



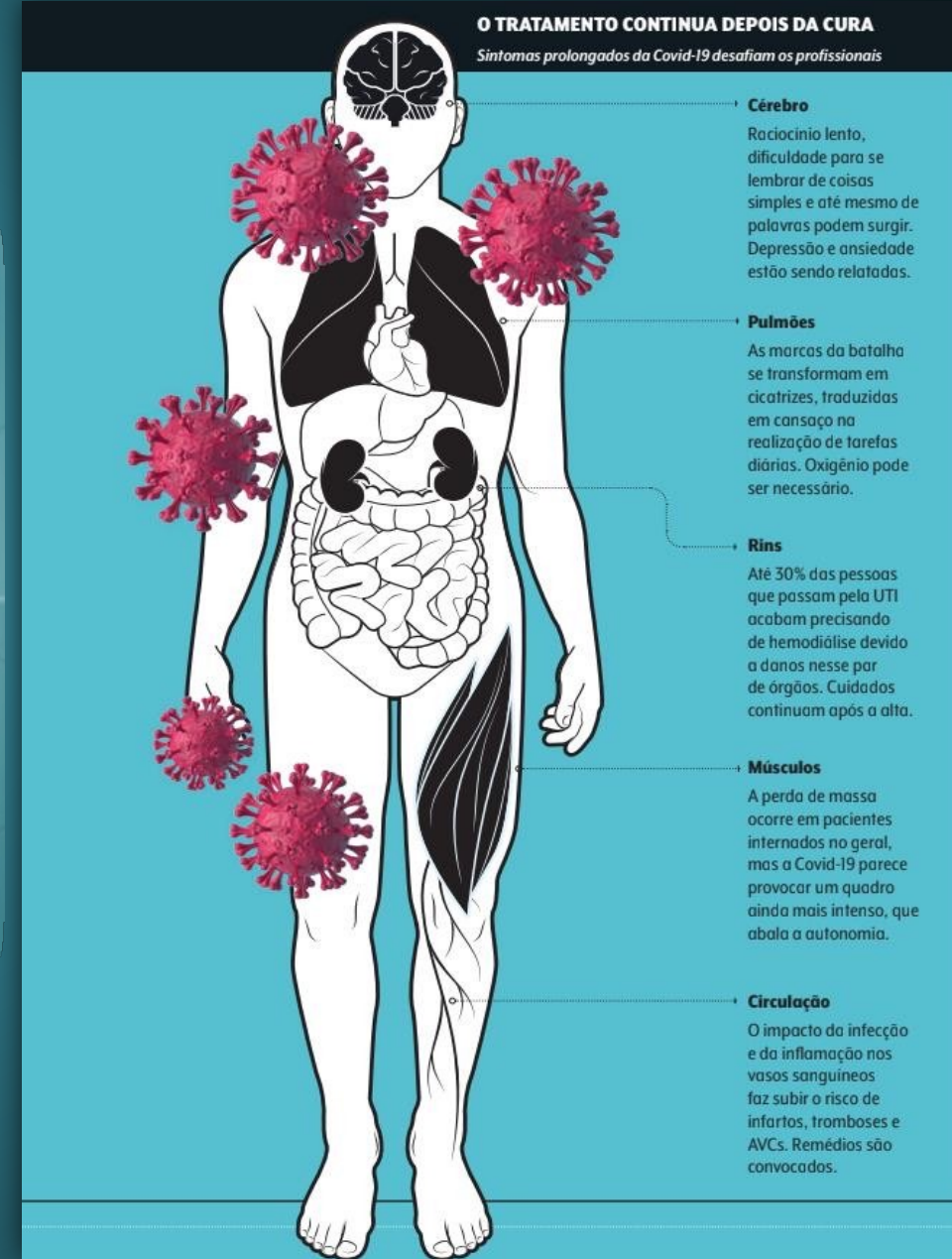
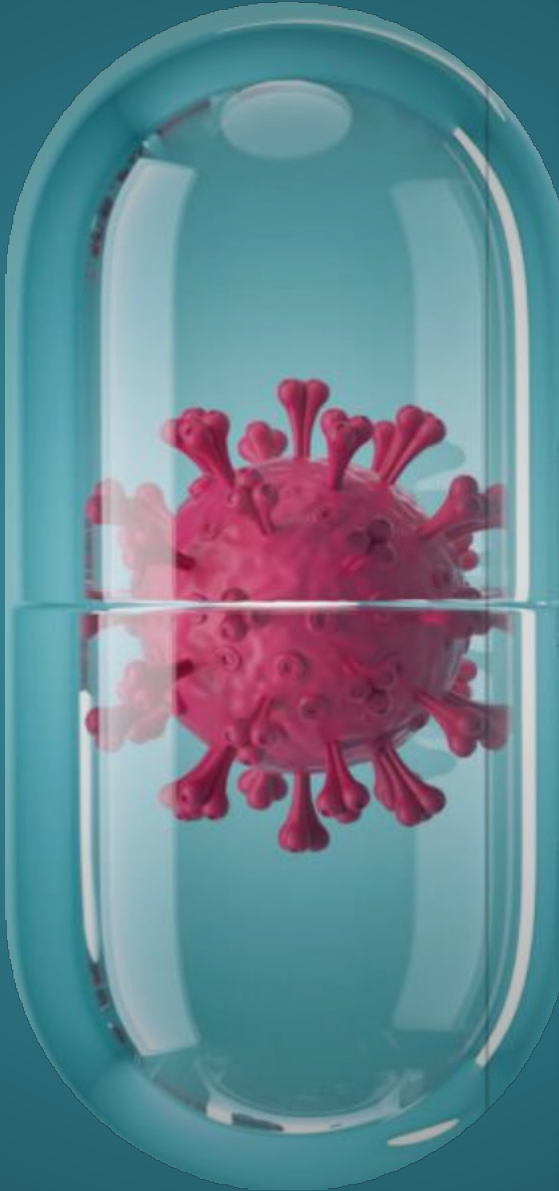
# **Rehabilitation Program Development for Post COVID-19 Condition in Brazil and the Americas**

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# MAIN DOMAINS RELEVANT FOR REHABILITATION

- Direct pulmonary damage
- *Pre-existing comorbidities*
- Complications of severe COVID-19 infection
  - Intensive care
  - Post-intensive care syndrome
- Effects of the vírus on various body systems
  - Cardiac
  - Neurological
  - Musculoskeletal
  - Cognitive
  - Mental
  - Other



# Rehabilitation Program Development for Post COVID-19 Condition

## Post COVID-19 Functional Status Scale - PCFS

Home based or  
Telerehabilitation

How much are you currently affected in your everyday life by COVID-19? (N=800)

233 (29.13%)	550 (68.74%) No or negligible limitations	I have no limitations in my everyday life and no symptoms, pain, depression or anxiety related to the infection
317 (39.63%)		I have <b>negligible limitations</b> in my everyday life as I can perform all usual duties/ activities, although I still have persistent symptoms, pain, depression or anxiety
136 (17.00%)	250 (31.26%) Limitations	I suffer from limitations in my everyday life as I occasionally need to avoid or reduce usual duties/activities or need to spread these over time due to symptoms, pain, depression or anxiety. I am, however, able to perform all activities without any assistancance
69 (8.62%)		I suffer from <b>limitations</b> in my everyday life as I am not able to perform all usual duties/activities due to symptoms, pain, depression 3 or anxiety. I am, however, able to take care of myself without any assistance
45 (5.62%)		I suffer from <b>severe limitations</b> in my everyday life: I am not able to take care of myself and therefore I am dependent on nursing care and/or assistance from another person due to symptoms, pain, depression or anxiety

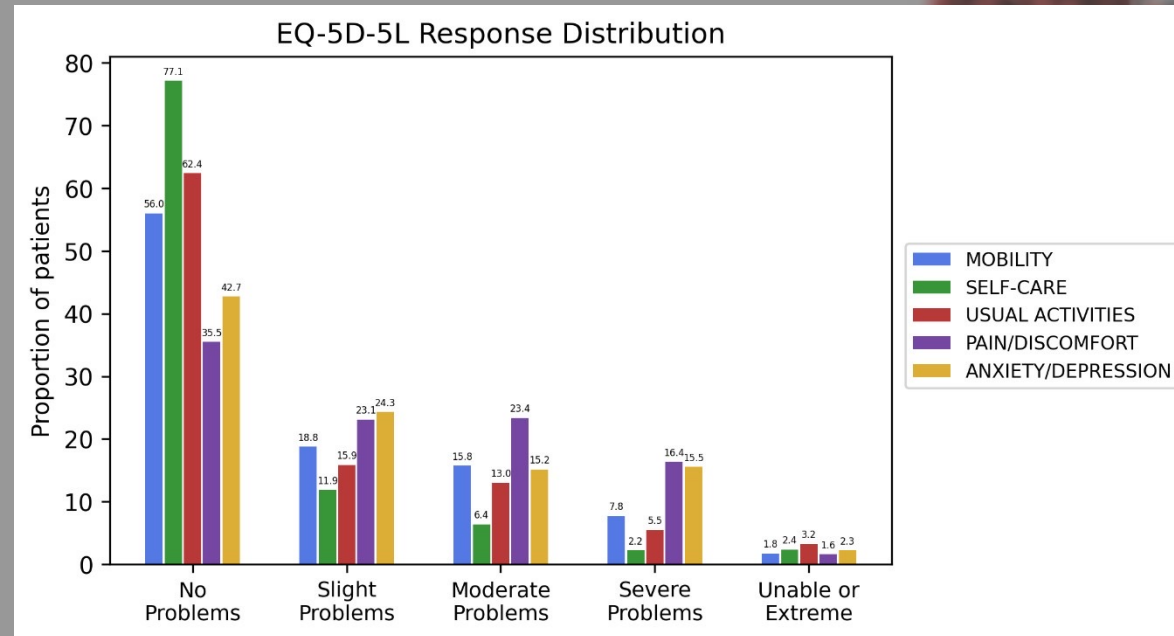
Rehabilitation Center

# Functioning Assessment

## EuroQol EQ-5D-5L

- PAIN AND DISCOMFORT (64.50%)
- ANXIETY AND DEPRESSION (57.27%)
- MOBILITY (44%)
- SELF-CARE (22.89%)
- DAILY ROUTINE (37.63%)

BREATHLESSNESS: 64.66%



### Insomnia Severity Index

Absence of Insomnia: 0 - 7:	59.95%
Sub-Threshold Insomnia: 8 - 14:	25.41%
Moderate Insomnia: 15 - 21:	11.76%
Severe Insomnia: 22 - 28:	2.88%

### Functional Oral Intake Scale

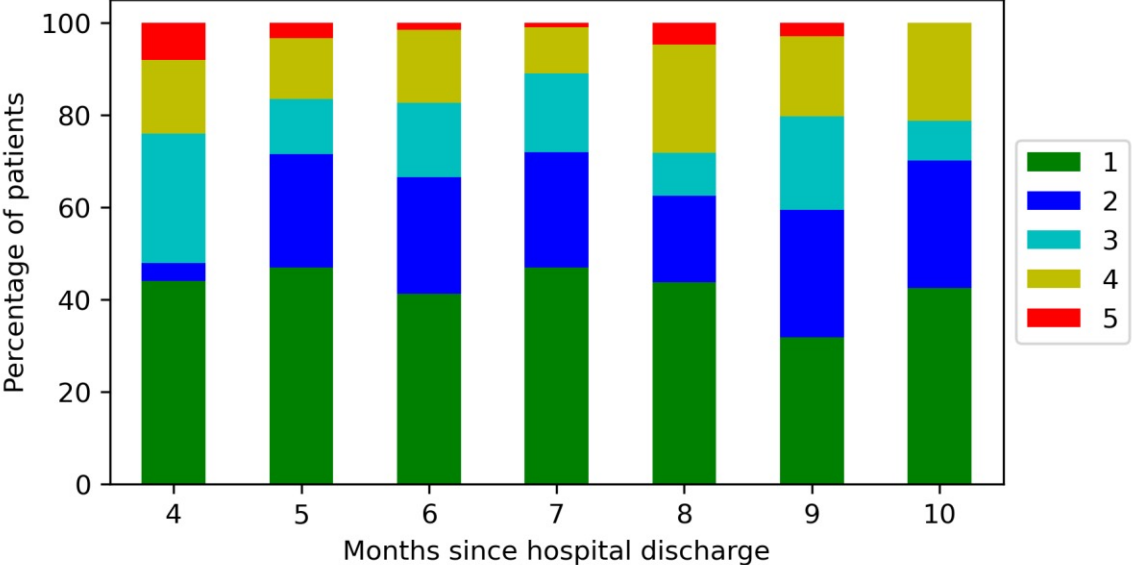
1 to 7: 92.85%

### MRC - Sum Score

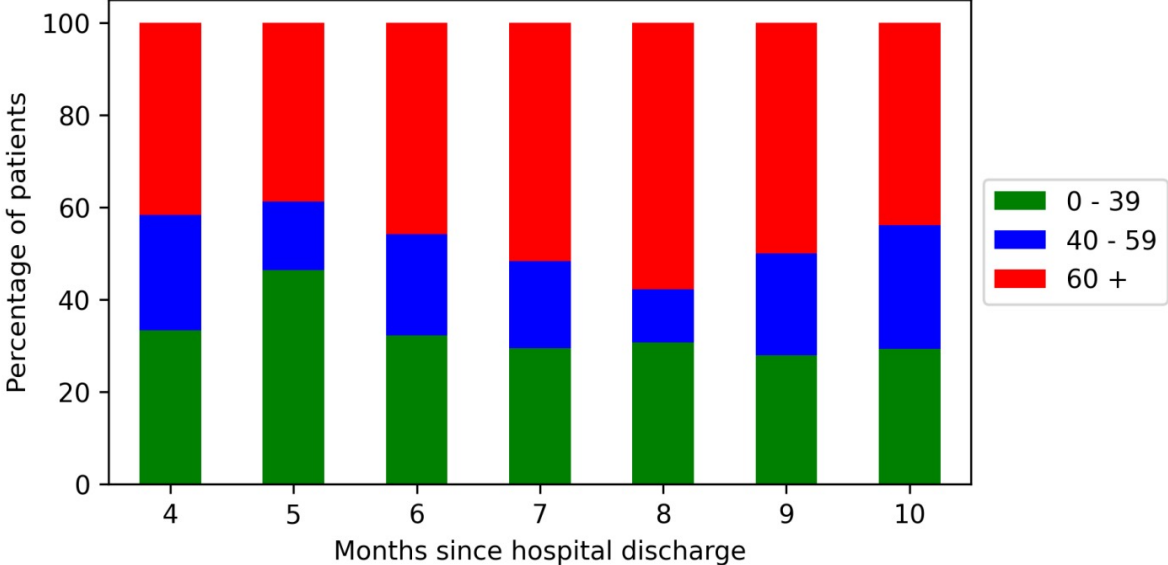
48 - 60: 80.22%

# POST COVID-19 CONDITION

Distribution of patients' EQ-5D-5L Anxiety and Depression Score

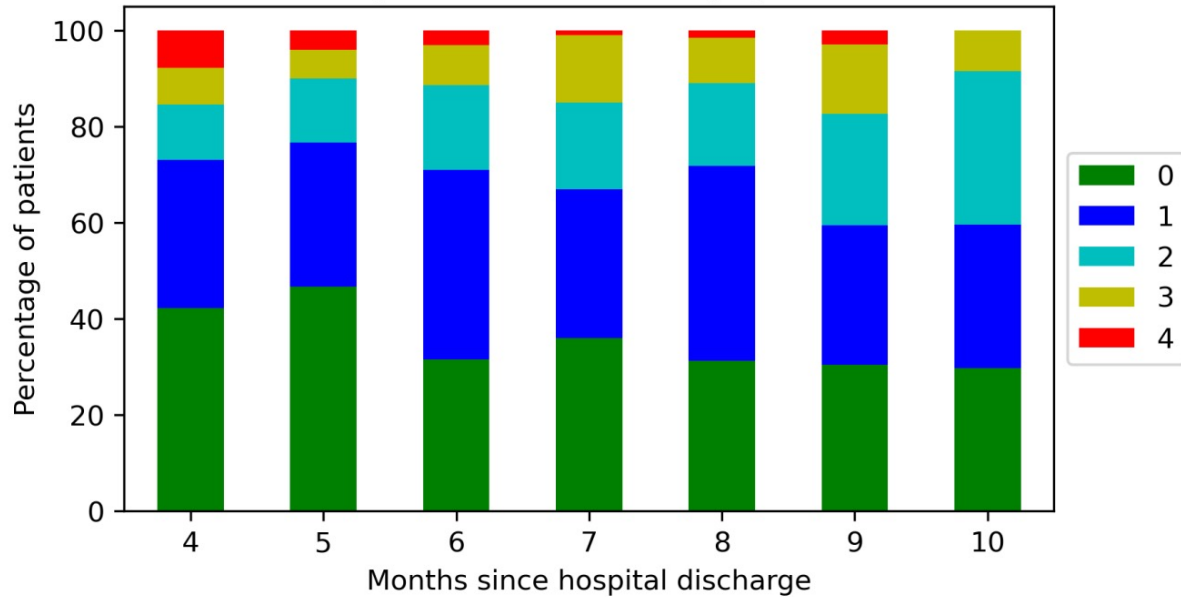


Distribution of patients' VAS for Pain Score

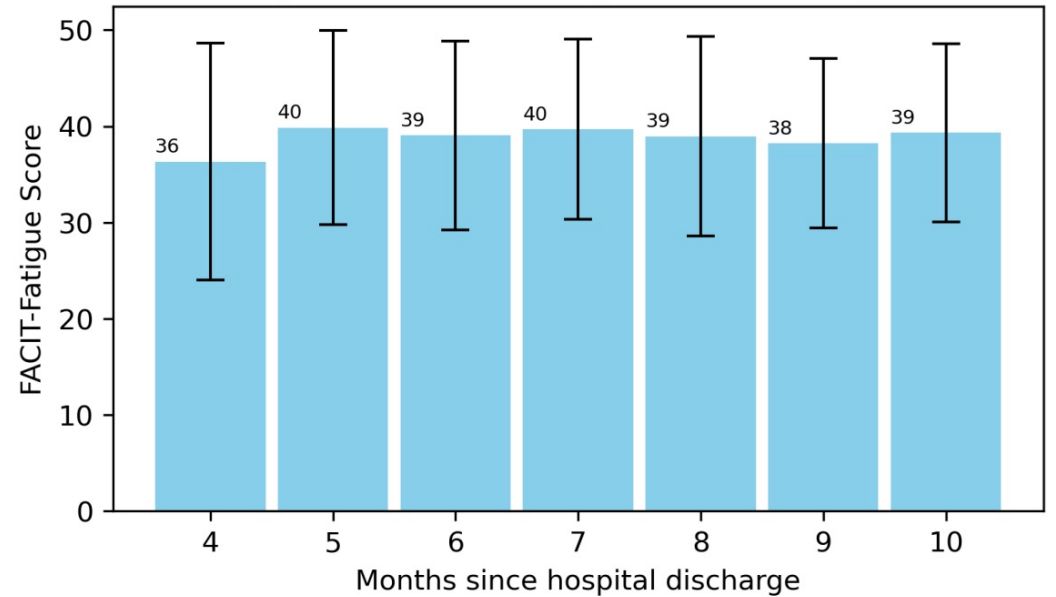


# POST COVID-19 CONDITION

Distribution of patients' MRC Dyspnea Scale Score



Distribution of patients' average FACIT-Fatigue Scale Score



# Functional impact of long-term manifestations of COVID-19

## Neuronal Networks

Memory deficit

Attention deficit

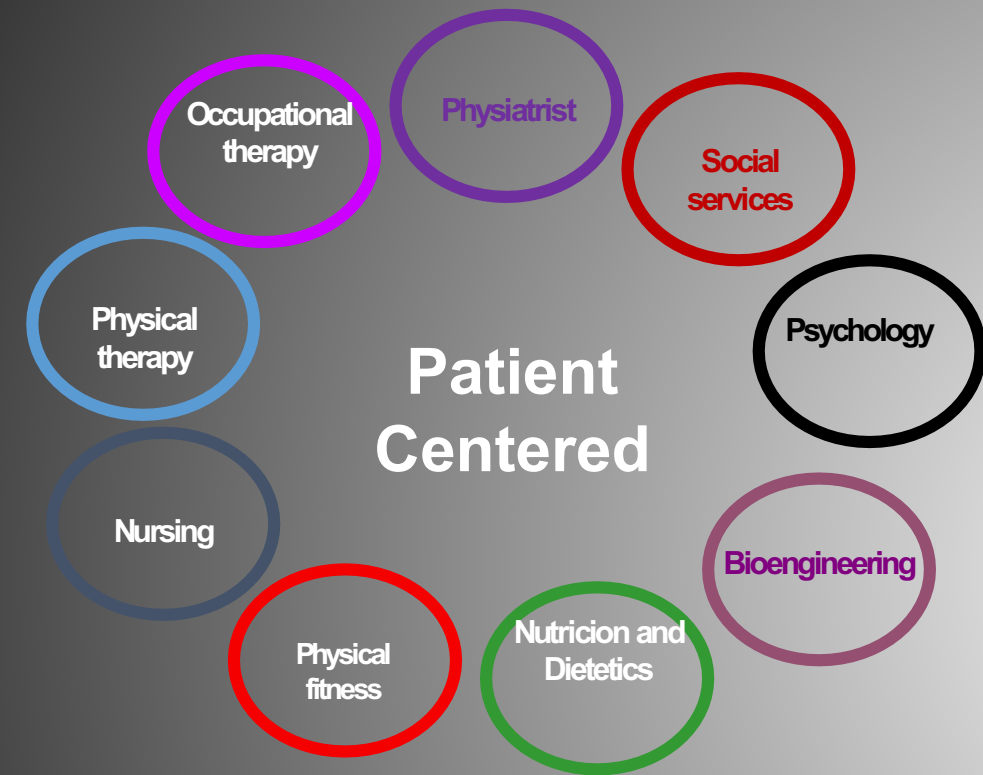
Concentration deficit

Decreased speed of mental  
processing

Dysexecutive syndrome

*Helms J et al. Neurologic Features in Severe SARS-CoV-2 Infection.  
N Engl J Med. 2020;382(23):2268-70*

# Models of rehabilitation care for post COVID-19 condition



BMJ Global Health

Commentary

## COVID-19: maintaining essential rehabilitation services across the care continuum

Janet Prvu Bettger<sup>1,2</sup>, Andrea Thoumi<sup>2</sup>, Victoria Markevich<sup>3</sup>, Wouter De Groote<sup>4</sup>, Linamara Rizzo Battistella<sup>5</sup>, Marta Imamura<sup>5</sup>, Vinicius Delgado Ramos<sup>6</sup>, Ninie Wang<sup>7</sup>, Karsten E Dreinhoefer<sup>8</sup>, Ariane Mangar<sup>9</sup>, Dorcas B C Ghandi<sup>10</sup>, Yee Sien Ng<sup>11</sup>, Kheng Hock Lee<sup>12</sup>, John Tan Wei Ming<sup>13</sup>, Yong Hao Pua<sup>13</sup>, Marco Inzitari<sup>14</sup>, Blandina T Mmbaga<sup>15</sup>, Mathew J Shayo<sup>16</sup>, Darren A Brown<sup>17</sup>, Marissa Carvalho<sup>18</sup>, Mooyeon Oh-Park<sup>19</sup>, Joel Stein<sup>20</sup>

## REHABILITATION IN THE CONTINUUM OF CARE

### ACUTE

#### Objectives

- Optimize oxygenation
- Manage secretions
- Prevent complications

**RESOURCES:** Physiotherapy/Respiratory and ICU physiotherapy

**Environment:** ICU



### POST-ACUTE

#### Objectives

- Identify and manage disabilities according to individual needs
- Facilitate hospital discharge

**RESOURCES:** Multidisciplinary

**Environment:** Rehabilitation Units/Wards, post acute care, home delivered rehabilitation



### LONG TERM

#### Objectives

- Optimize functioning and minimize the impact of disability on Independence and quality of life

**RESOURCES:** Multidisciplinary

**Environment:** Out-patient/Home-based

# INTENSIVE SPECIALIZED MULTIDISCIPLINARY OUTPATIENT REHABILITATION

- ✓ Pain management interventions
- ✓ Psychoeducational and cognitive interventions on digital platforms
- ✓ Nutritional interventions - microbiome - healthy dieting
- ✓ Specific muscle conditioning and training
- ✓ Proper and safe ADL performance
- ✓ Minimize energy consumption



# TELEMEDICINE IN REHABILITATION: NEEDS AND OPPORTUNITIES

INCREASE ACCESS TO REHABILITATION SERVICE DELIVERY:



## INTERVENTIONS - MANAGEMENT INNOVATIONS - TELECONSULTATION

### TELECONSULTATION, TELEREHABILITATION AND TELEMONTITORING

FROM MARCH 2020 TO MAY / 2021

NUMBER OF CONSULTATIONS: 22,089  
(TELECONSULTATION - 3,067) (TELEREHABILITATION - 19,022)

FACE TO FACE CONSULTATIONS: 47,685  
(MEDICAL - DENTAL - 5,316) (MULTIPROFISSIONAL TEAM - 42,369)

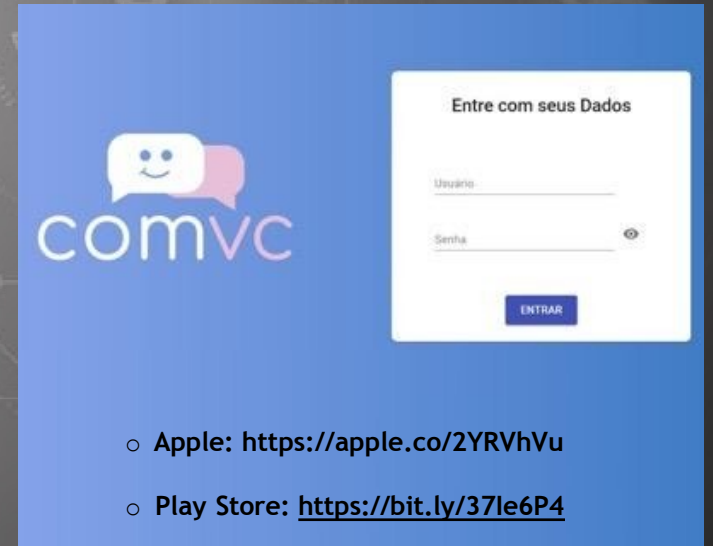


# HOME BASED ASSESSMENTS

Complete solutions incorporating non-invasive medical devices and a cloud ecosystem to monitor patients

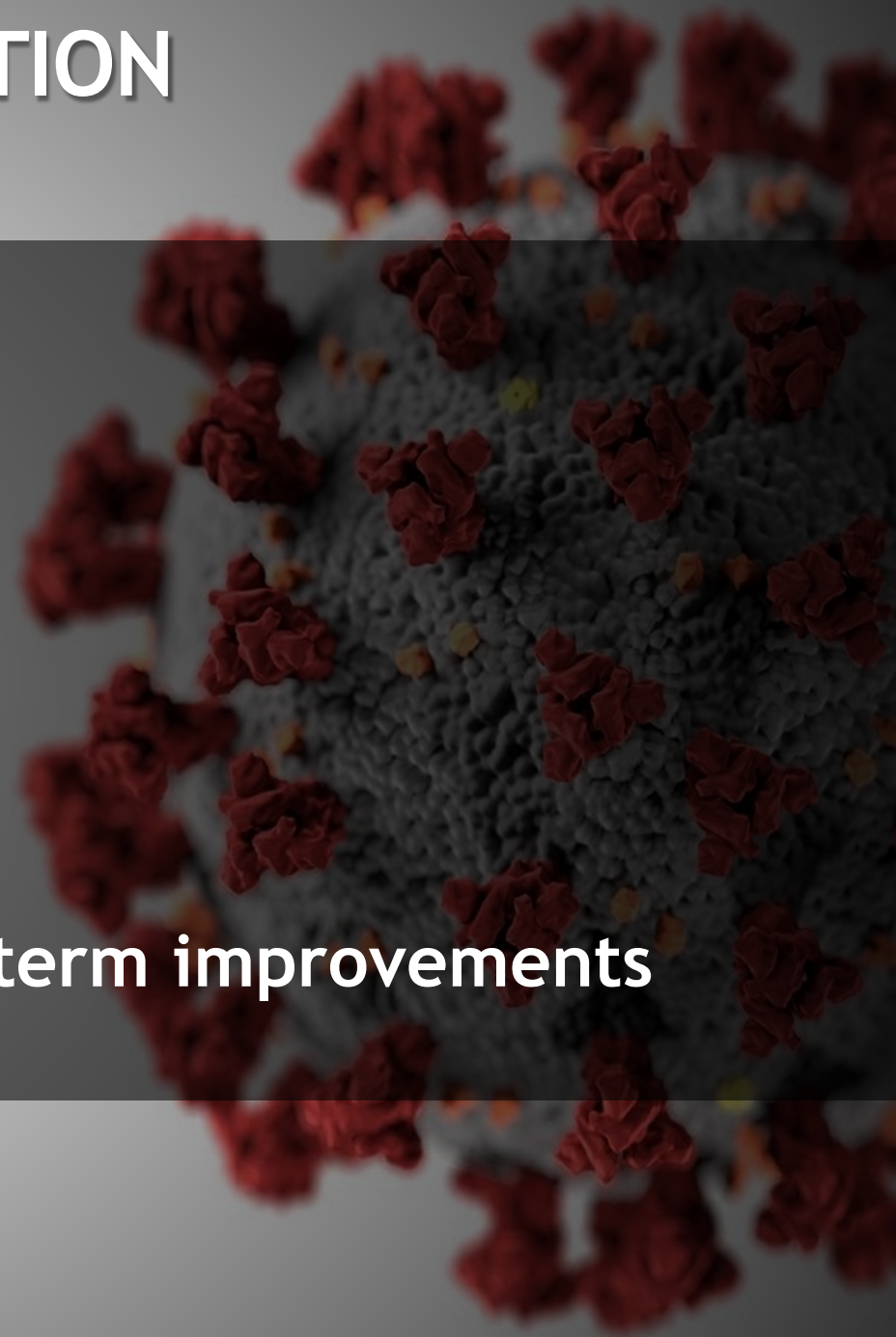


- Valuing Patient's experiences and preferences
- Usability
- Reliability



# COMMUNITY DELIVERED REHABILITATION

- ✓ Moderate to low intensity rehabilitation
- ✓ Taskshifting
- ✓ Informal and self-directed
- ✓ Individualized plan, self-initiated for long-term improvements



# CONCLUSIONS

Three to eleven months after hospital discharge to treat acute infection, patients with COVID-19 have their functional status compromised mainly due to fatigue, muscle weakness, pain, anxiety, depression, cognitive deficits and dyspnea.

Appropriate rehabilitation service delivery models at the community and primary care settings , including remote monitoring, task shifting and educational programs for the majority of COVID-19 survivors

In this long-term follow-up, there are no significant differences in the functional condition of those discharged from the ward or intensive care, except for changes in muscle echogenicity.

Integrated and comprehensive rehabilitation approach for severely impaired patients

***Recommendation of taskshifting and reference systems to ensure access to rehabilitation and continued care.***



**THANK YOU!**

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[www.fm.usp.br](http://www.fm.usp.br)