



# LSVT Global® Public Webinar Series

**Title:                   The Impact of Non-motor Symptoms in the  
Successful Delivery of LSVT LOUD® and LSVT BIG®**

**Presenters:       Cynthia Fox, PhD, CCC-SLP  
                          Heather Cianci, PT, MS, GCS**

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## The Impact of Non-motor Symptoms in the Successful Delivery of LSVT LOUD® and LSVT BIG®



Cynthia M. Fox, PhD, CCC-SLP  
Heather Cianci, PT, MS, GCS



Innovation in Science. Integrity in Practice.

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## Disclosures

- All of the LSVT faculty have both financial and non-financial relationships with LSVT Global.
- Non-financial relationships include a preference for the LSVT LOUD and LSVT BIG as a treatment techniques.
- Financial Relationships include:
  - Dr. Fox is an employee of, receives lecture honorarium from, and has ownership interest in LSVT Global, Inc.
  - Ms. Cianci receives lecture honorarium and travel reimbursement from LSVT Global, Inc.

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## PLAN FOR WEBINAR

- Logistics (handouts)
- Presentation of Content
- Address your questions
- Survey

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## Information to Self-Report CE Activity

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- Attendance for the full hour is required to earn a certificate.



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## Instructor Biographies



**Cynthia Fox, PhD, CCC-SLP**  
Dr. Fox received her doctorate degree in Speech and Hearing Sciences from the University of Arizona, Tucson. Her training included a focus in the areas of neuroscience and motor control. She is an expert on rehabilitation and neuroplasticity and the role of exercise in the improvement of function consequent to neural injury and disease. Dr. Fox is a world leader in administration of LSVT LOUD speech treatment for people with Parkinson disease. She was the first to apply this treatment to disorders other than Parkinson disease (e.g., multiple sclerosis) and pioneered the application to pediatric populations including children with cerebral palsy and Down syndrome. Dr. Fox worked closely on the development of a physical therapy program, LSVT BIG, that was modeled after the speech treatment protocol. Dr. Fox also serves as faculty for LSVT LOUD and LSVT BIG training and certification courses. She has numerous publications in these areas of research and has presented extensively nationally and internationally. Dr. Fox is a Co-Founder and CEO of LSVT Global, Inc.



**Heather Cianci, PT, MS, GCS**  
Ms. Cianci is the Geriatric Team Leader and founding therapist of the Dan Aaron Parkinson's Rehab Center at Pennsylvania Hospital in Philadelphia, PA. She received her Bachelor of Science in Physical Therapy from the University of Scranton, and her MS in gerontology from Saint Joseph's University, both in Pennsylvania. Heather received her Geriatric Clinical Specialist Certification in 1999 and was certified in LSVT BIG in 2007. She is a 2004 graduate of the Parkinson's Foundation's (formerly the NPF and PDF) Allied Team Training for PD, and became a faculty member for the program in 2017. Ms. Cianci has written and lectured for several national PD organizations, on-line CEU providers, and PT programs at Philadelphia area universities. Her research is on falls and bed mobility in PD, and she is also a former board member for CurePSP.

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## Polling Question Who are you?

- Speech Therapist
- Physical or Occupational Therapist/Assistant
- Person with PD
- Family/friend of person with PD
- Other



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## Presentation Objectives

1. Identify and describe at least four non-motor features of Parkinson disease.
2. Explain how non-motor features of PD may directly or indirectly affect speech, mobility and activities of daily living in people with PD.
3. Provide examples of five strategies that may be used in LSVT LOUD and LSVT BIG therapies to address nonmotor features and potentially improve treatment outcomes.

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### Background on motor and non-motor impairments in Parkinson disease (PD)

| Key Motor Symptoms   | Key Non-motor Symptoms         |
|----------------------|--------------------------------|
| Bradykinesia         | Depression, Apathy, Anxiety    |
| Hypokinesia          | Cognitive Impairment, Dementia |
| Rigidity             | Impaired Kinesthetic Awareness |
| Tremor               | Pain, Sensory deficits         |
| Postural Instability | Bowel and Bladder Dysfunction  |
|                      | Sleep Disorders                |
|                      | Sexual dysfunction             |

Motor and non-motor symptoms can negatively impact speech, voice, swallowing, communication, mobility, balance and activities of daily living in people with PD  
Goldman & Postuma, 2014; Schapira, Chaudhuri, & Jenner, 2017

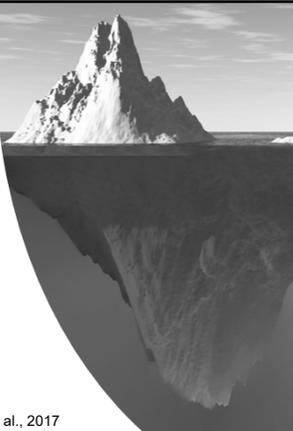
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### Non-motor Symptoms Often Precede Motor Symptoms

Motor symptoms are the “tip of the iceberg”

**Non-motor** symptoms manifest several years before the classic motor symptoms!

Goldman & Postuma, 2014; Scharpira et al., 2017



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### Impact of NMS on communication, mobility and activities of daily living

Appear early in the disease

Negatively impact performance and participation early in the disease – often more than motor symptoms

Exacerbate and interact with speech & motor symptoms

Less well managed by medication

Often under-recognized

Shulman, 2002

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## Cognition in Early PD

**Impairments found in early, untreated PD:**

- Impaired processing speed
- Attention deficits
- Visuospatial impairments
- Executive dysfunction
- Memory impairments

**Functional impact on process skills:**

- Impaired problem solving
- Difficulty multi-tasking
- Decreased mental flexibility
- Decision making
- Difficulty planning and organizing

(Weintraub, et al. 2015)

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### Loss of Higher Cognitive Function

- **Slower thinking may result in slower response time to questions**
  - People with PD often are frustrated when people do not wait for them to respond
- **Language challenges**
  - Delayed word retrieval
  - Difficulty shifting communication topics
  - Difficulty initiating and expanding upon language
  - Difficulties with language processing (e.g., to understand non-literal or implied meanings)



Slower processing, combined with increased levels of distractibility, can lead to loss of train of thought, making longer conversations more difficult and frustrating for both the PWP and the listener.

Auclair-Ouellet, et al., 2017; McNamara & Durso; 2018

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## Depression

Loss of joy in interacting → Feelings of isolation and loss of self-efficacy

↓

Decreased desire to start or participate in conversations → Affects engagement in treatment sessions

↓

Makes compliance and carryover more challenging → Decreased motivation – “people may just not want to try”

↓

May impact cognition and quality of life



e.g., Han et al., 2011; Manor et al., 2009; Schapira et al., 2017

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## Dementia

- Difficulty understanding directions
- Decreased deficit awareness
- Limits new learning and carryover
- Difficulty in understanding compensatory aids
- Feeding behaviors impacted, swallowing efficiency and safety may be compromised



Goldman & Postuma, 2014; Lauretani et al, 2014;

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## Apathy and Anxiety



- Withdrawal from communication and social interactions
- Feeling hopeless that speech, mobility and daily function challenges won't improve
- Loss of self-efficacy
- Default to low energy despite greater capacity
- Withdrawal from meaningful activities

Pagonabarraga & Jaime Kulisevsky, 2017; Verdonshot et al., 2016

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## Fatigue “It makes everything harder.”

Fatigue was the most frequently selected problem by people with PD in survey by Schalling et al., 2017

|   |  |  |
|---|--|--|
| Affects motivation                                | Reduced engagement in therapy and social communication | Greater risk for aspiration              |
| Interferes with carryover of treatment strategies | Concentration difficulties for conversation            | Also impacts freezing of gait and vision |

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## Sleep Disorders

- Daytime sleepiness/nighttime sleepiness, REM
- Reduced concentration and memory
- Affects levels of alertness, sustained attention for conversation
- Impacts consolidation/retention in terms of motor learning
- Airway clearance during sleep could be impacted by sleep disorders
- Impacts energy for therapy sessions





Schapira et al., 2017

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### Pain

- Can be musculoskeletal (41%), dystonic, neuropathic, or radicular
- 76% of PWP have pain
- Correlates with depression and poorer quality of life

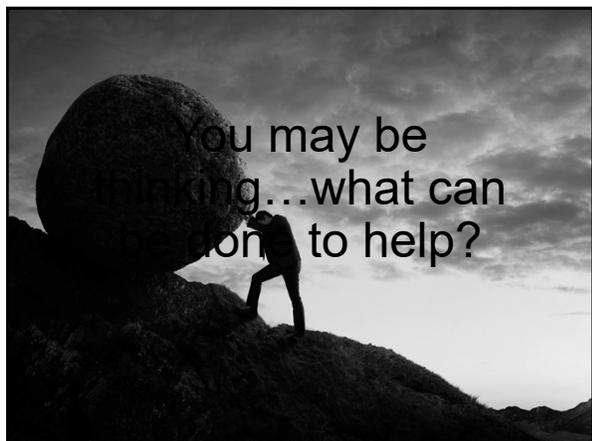
### Orthostatic Hypotension

- Can be side effect of PD meds
- Can be an autonomic symptom of PD
- Can lead to falls, fear of falling, and increased mortality
- Estimated prevalence 30% in PWP

Valkovic et. al, 2015; Velseboer 2016



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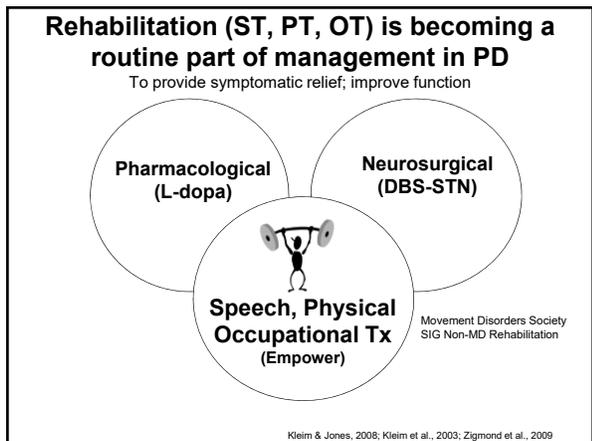


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### Unique Opportunity

Today in the world of PD – we CAN make a difference!

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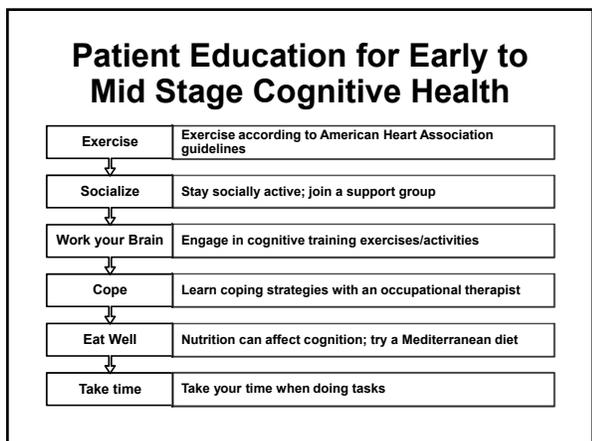
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### Treatment strategies related to non-motor symptoms

- Non-motor symptoms may impact treatment, but do NOT make people with PD ineligible to receive it
- We just have to figure out opportunities to motivate and address (not ignore) the non-motor symptoms
- Direct and indirect strategies

Strategies apply to all treatments  
LSVT LOUD and LSVT BIG as examples

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### Working with Loss of Higher Cognitive Function

- Increase dosage of treatment
- Reduce distractibility
- Be patient – allow time for delayed auditory processing
- Model exercises and functional mobility - limit verbal explanations
- Adapt or break-down the exercise when needed
- Repetition, repetition, repetition!!!
- Keep it simple!

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### Working with Dementia

- Many of the same strategies as loss of higher cognitive function
- Require assistance to be compliant with home exercise program
  - More care partner training
- Need more familiar reading material
- Need even more repetition of exercises and activities
- Enhanced lighting and table setting contrast during meals
- Assistive devices and equipment may be necessary

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### Dementia Case Example LSVT Loud

You have a person with PD who has significant dementia and as a result has difficulty reading unfamiliar material. This particular person is very involved in their place of worship. Thus, you can select familiar readings for him to read to keep the intensity of motor practice going and maintain salient engagement.



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### Motivation and Engagement Symptom Complex

Fatigue

Sleep Disorders

Depression

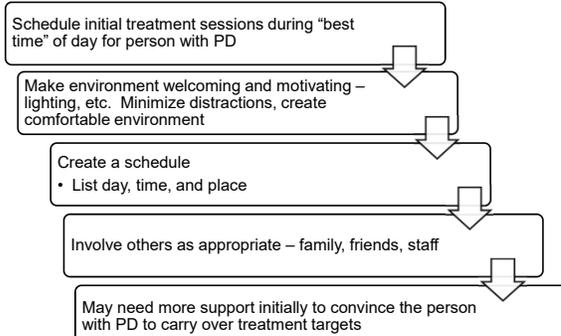
Apathy

Anxiety

**Collective strategies overlap to address these issues in treatment!**

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### Environmental Manipulations/External Support



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### Positive Reinforcement/Arousal

- **Positive reinforcement/Positive spin:**
  - Client: "These exercises are a lot of work."
  - Clinician: "Yes, they are! This is what will help you improve your communication/walking/buttoning. You have important things to say and do. The more we practice, the stronger you will get!"
- Positive reinforcement to facilitate activities
- Encourage energetic participation
- Celebrate success!!!
- Role of arousal in motor learning

*The therapist's positive, persistent energy gives the person with PD confidence to try!*

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### Salient and engaging tasks

- Incorporate tasks that are meaningful and salient to person - enhances motivation
- Link program to functional goals
- Hobbies and passions should be incorporated and used to achieve self-realization and improved communication, function and participation
- Salience of activities and other environmental factors that facilitate motivation and learning



Family



Work



Hobby

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### Physical activity & active practice

- Increase “vigor”
- Increased activity with treatment may help with sleep
- Increase endurance with daily exercise/practice
- Increase engagement and socialization



Cusso, Donald, & Khoo, 2016

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### Management of Fatigue

- Exercise!
- Keep mentally and physically active
- Establish good sleep habits/hygiene
- Avoid frequent naps
- Eat well
- Pacing strategies/routine

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### Fatigue & Apathy Case Example LSVT Big

- Admits he does not enjoy activities that were once pleasurable
- Feels unmotivated to do anything
- Feels tired often. Admits he does not sleep well because of restless legs and is up several times to urinate during the night.
- He has chronic low back pain so “takes it easy” a lot.
- He also gets dizzy sometimes when he is standing or walking, so spends much of his day sitting watching TV.
- Admits that he has slowed down some, but also thinks his wife walks too fast.

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### Treatment Strategies

- Set a schedule for HEP & Homework Helper DVD
- Meaningful functional goal selection: playing with grandkids, traveling, eating out
- Provided frequent reinforcement of how his effort will improve his QOL
- Educated on difference between muscle soreness vs. pain
- Educated on post exercise fatigue vs. other types of fatigue
- Reinforced education on sleep hygiene
- Highlighted how exercise resulted in boosted energy level and improved sleep
- Discussed OH symptoms with MD and provided basic education on hydration, compression hose, rising slowly, etc.
- Reinforced positive changes in movement so he could begin to internalize what normal movement “feels like”

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### Treatment Strategies for Pain & Sensory Changes

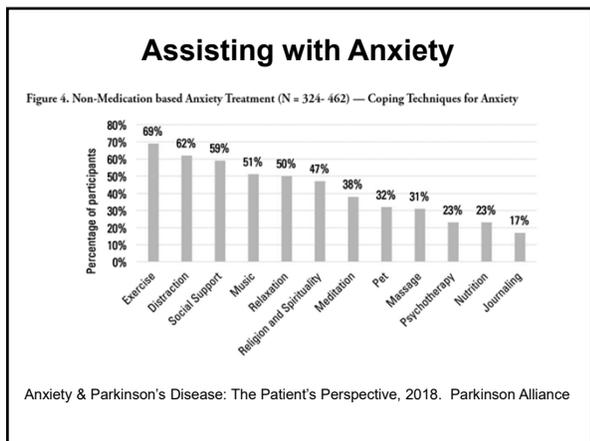
|            |   |
|------------|---|
| Model Well | Model and reinforce good biomechanics and voice quality   |
| Adapt      | Adapt for painful movements or joints or vocal quality. LSVT exercises should never cause pain. |
| Support    | Provide support or change position of exercises as needed                                       |
| Decrease   | Decrease hold time and reps if limited by pain or vocal strain                                  |
| Screen     | Screen for conditions which need treatment before or after LSVT BIG or LSVT LOUD                |

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### Treatment Strategies for Orthostatic Hypotension

- Educate in safe postural transition strategies
- Encourage strategies for hydration
- Assess avoidance of toileting
- Discuss medical management and compression wear with MD

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frontiers  
in Medicine

MINI REVIEW  
published: 17 August 2019  
doi: 10.3389/fnmed.2019.00026

### The Impact of Physical Activity on Non-Motor Symptoms in Parkinson's Disease: A Systematic Review

Melanie E. Cusso<sup>1\*</sup>, Kenneth J. Donald<sup>1</sup> and Tien K. Khoo<sup>1,2</sup>

"Global and specific NMS involving depression, apathy, fatigue, cognition, and sleep were significantly improved by some form of physical activity."

Need for further research to fully clarify the relationships between what types of exercises, dosage of exercise, and other contributing factors most significantly impact NMS.

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*"I do believe that as patients begin to see positive results from therapy and hear positive comments from others their confidence increases which impacts their ability to cope with anxiety, depression, apathy, etc. better."*

—LSVT LOUD Clinician

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1

They are all potential barriers to generalization outside of the treatment room!

2

They are part of the reason high intensity, repetition and salience is so important

3

People with PD need to be viewed as a "whole person"

Why is it important to consider non-motor symptoms?

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Don't get "lost" in all of the issues people with PD have and diffuse the focus. The target is still Amplitude.

## Potential Pitfalls

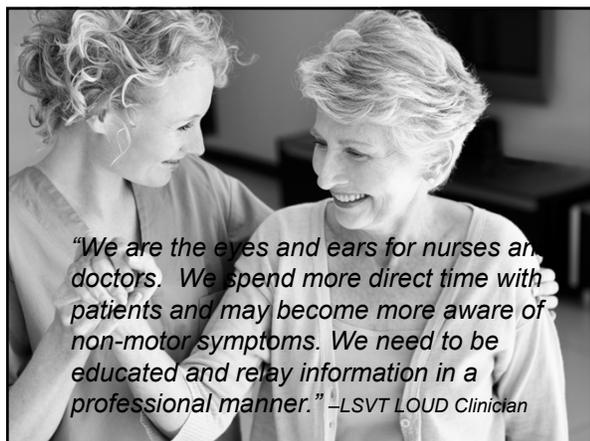
Our greatest gift we can give is

- Improved communication
- Improved swallowing
- Quality of life
- Increased participation
- Improved ease of mobility

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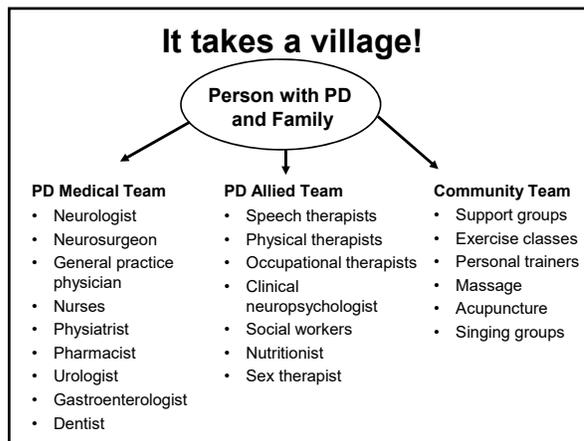
## Know when to refer!

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*"We are the eyes and ears for nurses and doctors. We spend more direct time with patients and may become more aware of non-motor symptoms. We need to be educated and relay information in a professional manner." –LSVT LOUD Clinician*

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### Summary

- Non-motor symptoms are pervasive in PD at all stages and affect communication, swallowing, mobility, activities of daily living and quality of life
- We can impact non-motor symptoms both directly and indirectly with our treatments.

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### Summary

- View the "whole person" but focus on what we are specialized to improve
- Best care involves a multi-disciplinary team and refer as appropriate
- Need for systematic research on impact of LSVT LOUD and LSVT BIG therapies on NMS in people with PD

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### How to ask questions LIVE:

1. Type in the QUESTION BOX on your control panel
2. Raise your hand! (*Click on the hand icon.*)
  - Your name will be called out
  - Your mic will be unmuted (make sure your mic is unmuted as well)
  - Then ask your question out loud
3. Email [webinars@lsvtglobal.com](mailto:webinars@lsvtglobal.com) if you think of questions later

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## Thank you!

**QUESTIONS??**  
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