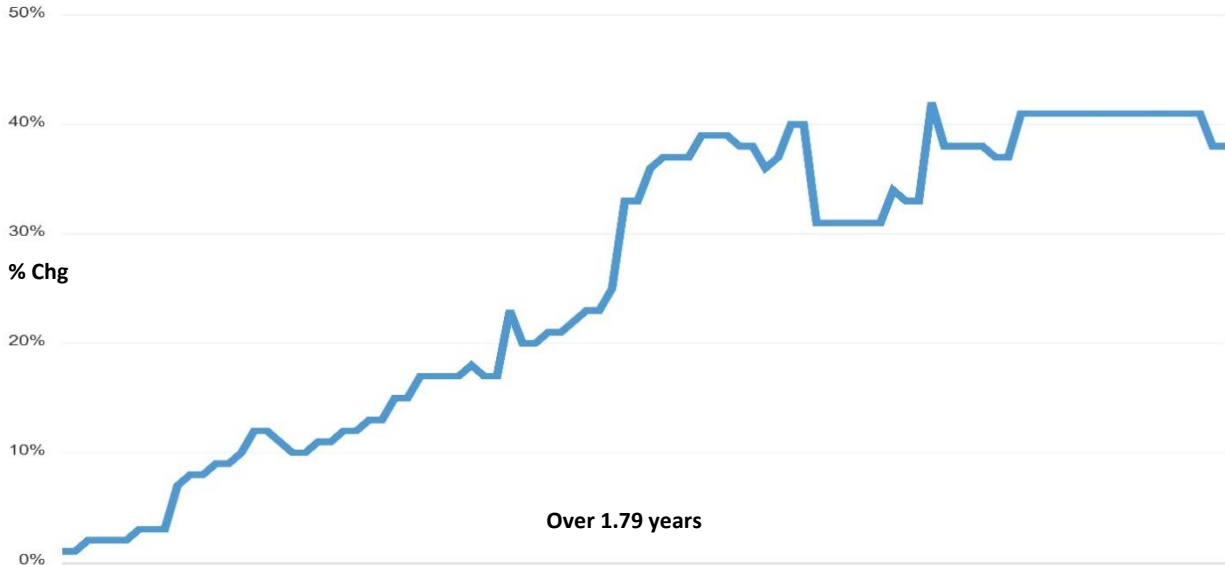
2023-09-22 , Criteria: PD 18ct 42% over 1.79 yrs, Program: Parkinson's QoL Assist

Note: Total in group: 18  
42% Mean Peak Improvement  
over 91 Weeks (1.79 yrs)

Dr. Frank Jarrell  
Director of Research & Development  
Data Research Portal

Illustration 2a.

### Positive QoL



## 2b. 17 PD Patients, 41% Mean Peak over 142 Complaints Response Curve

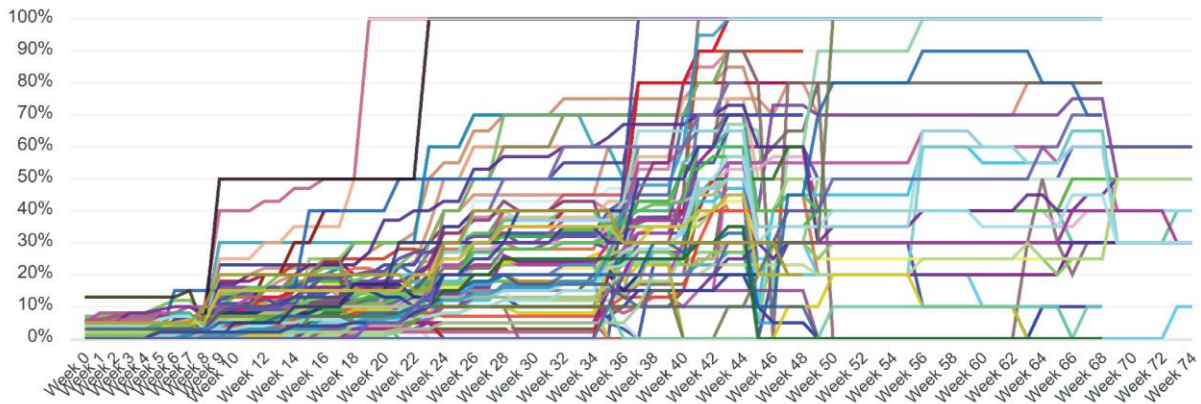
2023-05-12 , Program: Parkinson's QoL Assist

Note: Total in group: 17, Total that answered these questions: 17

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Director of Research & Development  
Data Research Portal

Illustration 2b.

### Positive QOL



**Illustration 2a. & 2b.** Combined 18 and 17 Parkinson's patients over 91 weeks with Lasene Neural Therapeutics 14 Males, 4 Females / Ages 54-83/ 42% mean peak improvement in 142 total reported complaints. 2a. is an Overall Line Graph Response Curve and 2b. is an Overall Split Line Comparative Complaint Response Curve.

### 3a. 10 of 17 PD Patients with Speech Dysf., Range 40 - 100% Mean Peak Improv.

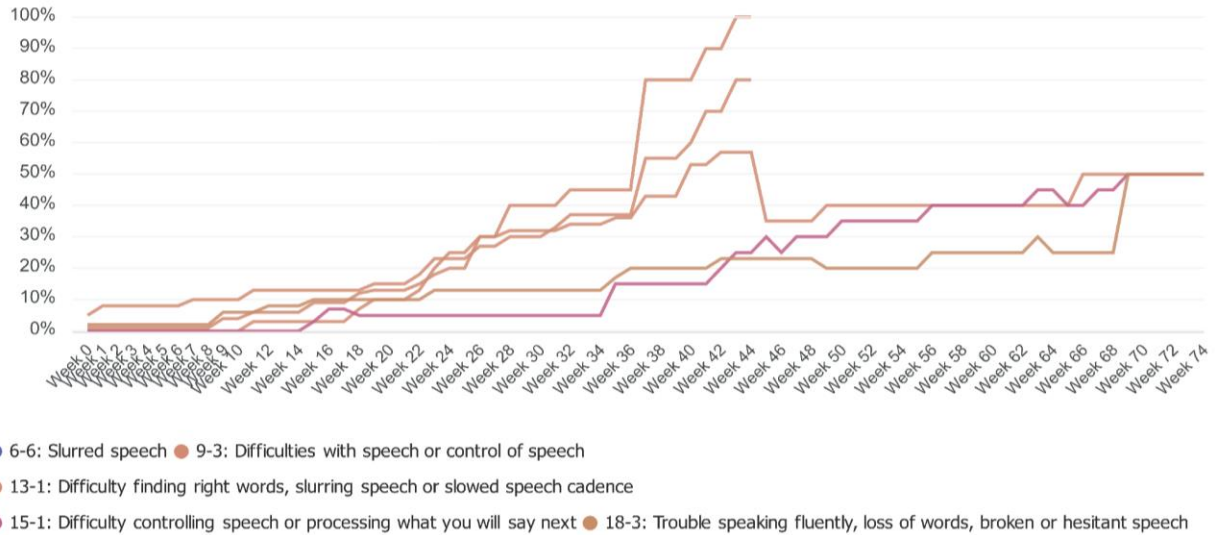
2023-05-12 , Program: Parkinson's QoL Assist, Keywords: speech

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Note: Total in group: 17, Total that answered these questions: 10

#### Positive QOL

Illustration 3a.



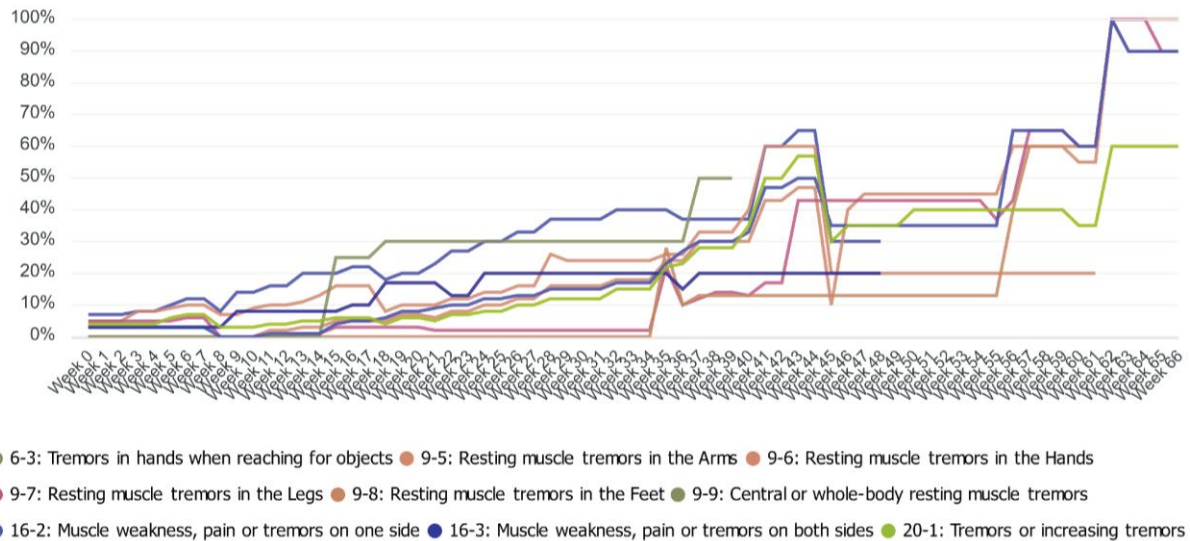
### 3b. 15 of 18 PD Patients with Tremors, Range 20 -100% Mean Peak Improvement

Note: Total in group: 18, Total that answered these questions: 15

Director of Research & Development  
 Data Research Portal

#### Positive QOL

Illustration 3b.



**Illustration 3a.** 10 of 17 PD patients' w/ Speech Dysf. / Mean QoL Progress Graph to 74 weeks /  
 Note: Trend in Patient QoL.

**Illustration 3b.** 15 of 18 PD patients' w/ Tremors / Mean QoL Progress Graph to 74 weeks  
 Note: Trend in Patient QoL

# DISCUSSION

Lasene clinical data samples demonstrate one best case single-patient data study, an 18 patient composite data study on all combined self-reported complaints, and one each of multi-patient single complaint emphasis for both speech dysfunction and tremors in Parkinson's disease.

Up to date science and research, state of the art technology, systematic algorithms, data acquisition and processing methods, and advanced treatment algorithms provide a sound basis for health related QoL gains in treating patient reported neural deficits. Protocols and technical safety, absence of adverse effects or events, and robust clinical outcomes demonstrate consistent high-yield, quality of life benefits for those patients suffering from a wide set of neurological conditions to include Parkinson's Disease.

Further studies are warranted, and collaborative analysis for safe and effective therapeutic and pharmacological development may arise from ongoing Lasene Neural Therapeutics data processing systems.

## A DOCTOR'S PERSONAL EXPERIENCE

[I was diagnosed with] "Advanced Parkinson's in 2015. Shuffling gate, severe forward posture, muscle rigidity, loss of voice projection and volume, tongue and mouth tremors, whole body tremors, right hand severe tremors, constipation, insomnia, nightmares, low energy, decreased libido, erectile dysfunction, and brain fog." [I began] "Lasene and light changes began to surface during the first 30 days. Now I have normal gate and posture, no mouth tremors, no body shaking, only a slight right-hand tremor that occurs a couple of times a day, restored sleep, no nightmares, normal bowel movements, restored libido and sexual function, voice projection restored, no more brain fog".

## RESOURCES

Visit: <https://Lasene.com/> or call Cheryl Harris, MA, MSW, LCSW Director of Business Relations at +1-704-330-3556 for general information, clinical opportunities, business relationships.

**Contact:** Dr. Frank Jarrell, Director of Research and Development at:

[lasene@spinalreflex.com](mailto:lasene@spinalreflex.com) for technical information and research collaboration.

# PATIENT COMMENTS

- “I was apprehensive. I tried the therapy which turned out to be So, So simple and comfortable.”
- “I’m like, you know, is this going to burn anything? (laughs) So it was great for me to see and understand that there wasn’t any downside, but there was a bunch of upside.”
- “The whole process was easy, relaxing, and great results. I recommend to anyone.”
- ‘Noted loss in Parkinson’s mask and he smiles today. Also, improvement in gait and postural elevation.’
- ‘Walking, ability to roll over in bed, strength, and energy better.’
- “My mood and that [excessive daytime sleeping] really improved quickly.”
- ‘No freeze gait today. Doing good, getting up better from a chair.’
- ‘Gait is smoother, less throwing of the arms and torso for forward momentum.’
- “I wouldn’t want to get up, would be groggy and getting up at 9:00; didn’t dream. And once I started this, I just have these dreams that are vivid and go on all night it seems. I am waking up at 7:00 which is more normal.”
- ‘Sleep improved; dreams resumed.’
- ‘Sleep seems better, less restless, less waking, not as much stiffness in moving, fluidity of gait increased, less fatigue in evenings.’
- “When I would go to bed, it was annoying having that tremor keeping me from falling asleep. And now I find I am able to go to sleep and I don’t have it when I wake up.
- “Tremors way better, 80% decrease. Mood, depression, fear of change, pain, loss of lifestyle, crying, 50% less; not so hopeless feeling”.
- ‘Intermittent tremors in hands, walking well with golf while on 3-day holiday.’
- “Definite energy. Before I would start doing a task that normally I would do 6 of in a day; and I would do one and go “oh, I’ve got to rest” or I just didn’t have the will a lot of times, or the motivation to do things. I just did them like I was 80 years old. Now I feel much more like I used to. I can just get after something and complete it. I have energy and am motivated to do it.”
- “I can judge [tremors] by doing a scale on the piano, how I could do that. I can do them quite well now.”
- ‘Walking 50% improved, turn/freeze gait only if doing it fast.’
- “The restlessness and twitching I felt in my legs have completely stopped.”
- “Right leg/foot no longer crossing midline with walking’
- “No panic attack since Thursday [7 days] and 40-60% reduction in depression. Episodes [panic attacks] are about 1 week apart [HX 2x per day]. My panic is much improved.”
- “Not waking with depression.”
- “I feel like I have my life back. I feel like I’m not going to get any worse, and if anything, I will get better.”
- “My tremors sometimes go completely away.”
- “In a couple of years, if I just even improve minuscule, I think I could be 90% back.”
- “I find that situations when the tremors would be bad were social situations where everybody is laughing and you are excited and talking, and it has definitely lessened quite a bit. The triggers are not as powerful.”
- “I was able to hike down an 800 ft. gorge 2- 3 times to go fly fishing. I was rock hopping and my balance was good. Before I was really scared to try to jump from rock to rock.”

- “This program has given me inspiration and hope”
- “An emotional or excitability trigger just doesn’t have the same effect that it did
- “I lost my sense of smell, I used to have a really good sense of smell and now I would say it is 50% back.”
- “Reduced tremor, improved speed and cadence of speech and improved gait efficiency and balance.”
- “I came in and said all I want to do is walk. My hip no, I don’t even think about it anymore. It’s back 98%.”
- “The whole process was easy, relaxing, and great results. I recommend to anyone.”
- “I used to look in the future and see this person in the wheelchair drooling, and now I don’t see that. That’s a horrible thing to see. And now I just see improvement and I think I can stay that status quo. If I can just stay the way I am now I’d be happy, really happy, and I see that I think I can just stay like this.”
- “My balance is better by far. Running and turning quickly (playing tennis); I could do all that. Much more coordinated.”
- “Continued reduction in hand tremors at 0 – 10% of original. Can perform one leg hip rotation with decreased tremors, increased endurance, and decreased pain.”
- “Can stand straight without trying.”
- “If people don’t have this chance, it’s a sin. You can’t withhold, if there’s even any treatment that the symptoms are lessened, you’ve got to share that with people.”
- “An innovative and comprehensive program for treating injuries, chronic pain, and in my case, symptoms of Parkinson’s. I initially sought treatment for my hip pain that has persisted for 3 years, with no real diagnosis or relief from multiple providers. My hip pain is resolving.”
- “The laser and your system, it just goes like it belongs together. I had read about the laser and there were some very definitive studies done that laser will help this [Parkinson’s], will help symptoms. The hope that gave me was amazing.”
- “The people that I know that have been ‘treated in this manner’ have had remarkable results. I don’t even feel like I’m the poster child! I feel like the people that I’ve seen that you have treated are just remarkable, and in a month in some instances!”
- “I go longer periods of not even being aware of my [tremors] which is great, instead of it just constantly being a reminder. When I do have it, I seem to be able to do a little shrug off or mental relax of it.”

## RESOURCES

Visit: <https://lasene.com/research-studies/> for an extensive list of citations by the National Institute of Health and the National Library of Medicine.



# CITES RESEARCH ABSTRACT LINKS

## Abstract Categories:

- A. Direct References to Parkinson's and Nlr Laser Therapy
- B. Direct References to Neurodegenerative Diseases
- C. Parkinson's Related Studies that May Benefit from Photobiomodulation
- D. Photobiomodulation in Neurology
- E. Photobiomodulation in Other Conditions
- F. Safety and Biophysics of Photobiomodulation
- G. Animal Studies Relevant to IR/PBM and Parkinson's 1999 – 2020

### A. Direct References to Parkinson's and Nlr Laser Therapy

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## B. Direct References to Neurodegenerative Diseases

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## C. Parkinson's Related Studies that May Benefit from Photobiomodulation

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