

NARA
The National Association of
Rehabilitation Providers and Agencies


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THE ERA OF AGILITY
STRATEGIES FOR
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Bally's Las Vegas

COVID Long Haulers - Connecting the Dots

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Introduction of Speakers




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None have Relevant Financial Relationship to disclose

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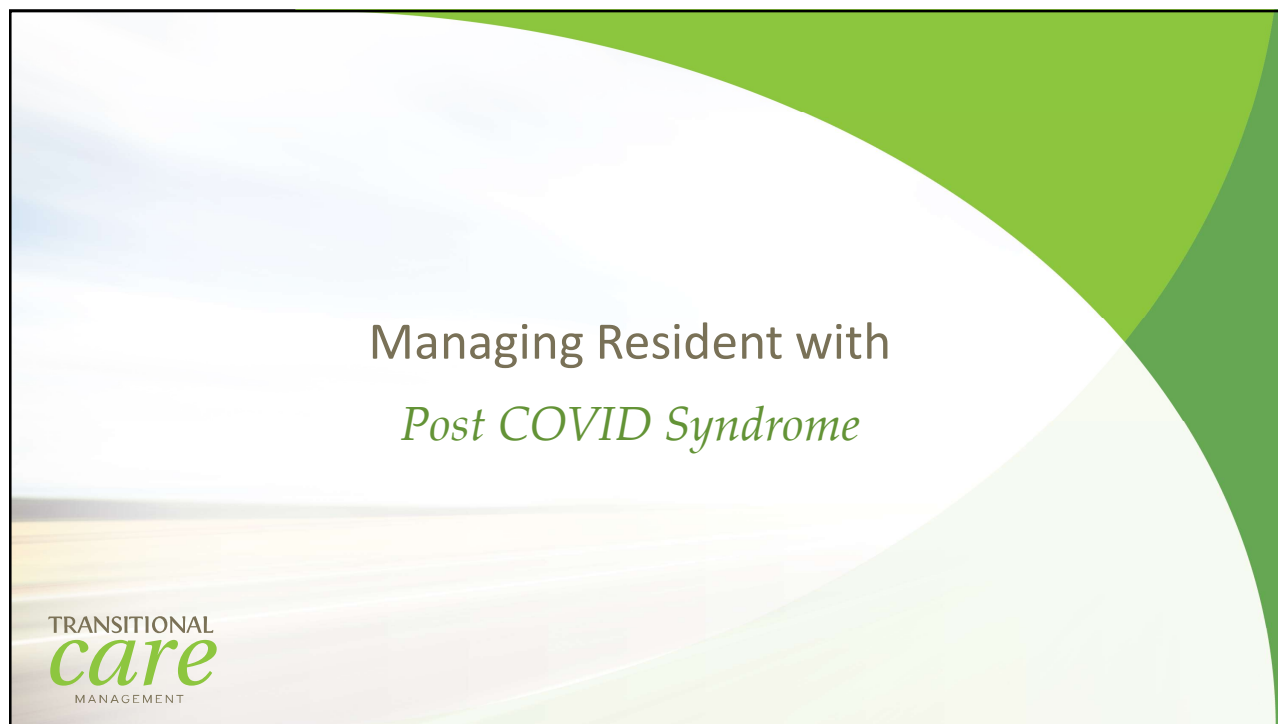
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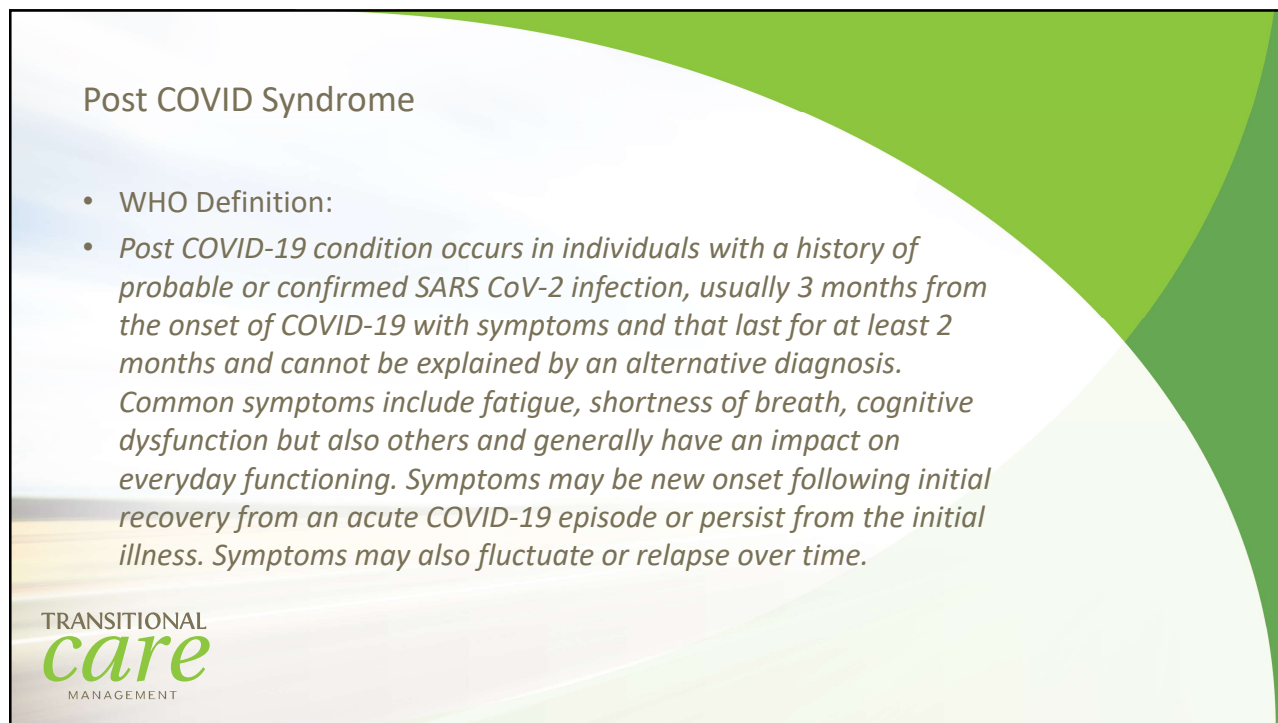
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What Causes Post COVID Syndrome

- Currently unknown; but probably due to organ damage, or persistent inflammatory or autoimmune response
- Occurring in both individuals who were extremely ill as well as those who were not
- SARS-CoV-2 can attack the body in a range of ways, causing damage to the lungs, heart, nervous system, kidneys, liver and other organs. Mental health problems can arise from grief and loss, unresolved pain or fatigue, or from post-traumatic stress disorder (PTSD) after treatment in the intensive care unit (ICU).

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Organ Damage Related to COVID

Although COVID-19 is seen as a disease that primarily affects the lungs, it can damage many other organs as well. This organ damage may increase the risk of long-term health problems. Organs that may be affected by COVID-19 include

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Heart Damage Related to COVID

Heart - Imaging tests taken months after recovery from COVID-19 have shown lasting damage to the heart muscle, even in people who experienced only mild COVID-19 symptoms. This may increase the risk of heart failure or other heart complications in the future.

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Neurological Damage

- An increased risk of dementia, psychotic disorders, cognitive deficits, and epilepsy or seizures can persist for up to 2 years
- Higher Incidence of Dementia in those over 65; approximately 1.2 % increase in COVID compared to other respiratory illnesses

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Neurological Damage Related to COVID

- **POTS after COVID-19.** People recovering from the coronavirus sometimes show symptoms of a condition known as POTS (postural orthostatic tachycardia syndrome). POTS isn't directly a cardiac problem, but a neurologic one that affects the part of the nervous system that regulates heart rate and blood flow. The syndrome can cause rapid heartbeats when you stand up, which can lead to brain fog, fatigue, palpitations, lightheadedness and other symptoms

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Neurological Damage Related to COVID

- Several long COVID symptoms could be linked to the affect on the Vagus nerve
- The Vagus nerve runs from the brain through the body and connects to the heart, lungs, intestines and several muscle involved in swallowing.
- Approximately 66% of individuals studied had some type of Vagus nerve dysfunction
- Long haul COVID patients with Vagus nerve dysfunction had issues diarrhea, tachycardia, dizziness, swallow issues, voice issues and hypotension; most had three or more symptoms.

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Lung Damage Related to COVID

- The type of pneumonia often associated with COVID-19 can cause long-standing damage to the tiny air sacs (alveoli) in the lungs. The resulting scar tissue can lead to long-term breathing problems.
- Three factors that affect the lung damage risk in COVID-19 infections and how likely the person is to recover and regain lung function:
- **Disease severity.** The first is the severity of the coronavirus infection itself — whether the person has a mild case, or a severe one. Milder cases are less likely to cause lasting scars in the lung tissue.

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Lung Damage Related to COVID

- **Health conditions.** The second is whether there are existing health problems, such as chronic obstructive pulmonary disease (COPD) or heart disease that can raise the risk for severe disease. Older people are also more vulnerable for a severe case of COVID-19. Their lung tissues may be less elastic, and they may have weakened immunity because of advanced age.
- **Treatment.** Treatment is the third factor. A patient's recovery and long-term lung health is going to depend on what kind of care they get, and how quickly. Timely support in the hospital for severely ill patients can minimize lung damage.
- Breathing exercises and respiratory therapy often help the lungs heal

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Diabetes

- Overall, the most common new diagnoses linked to having had COVID-19 were shortness of breath, heart rate abnormalities, and type 2 diabetes.
- Among hospitalized people ages 20 and older, the rate of new type 2 diabetes was about twice as high in people who had tested positive for COVID-19 compared with those who had tested negative.
- Type 2 Diabetes has also been linked to the chance of developing Post COVID Syndrome

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Diabetes


- For the study published in JAMA Network Open, researchers looked at the emergence of new health conditions 31 to 150 days after participants were tested for COVID-19. The participant group included 338,024 people younger than 20 years old, and 1,790,886 people ages 20 and older — some of whom tested positive for COVID-19, and some of whom tested negative. Overall, the most common new diagnoses linked to having had COVID-19 were shortness of breath, heart rate abnormalities, and type 2 diabetes. Fatigue was also more common among people ages 20 and older who were hospitalized at the time they received a new diagnosis. Among hospitalized people ages 20 and older, the rate of new type 2 diabetes was about twice as high in people who had tested positive for COVID-19 compared with those who had tested negative.
- Type 2 Diabetes has also been linked to the chance of developing Post COVID Syndrome
- This can be due to either the way COVID attacks the body organs or due to increase body mass found in individuals post pandemic

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Mental Health

- Why did COVID cause so many mental health issues:
- Out of the blue”
- Immediate threat
- Prolonged
- Rapidly changing
- Many unknowns
- Uncertainty
- Loss of routines
- Colliding of worlds
- No end date
- Expectation and need of “moving forward”



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Impact of Prolonged Isolation

Lack of mobility -> less standing and walking -> muscle atrophy -> falls

Prolonged bed mobility:


- *For every 24 hours immobilized in bed muscles lose 2% of their motor units*
- *Healthy subjects can lose 4-5% of their strength in a week -> loss of ROM*

Social isolation -> Decreased cognitive stimulation -> confusion, behaviors

Less talking / activity + weakness -> we are seeing more dysphagia

Lack of activities – even in the first 14 days = more dependent resident


Lack of familial relationships and connections -> Depression



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The Opportunities to Promote Health Recovery and Well-Being

- Rehab Approach – getting our residents out of their rooms and “back in action” in the center
- Lifestyle Recovery
- Environmental Milieu – things to do during the day / waking hours
- Therapy partnerships
- Events / Activities role to promote health recovering and well-being




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Post COVID Care Team

- The Post-COVID CARE team includes physicians, nurses respiratory therapy, dietary, therapy and activities
- Look at residents as a whole with a different set of needs that should be addressed by different subspecialists.



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Team

- Physicians: With the increased role of telemedicine; the residents at the facilities have increased access to specialists that they may have not had access to prior; opportunity for physician to identify Post COVID Syndrome as opposed to other medical issue
- Nursing: Increased collaboration with therapy to understand the limits of individuals post COVID due to reduced lung function and impaired ability to exercise up to 6 months after discharge from a hospital

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- Dietician: Patients who have suffered COVID-19 will be at increased risk of malnutrition and will likely have suffered loss of muscle during their stay. Dietitians can recommend nutrient rich, fortified, tasty foods or specialist nutrition supplements to help people regain the weight and muscle that may have been lost.
- Social Work: Mental health challenges, including stress, anxiety, and depression; was observed in up to 1/3 of survivors at 6 months and beyond; Discharge Planning Challenges
- Activities: Do” versus “Facilitate

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- Physical Therapy:
- Early & frequent mobility key to combating muscle wasting
- Progression of exercise to regain strength and endurance while maintaining oxygenation levels and stable vital signs
- Impaired trunk control
- Balance training
- Improve chest wall expansion & respiration
- Airway clearance techniques



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Team

- Occupational Therapy:
- Occupational Disruption: establish a daily routine/schedule
- Back to Basics: ADL training
- Energy conservation & work simplification techniques

Long Haul COVID / Post-COVID Effects:

- Impaired activity tolerance / endurance
- Living with impaired cognition
- "I can't pull it together" – low endurance + impaired cognition + psychosocial impact

Psychosocial:

- PTSD: 1/3 of patients who recover from PICU syndrome
- Disability + Isolation
- Adjustment to new circumstances
- Depression
- Anxiety
- Insomnia / Sleep Hygiene
- Intervention
 - stress management, coping strategies, relaxation, goal management
- How can OT help with new routines?

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Team

Post-extubation: voice, swallowing

- Voice
- swallowing
- Impact of respiratory status
- Decompensation

Trach Care and Weaning

Respiratory Support for Speech, Eating, ADLs

Ability to speak and form words has been a common symptom of PICU Syndrome

- Implement strategies for communication of wants & needs with caregivers & family

Dysphagia (*50-83% of Critically Ill Patients*)

- Post-extubation dysphagia - up to 62% of patients who have been intubated for typical 5-14 days

Cognition:


- Studies are showing PICU Syndrome - 30-80% of patients have cognitive deficits, some long-lasting
- Post COVID Delirium and Brain Fog
- Identify and treat reversible contributors
- Restore function
- Adapt / Compensate for chronic deficits
- Prevent and manage complications

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Conclusion

“The strength of the team is each individual member. The strength of each member is the team.”

Phil Jackson




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Covid-19 Impact

Kathleen Dwyer OTR/L, CHT, RAC-CT, CHC




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Objectives

- National view of the current Covid-19 Cases via Net Health Business Intelligence
 - CHS Therapy and it's affiliates and subsidiaries (35 states, approx. 30,000 patients)
- Relating Diagnosis Codes and Trends since 2020
- Control versus Covid-19 patients versus Long Haulers patients
 - Discharge disposition
 - Average length of stay
 - Outcomes

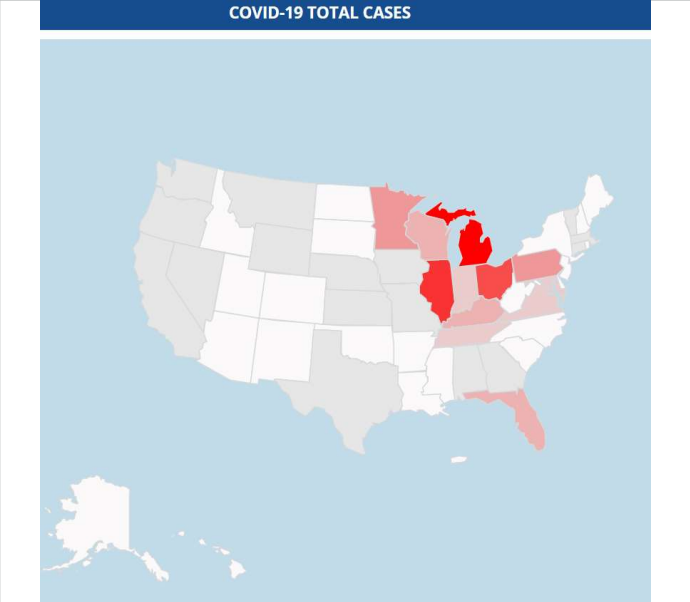



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Covid-19 Impact Report

- Hot spots – Since 1/1/2020
- CHS Therapy and it's affiliates and subsidiaries (35 states, approx. 40,000 patients)





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Covid-19 and the related conditions

Diagnosis Code	Diagnosis Code Description
U07.1	COVID-19
U09.9	Post COVID-19 condition, unspecified
Z86.16	Personal history of COVID-19
J12.82	Pneumonia due to coronavirus disease 2019
Z20.822	Contact with and (suspected) exposure to COVID-19
Z11.52	Encounter for screening for COVID-19
M35.89	Other specified systemic involvement of connective tissue
M35.81	Multisystem inflammatory syndrome

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Total cases since 2020

- Covid-19 and Related Conditions (since Q1 2020)

U07.1 CASES	Z86.16 CASES	Z20.822 CASES	M35.89 CASES
35,953	4,131	287	19
U09.9 CASES	J12.82 CASES	Z11.52 CASES	M35.81 CASES
466	2,071	74	13

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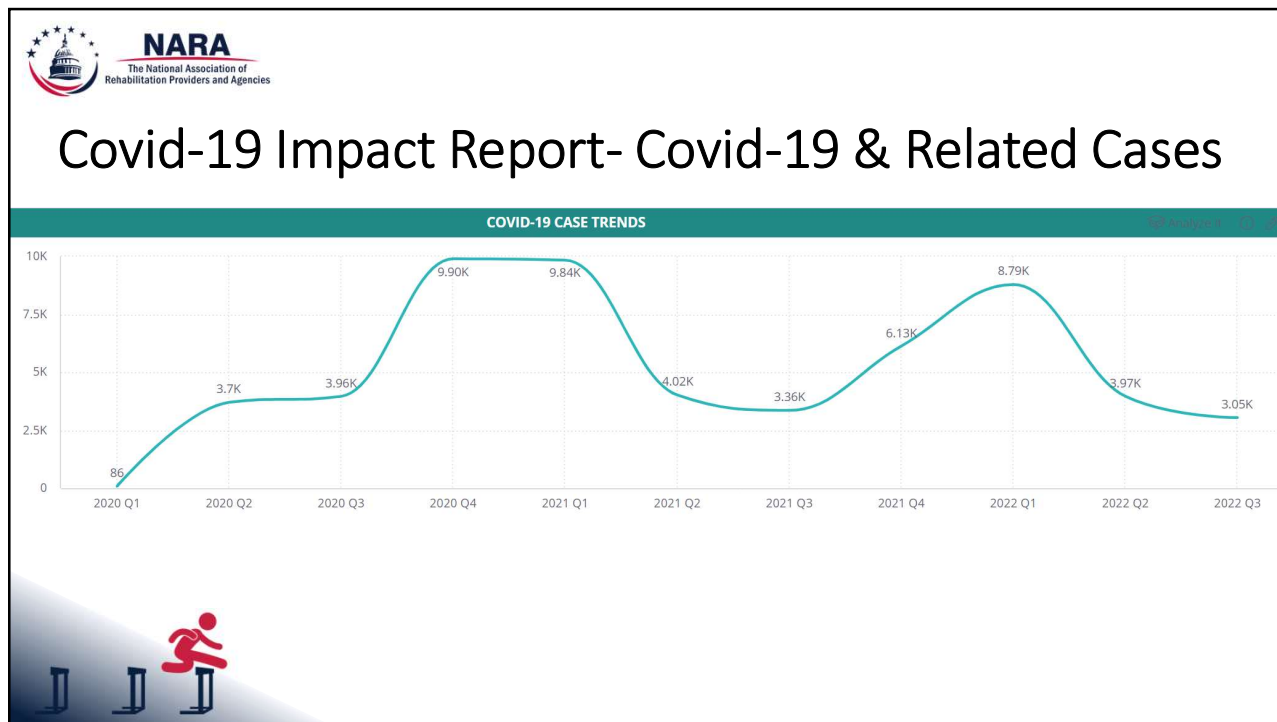
Covid-19 Impact Report

- ICD-10 Codes since 2020
 - Trend comparison year over year
 - Nearly 40,000 patients in our data

COVID-19 CASE DETAILS SINCE 2020

Year	Resident Count							
	Contact with and (suspected) exposure to COVID-19	COVID-19	Encounter for screening for COVID-19	Multisystem inflammatory syndrome	Other specified systemic involvement of connective tissue	Personal history of COVID-19	Pneumonia due to coronavirus disease 2019	Post COVID-19 condition, unspecified
	Z20.822	U07.1	Z11.52	M35.81	M35.89	Z86.16	J12.82	U09.9
2020	10	14,611				29	3	
2021	174	16,922	48	9	12	2,529	1,460	135
2022	125	11,080	30	4	8	1,937	746	376
Grand Total	287	35,953	74	13	19	4,131	2,071	466

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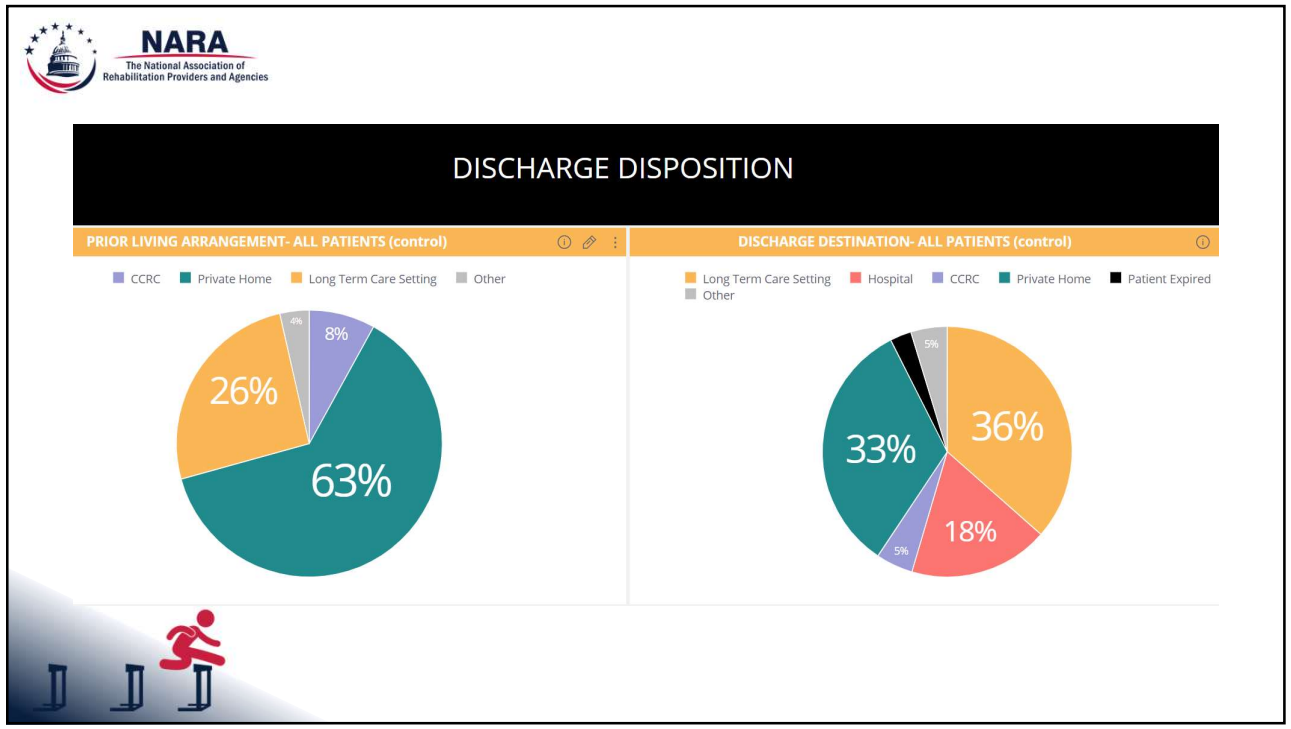


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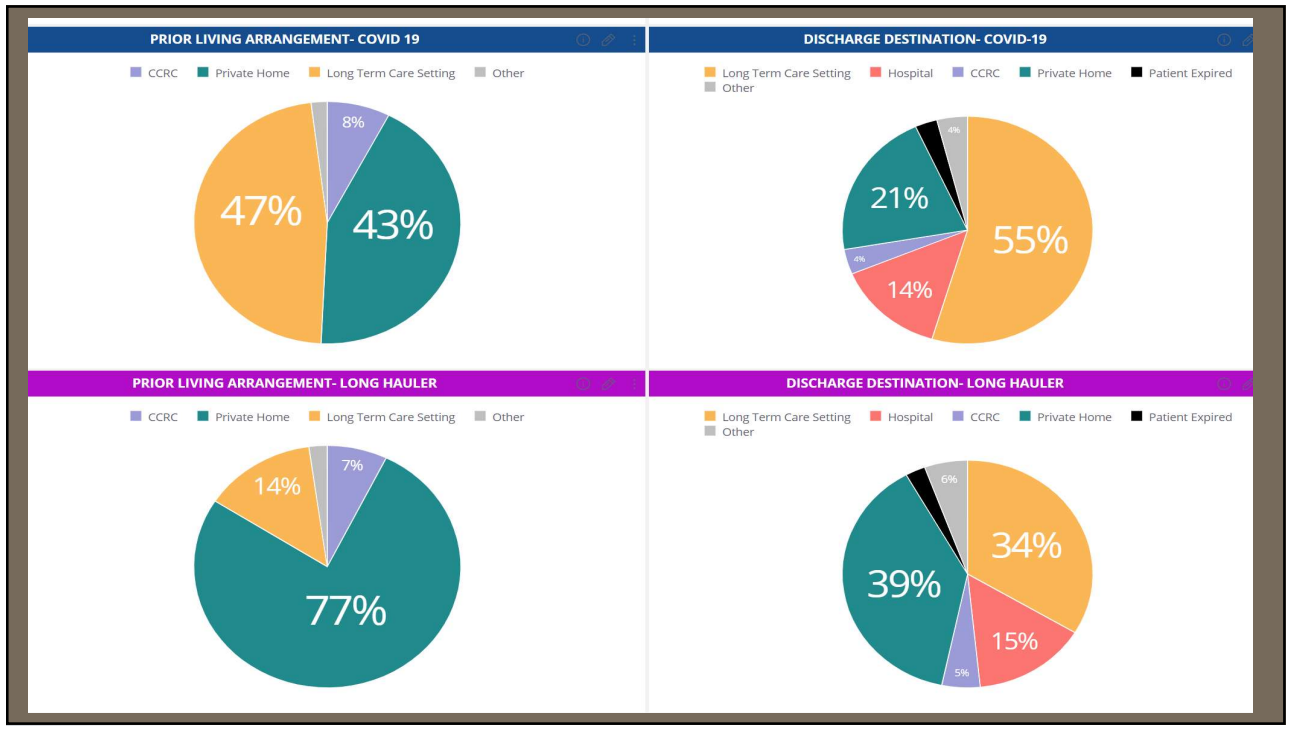
Covid-19 Impact Report

- Discharge dispositions:
 - Prior living arrangement versus discharge destination
 - Control Group
 - Covid-19 Group
 - Long Hauler Group

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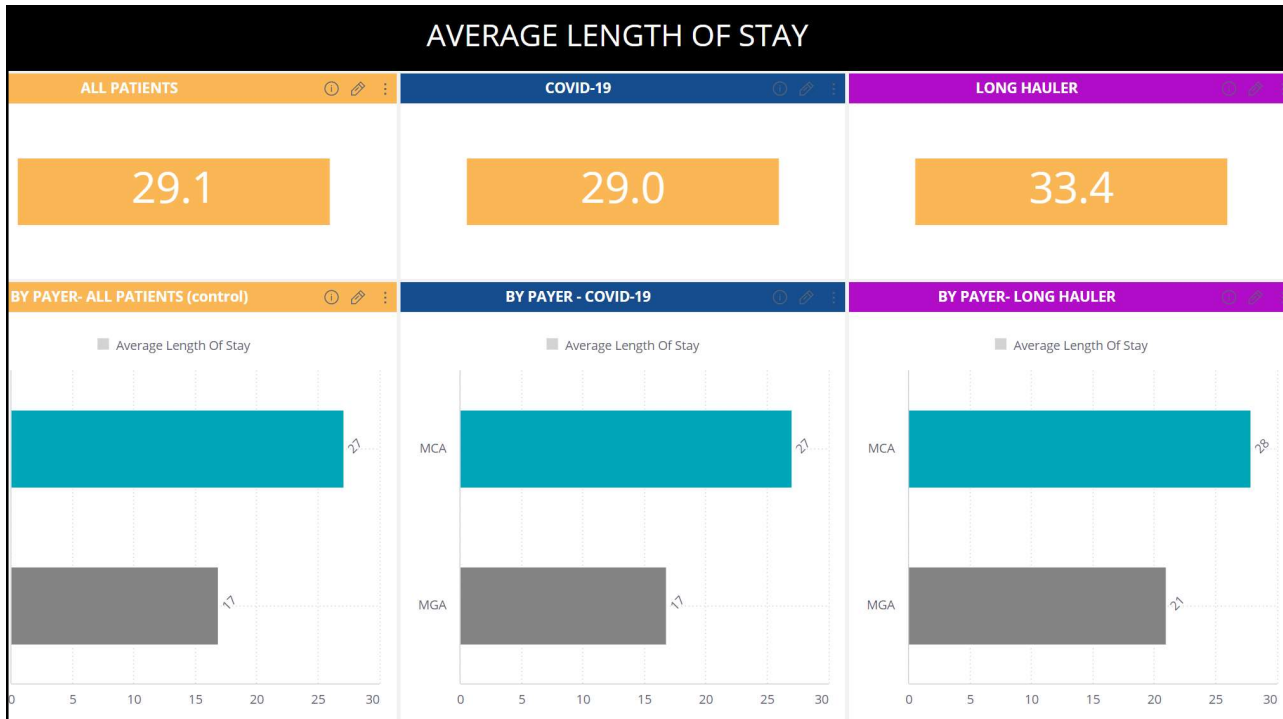


Covid-19 Impact Report


- Average Length of Stay
 - Control Group
 - Covid-19 Group
 - Long Hauler Group
- Payer Groups
 - Medicare
 - Managed Care



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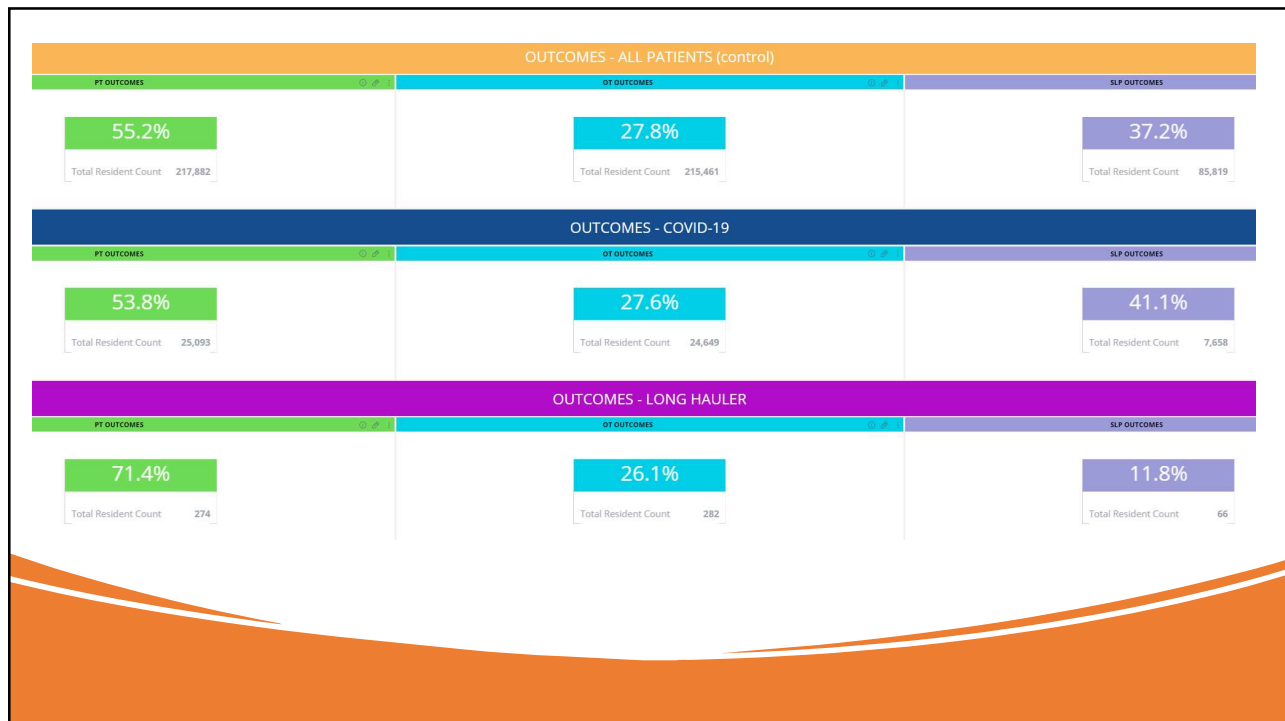


Covid-19 Impact Report

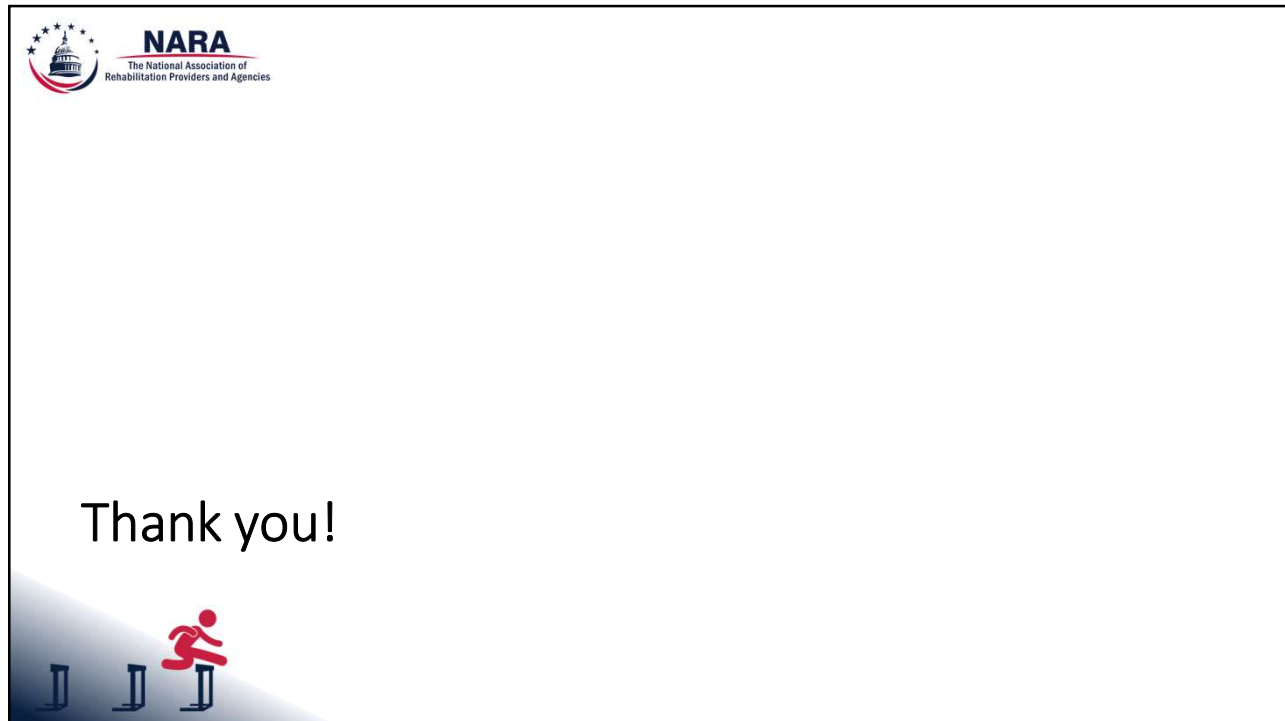
- Outcomes by Type for **Planned Discharges**
 - Control Group
 - Covid-19 Group
 - Long Hauler Group



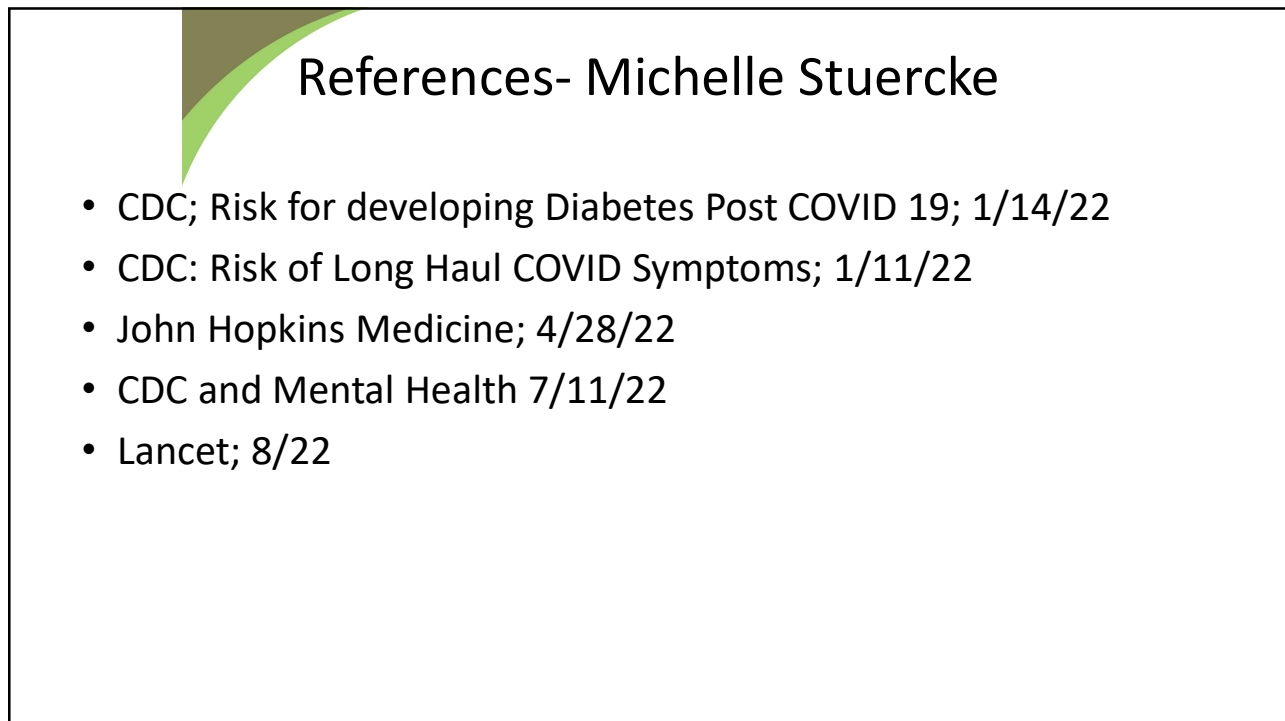
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FULL SPECTRUM LIGHT



Sara Bender, PT/DPT, CES, VVBC
Director of Education and Clinical Services



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Micro Versus Macro Approach

- Therapy has historically treated from a **macro** level approach (muscle group strengthening, gross motor movements, functional tasks, etc)
- FSL is a treatment approach attempting to target the **micro** level



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Micro Versus Macro Approach

-While COVID and Long Haulers have macro level effects, the root cause is at a micro or cellular level

-We began to question: What exactly is affected at a cellular level and can we impact that for healing?



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Micro Versus Macro Approach

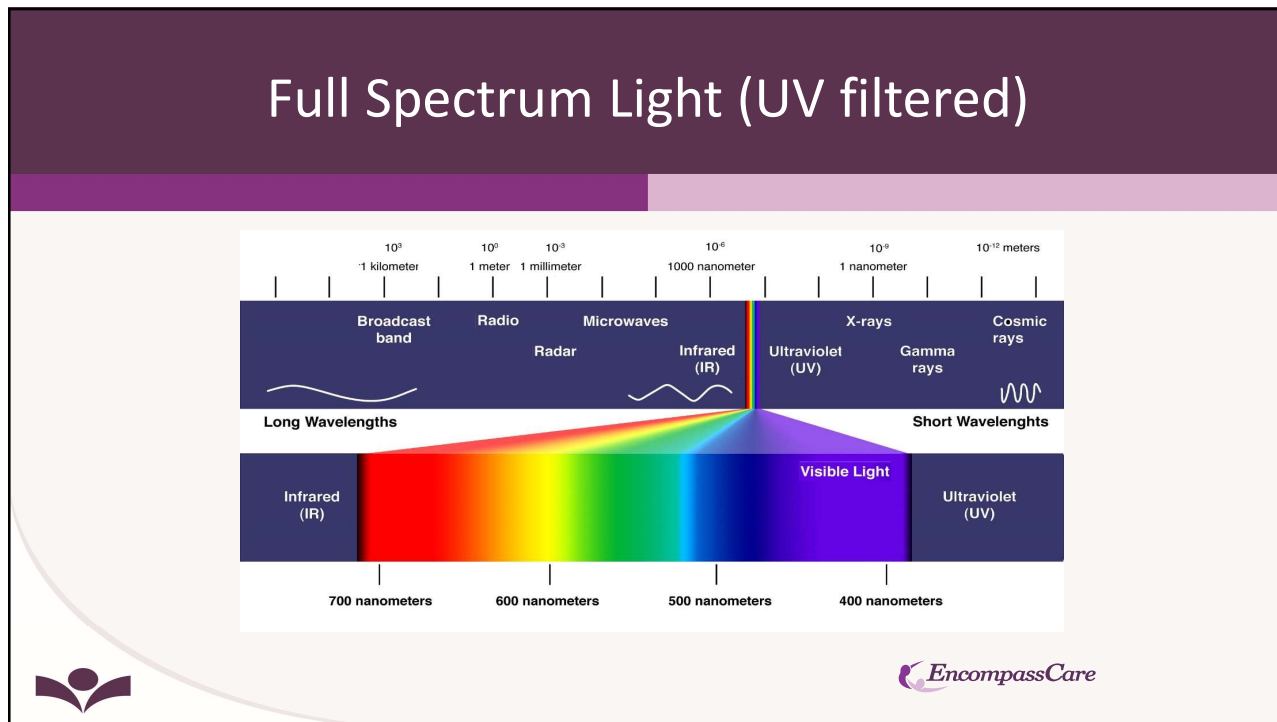
We observed such things as:

- Fatigue
- Isolation
- Depression/Anxiety
- Weakness
- Decreased Immunity
- Weight loss
- Neuro complications



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Full Spectrum Light

Light Spectrum Example Comparisons:

- Pitch black darkness like at nighttime is 0 Kelvin
- Daylight (about noon) is around a bright 5,000 - 5,500 Kelvin
- Soft, warm light bulbs in your home typically have a color temperature of just 2,700 - 3,000 Kelvin
- Full Spectrum Light Therapy boxes use a bulb that mimics daylight at 6,500 Kelvin
 - This is the clinical standard of effective light box therapy for treating SAD, depression, anxiety, sleep disturbances, joint pain and for bolstering the immune system

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3 Pillars of Full Spectrum Light

We began our pilot program attempting to determine FSL's effect on three areas:

1. Bolstering the immune system and improving one's overall energy
2. Lessening of depression and anxiety
3. Regulating and deepening sleep cycles to achieve REM and consistency of sleep patterns



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Clinical/Health Benefits

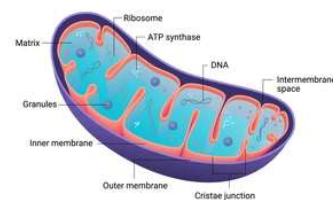
1. Bolster immune system and increase one's overall energy:

-Full Spectrum Light (FSL) activates mitochondria of our cells. Mitochondria are the "workhorses" of the cell and when they are stimulated by FSL, Adenosine TriPhosphate (ATP) is produced

-When ATP is increased, cell function is improved

-Mitochondria store calcium

MITOCHONDRIA



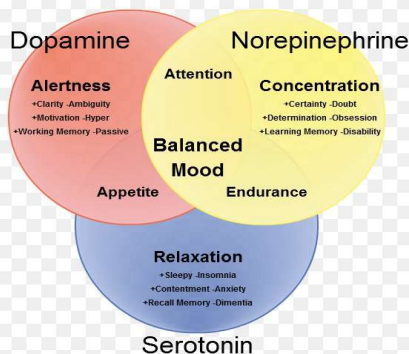
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Clinical/Health Benefits Con't

2. Lessening of Depression and Anxiety: FSL stimulates production of **serotonin** and **norepinephrine** which are chemicals responsible for combatting depression, enhancing moods and decreasing anxiety



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Clinical/Health Benefits Con't

3. Improving Sleep Cycles: FSL stimulates production of **melatonin** which improves sleep depth and regularity of sleep cycles



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Importance of Consistent Sleep

During REM sleep:

- **Acetylcholine** produced (Neuronal gap significance)

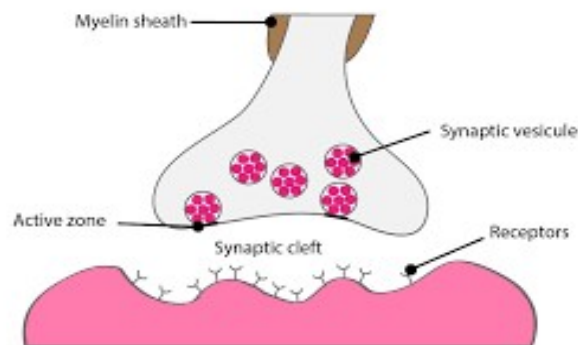
- **Norepinephrine** and **Serotonin** paused (Reserve stores)



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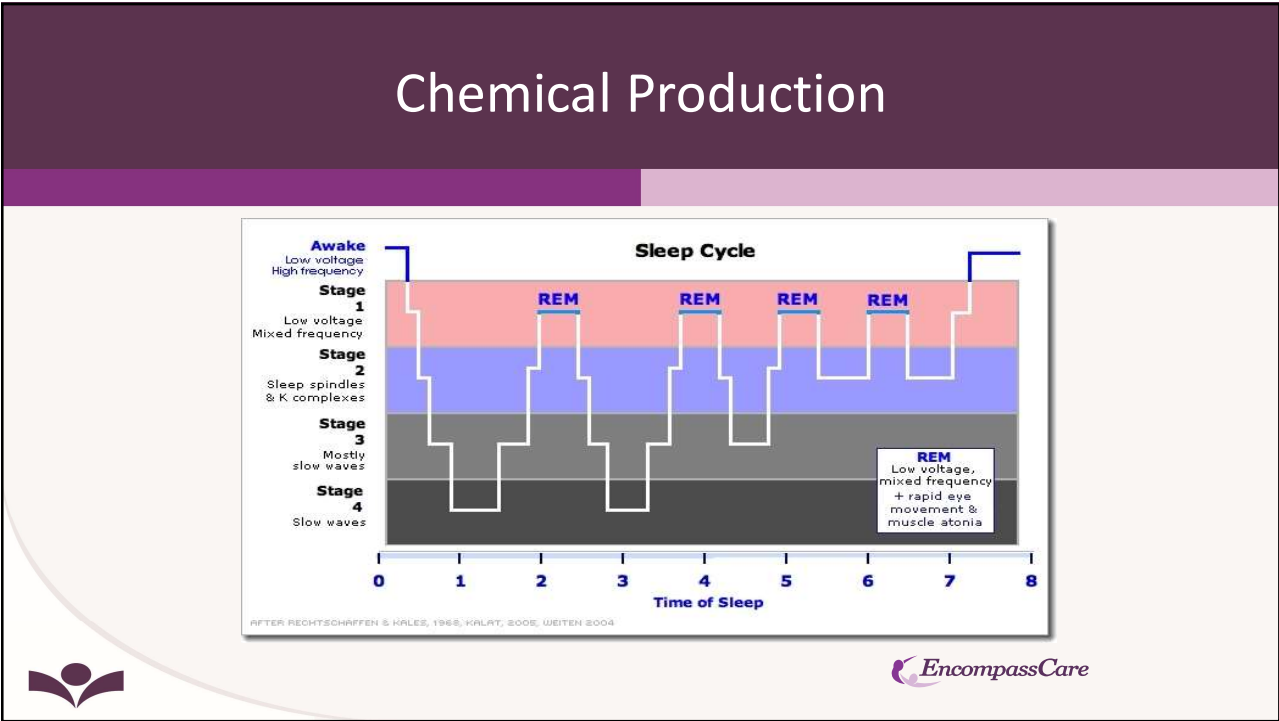
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Effect of Acetylcholine



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- ## FSL Protocol Pieces
- **Intensity**
 - **Duration**
 - **Timing**
- EncompassCare*

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Key Elements for Effectiveness

- **Intensity:**

-The intensity of the light box is recorded in lux, which is a measure of the amount of light the patient receives

-The typical recommendation is to use a 10,000-lux light box



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Key Elements for Effectiveness

- **Duration:**

-With a 10,000-lux light box, light therapy typically involves daily sessions of about 20 to 30 minutes

-Typical treatment frequency is 3-5x/week

-If the patient reports any reaction from the treatment, decrease the treatment time (not other protocol parameters)



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Key Elements for Effectiveness

- **Timing:**

-For most people, light therapy is most effective when it is done early in the morning, after one first wakes up

-However, the time of day for treatment can vary based on deficits being treated

-Keeping the daily treatment time (i.e. 11 am, 3 pm, etc.) as consistent as possible is preferable



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Preliminary Pilot Findings

- 18 facilities piloted
- 102 patients treated
- 20% increase in mobility GG scores of patients on FSL pilot
- 50% reduction in pain for patients evaluated and treated for pain
- 25-30% decrease in self reported fatigue using RPE and BORG
- 73% of patients reported decrease in depression/anxiety or no increase in symptoms



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Anecdotal Pilot Findings

- Reduction in LE edema
- Reduction in pain
- Reduction in contractures
- Increase in LE and core strength and mobility
- Improvement in eyesight/discrimination
- Increased meal consumption
- Increased participation in active therapy and in social settings
- Improvement in functional mobility due to participating in therapy programs and gaining strength



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References- Kathleen Dwyer

- CMS ICD-10 Information page
 - [2022 ICD-10 PCS | CMS](#)
- MDS/RAI resources:
 - <https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/NursingHomeQualityInits/MDS30RAIManual.html>



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