A microscopic view of several COVID-19 virus particles. The particles are spherical with a distinct outer layer of spike proteins, giving them a crown-like appearance. They are set against a background of a reddish-pink, textured surface, possibly representing a cell membrane or a similar biological structure. The lighting is soft, highlighting the intricate details of the virus's surface.

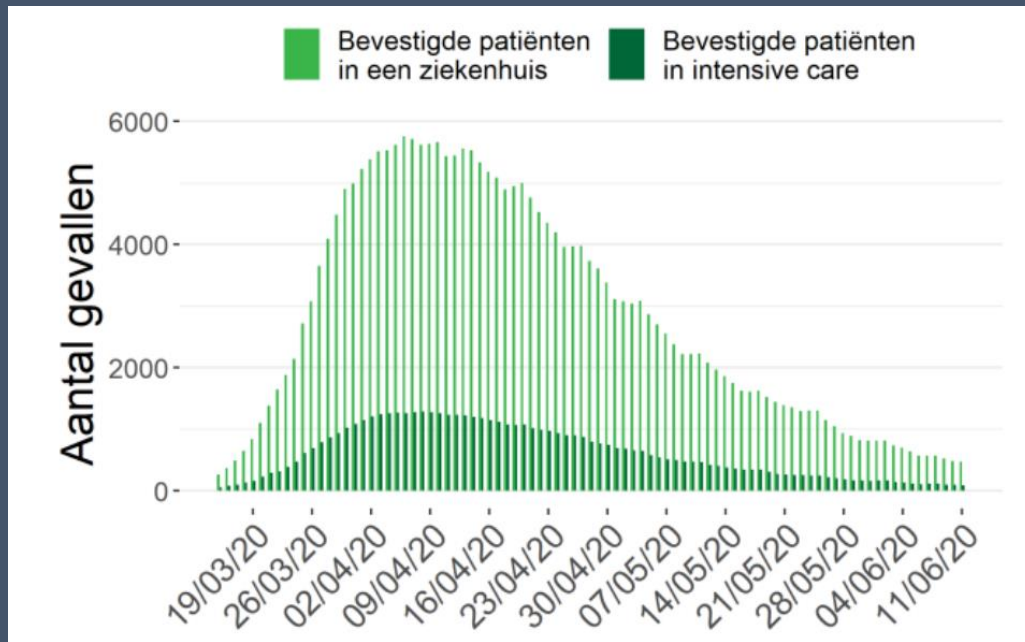
# Multi-domain impact of COVID-19 on inpatients: creating a need for assessment

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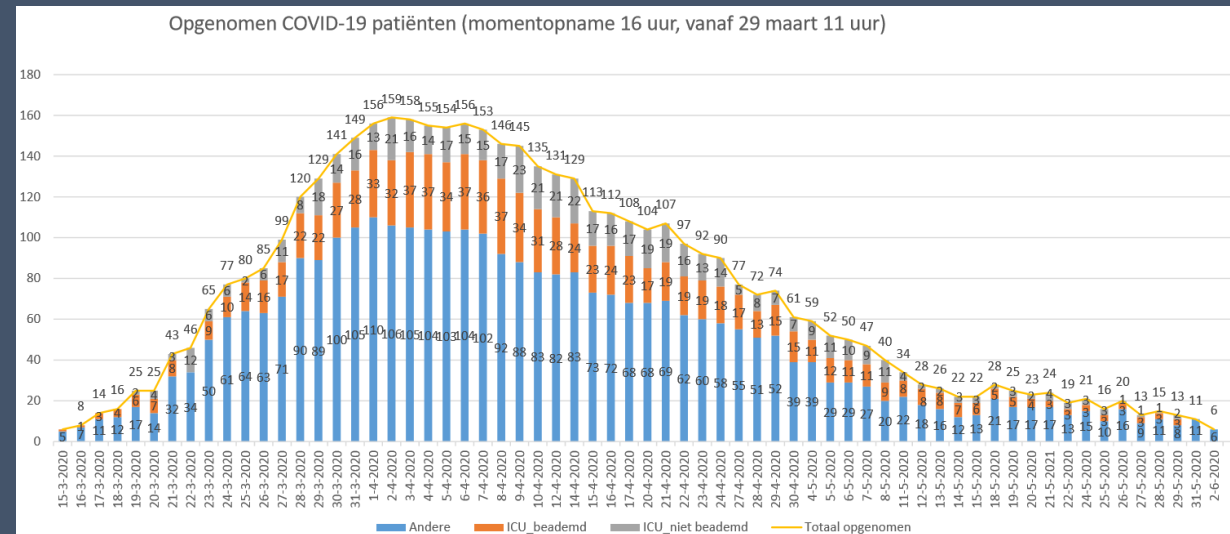
Department Physical Medicine and Rehabilitation University Hospitals Leuven

# COVID-19 first wave

Number of hospitalized patients in Belgium



Number of hospitalized patients in University Hospitals Leuven



# Need for an assessment of patients

- To assess patients' functional status
- To predict patient flows
- To assess the need for rehabilitation
- To predict the possible future need of rehabilitation

# Development of the assessment

- Expert opinion (new disease, no precedence)
- Minimizing additional workload
- Minimizing additional patient contact
- Minimizing waste of personal protective equipment
- Providing information concerning multiple domains
- Possible within isolation

# COVID-19 assessment UZ Leuven

## Physical

- Hand grip force (JAMAR)
- Chair stand test

## Functional

- Barthel Index

## Cognitive

- Montreal Cognitive Assessment (MOCA)

## Psychological

- Hospital Anxiety and Depression Scale (HADS)

## Nutrition

- Nutrition Risk Score 2002 (NRS 2002)

## Swallow screening

# First wave data

163 patients admitted to the non-ICU COVID-19 ward in the University Hospitals Leuven

135 patients assessed

## Demographics

Age in years (median, IQ1-IQ3)	72.0 [58.0-86.0]
Age non-ICU patients (median, IQ1-IQ3)	77.0 [63.0-88.0]
Age ICU patients (median, IQ1-IQ3)	60.0 [51.5-67.5]
Gender	67 males (49.6%) 68 females (50.4%)
Initial admission to ICU	33 (24.3%)

Difference in age between ICU and non-ICU patients,  $p < .0001$

Number of assessments performed (%)

74 (54,4%) hand grip dynamometry

87 (64,0%) FTSTT

70 (51,5%) BI

38 (27,9%) MOCA

8 (5,9%) MOCA Blind

53 (39,0%) swallow screening

76 (55,9%) NRS

47 (34,6%) HADS

# First wave data

	Total population N=136	Age <70 years N=62	Age ≥70 years N=74	p-value	ICU N=33	Non-ICU N=103	p-value
<b>Physical domain</b>							
HGF (best side; %predicted value) <sup>a</sup>	85.9 ± 30.5	81.6 ± 28.1	89.6 ± 32.3	.268	69.8 ± 23.1	93.7 ± 30.7	.001*
HGF <80% predicted value (N,%)	32/74 (43.2%)	18/34 (52.9%)	14/40 (35.0%)	.159	16/24 (66.7%)	16/50 (32.0%)	.006*(1)
FTSTS (seconds)* <sup>b</sup>	14.5 [10.3-18.8]	13.0 [9.0-16.0]	17.0 [11.5-20.0]	0.185	16.0 [11.0-27.5]	14.0 [10.0-18.0]	.173
FTSTS ≥ 14 or impossible to perform	71/86 (82.6%)	26/37 (70.3%)	45/49 (91.8%)	.019*(2)	22/25 (88.0%)	49/61 (80.3%)	.537
<b>Functional domain</b>							
Barthel index <sup>b</sup>	10.0 [4.0-18.0]	15.0 [7.5-19.0]	8.0 [4.0-11.0]	.005*	9.0 [4.0-16.0]	10.0 [4.0-18.0]	.763
<b>Cognitive domain</b>							
MOCA <sup>b</sup>	23.0 [18.8-27.0]	26.0 [21.0-27.0]	21.0 [11.0-24.5]	.029*	26.0 [19.0-27.0]	23.0 [17.0-27.0]	.663
MOCA < 26	26/43 (60.5%)	12/26 (46.2%)	14/17 (82.4%)	.026*	9/17 (52.9%)	17/26 (65.4%)	.528
MOCA Blind <sup>a</sup>	13.0 ± 4.3	11.5 ± 2.1	13.8 ± 4.8	.545	15.0 ± 2.8	12.7 ± 4.7	.545
MOCA Blind < 18	7/8 (57.5%)	3/25 (12.0%)	5/13 (38.5%)	.094	2/15 (13.3%)	6/23 (26.1%)	.440
<b>Psychological domain</b>							
HADS-Depression subscale <sup>b</sup>	6.0 [2.0-9.0]	5.5 [2-10.3]	6 [4.0-8.5]	.569	5.5 [2.0-9.3]	6.0 [2.0-10.5]	.583
HADS-Anxiety subscale <sup>b</sup>	6.0 [3.0-9.0]	6.0 [3.0-9.0]	6 [3.5-9.0]	.855	6.0 [3.0-9.0]	6.0 [3.0-10.0]	.598
HADS-Total score <sup>b</sup>	11.0 [6.0-17.0]	10.5 [4.8-17.5]	11 [8.5-18.0]	.622	10.5 [5.8-15.5]	11.0 [6.0-21.0]	.561
HADS-D > 7	16/47 (34.0%)	10/26 (38.5%)	6/21 (28.6%)	.547	6/18 (33.3%)	10/29 (34.5%)	1
HADS-A > 7	16/47 (34.0%)	9/26 (34.6%)	7/21 (38.9%)	1	6/18 (33.3%)	10/29 (34.5%)	1
<b>Nutritional domain</b>							
NRS 2002 risk of malnutrition	24/76 (31.6%)	10/32 (31.3%)	14/44 (31.8%)	1	8/15 (53.3%)	16/61 (26.2%)	.063
<b>Swallow screening</b>							
Swallow screening aberrant	3/53 (5.7%)	1/27 (3.7%)	2/26 (7.7%)	.610	2/19 (10.5%)	1/34 (2.9%)	.290

# First wave data

- Physical impairments: 43,2 – 82,8%
- Cognitive impairments: 68,4-87,5%
- Nutritional impairments: 31,6%
- Psychological impairments: 46,8%
- Median Barthel index: 10.0 [4.0-18.0]
- ICU versus non-ICU: HGF was the only significant difference
  - OR=4.25 95%CI (1.51 – 11.98)



# Conclusions

1. High prevalence of physical, functional, cognitive, nutritional, and psychological impairments in hospitalized COVID-19 patients
2. Perform cognitive and psychological screening
3. Screen both ICU and non-ICU patients

The screeningsassessment was designed in cooperation with multiple departments in the University Hospitals Leuven.

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