



# Expanding our understanding of Post COVID-19 condition

1st webinar  
9 February 2021, 13.00 CET  
Meeting background and agenda



# ***Surviving COVID-19***

## *The Bergamo project for the follow-up of pts with COVID-19*

- To provide care for a large cohort of post-acute adult patients
- To improve our understanding of the mid and long-term consequences of COVID-19

Sistema Socio Sanitario



Regione  
Lombardia

ASST Papa Giovanni XXIII

### **SURVIVING COVID-19**

**Progetto clinico-organizzativo per un modello di follow-up e di raccolta  
dati sugli outcomes a medio e lungo termine  
della malattia da SARS-CoV-2**



# Follow-up enrolment

## ***Hospitalized pts***

- ED (directly home discharged pts)
- Hospital ward
- HDU
- ICU

## ***Priority criteria***

- A. ICU/HDU pts
- B. Hospital ward pts
- C. ED discharged pts
- D. (Low-level of care pts)
- E. (Home-care pts)

**N (A+B+C)  $\simeq$  2,500**

## ***Stratified by WHO criteria***

- Mild disease
- Moderate disease
- Severe disease
- Critical disease

Note:

- ARDS stratified by  $\text{PaO}_2/\text{FiO}_2$  whenever feasible.

***Data on the higher level of respiratory assistance included for analysis.***

**Time frame:**

- pilot phase: 04/05/2020 – 31/05/2020
- main phase: 01/06/2020 – 30/09/2020

# The first post-acute phase assessment

- Selective enrolment (pts at higher risk of post-discharge complications and/or unmet healthcare needs)
- COVID-19 dedicated clinics
- Coordination by dedicated nurse case managers
- Multidisciplinary\* and multiprofessional approach
- Clinical management by dedicated ID specialists
- Standardized data collection and periodical reassessment of the model of care
- Appropriate referral procedures for dedicated specialist follow up: pneumology, physical medicine and rehabilitation, neurology, psychiatry, psychology, cardiology, nutrition, hematology (thrombosis and hemostasis).
- It ends with discharge and/or referral to appropriate specialists for further follow up.

\*Core medical specialists: ID specialists, pneumologists, intensivists, emergency physicians, radiologists.

- Pilot phase (May): 1 clinic at the main Bergamo building
- Main phase (June - September): 3 clinics at the temporary field hospital («Bergamo Fiera»)

# First step (1-3 months from discharge)

## ➤ Nurse clinic (dedicated nurses for case management)

- ✓ Visit (including: AVPU, MEWS, Karnofsky, modified Medical Research Council Dyspnea Scale, Fall Risk Questionnaire, Numeric Pain Rating Scale, Morisky Medication Adherence Scale, Braden Scale)
- ✓ Electrocardiogram
- ✓ Blood samples for lab exams\* & Biobanking
- ✓ Chest X-ray°
- ✓ Full pulmonary function testing with DLCO°
- ✓ Psychosocial assessment (Impact of Events Scale-rev, Hospital Anxiety and Depression Scale, Resilience Scale for Adults, Short Form Survey-36, Montreal Cognitive Assessment)
- ✓ Rehabilitation needs assessment (Barthel Index, Functional Independence Score, Brief Fatigue Inventory)

° on site evaluation by a pneumologist who may prescribe:

- high resolution lung CT (same day)
- pneumology evaluation (by appointment)

**Note:** a dedicated pathway is in place for pts who had COVID-19 while pregnant.

## \*LAB EXAMS

- ✓ complete blood count
- ✓ PT-INR
- ✓ aPTT ratio
- ✓ D-Dimer
- ✓ Fibrinogen
- ✓ C Reactive Protein
- ✓ Sodium
- ✓ Potassium
- ✓ AST
- ✓ ALT
- ✓ BUN
- ✓ Creatinine
- ✓ Total bilirubin
- ✓ γGT
- ✓ LDH
- ✓ Glucose
- ✓ Troponin I
- ✓ BNP
- ✓ glycated hemoglobin
- ✓ TSH
- ✓ Antithyroglobulin antibodies
- ✓ Thyroid peroxidase antibodies
- ✓ Prealbumin
- ✓ Protein
- ✓ Albumin
- ✓ Serum protein electrophoresis
- ✓ SARS-CoV-2 antibodies
- ✓ Urinalysis

## Second step (3 working days later)

### ➤ Medical evaluation

(ID specialists)

- ✓ end of dedicated follow-up and referral to GP
- or*
- ✓ prescription of further exams and referral to specialized care as required
  - Ad hoc referral procedures available for: pneumology, physical medicine and rehabilitation, neurology, psychiatry, psychology, cardiology, endocrinology & diabetology, nutrition, hematology (thrombosis and hemostasis).

As of July 31st, 767 patients had completed the first post-discharge multidisciplinary assessment.

► [Epidemiol Infect.](#) 2021 Jan 19;1-25. doi: 10.1017/S0950268821000145. Online ahead of print.

## Surviving COVID-19 in Bergamo Province: a post-acute outpatient re-evaluation

S Venturelli <sup>1</sup>, S V Benatti <sup>1</sup>, M Casati <sup>1</sup>, F Binda <sup>1</sup>, G Zuglian <sup>1 2</sup>, G Imeri <sup>1</sup>, C Conti <sup>1</sup>, A M Biffi <sup>1</sup>, S Spada <sup>1</sup>, E Bondi <sup>1</sup>, G Camera <sup>1</sup>, R Severgnini <sup>1</sup>, A Giammarresi <sup>1</sup>, C Marinaro <sup>1</sup>, A Rossini <sup>1</sup>, P A Bonaffini <sup>1</sup>, G Guerra <sup>1</sup>, A Bellasi <sup>1</sup>, S Cesa <sup>1</sup>, M Rizzi <sup>1</sup>

Affiliations + expand

PMID: 33461632 DOI: [10.1017/S0950268821000145](#)

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# First post-discharge assessment: lab findings (N= 767)

➤ Raised D-dimer ( $\geq 500$ ng/mL)	39.0%
➤ Anti-Thyroglobulin Ab >60 UI/mL	9.3%
➤ Anti-Thyroid peroxidase Ab >60 UI/mL	17.5%

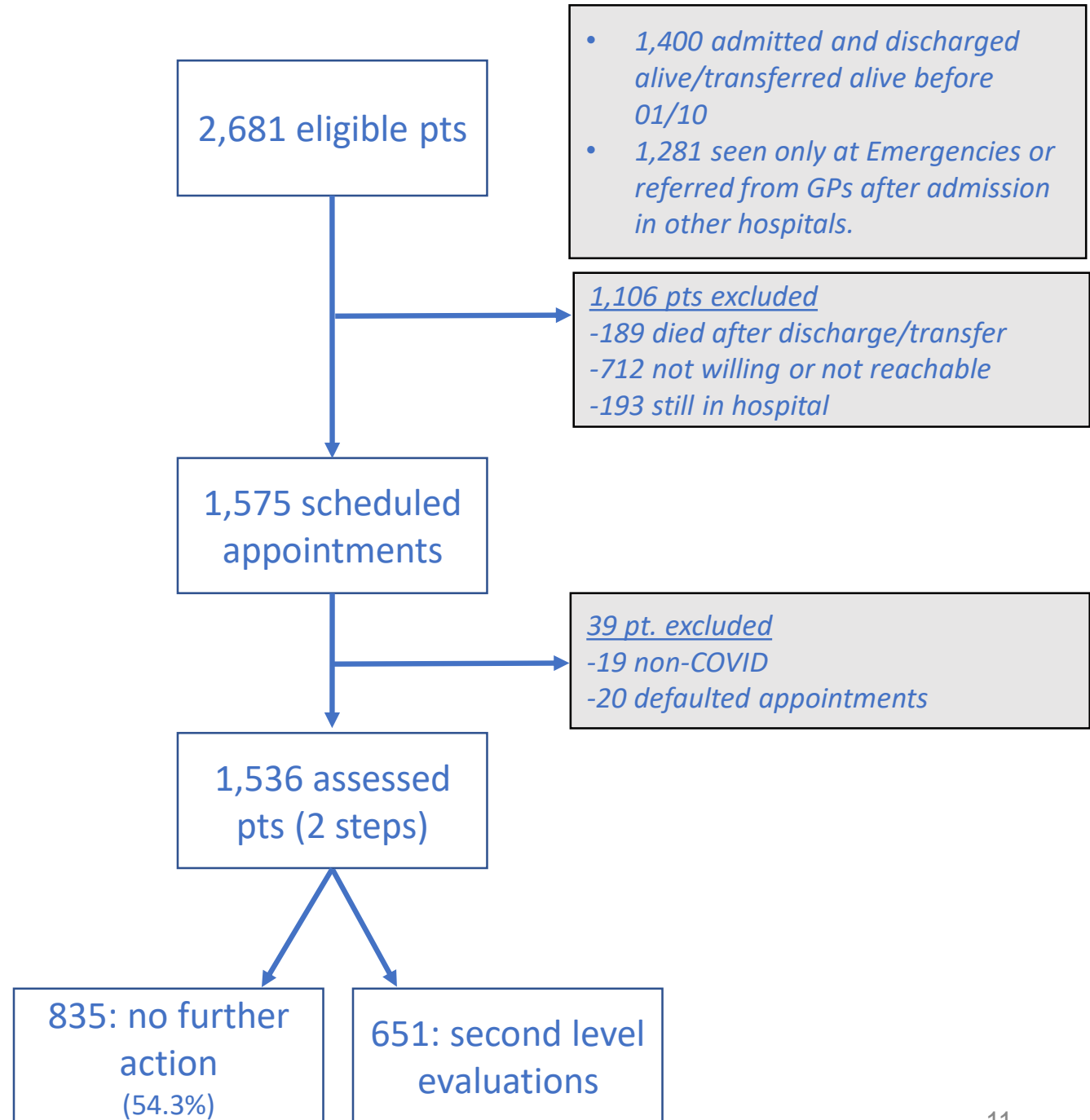


# Surviving-COVID-19

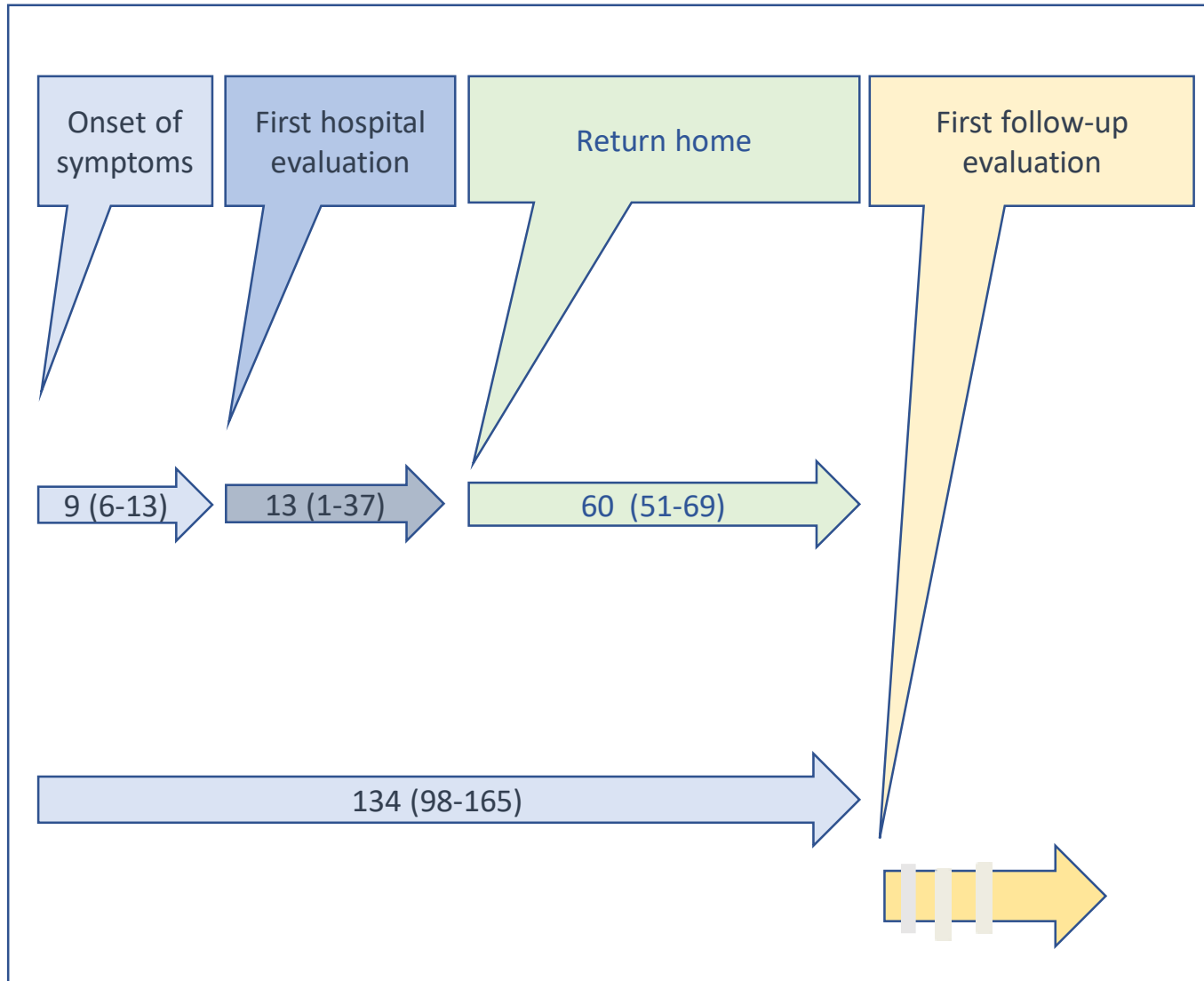
## the Bergamo cohort

- Preliminary analysis as of 8 February, 2021
- Data available for 1,536 pts
- Females 37.7%
  - Age (mean): 59 (range: 19-93)
  - Main comorbidities:

– obesity	21.6%
– hypertension	27.5%
– diabetes	9.6%



# Timeline (days: median, IQR)



# Severity of the acute episode: maximum respiratory support (N =1,536 pts)

	<i>N</i>	%
Room air	386	25.1
Low oxygen flow	295	19.2
Reservoir mask	160	10.4
Venturi mask	110	7.2
CPAP/NIV	205	13.3
Mechanical ventilation	124	8.1
ECMO	6	0.4
Not available	250	16.3

# First post-discharge assessment

➤ <b>Dyspnea</b> (modified Medical Research Council Dyspnea Scale)	33.4%
–grade 1 (shortness of breath when hurrying or walking up a slight hill):	21.4%
➤ <b>DLCO &lt;80%</b> (n = 1,340)	28.1%
➤ <b>Fatigue (symptom)</b>	32.0%
➤ <b>Fatigue (Brief Fatigue Inventory)</b>	
✓ mild + moderate + severe	51.8%
✓ moderate + severe	32.0%

# First post-discharge assessment

➤ Barthel Index able to live independently 64.1%  
– (versus 72.5% preCOVID-19)

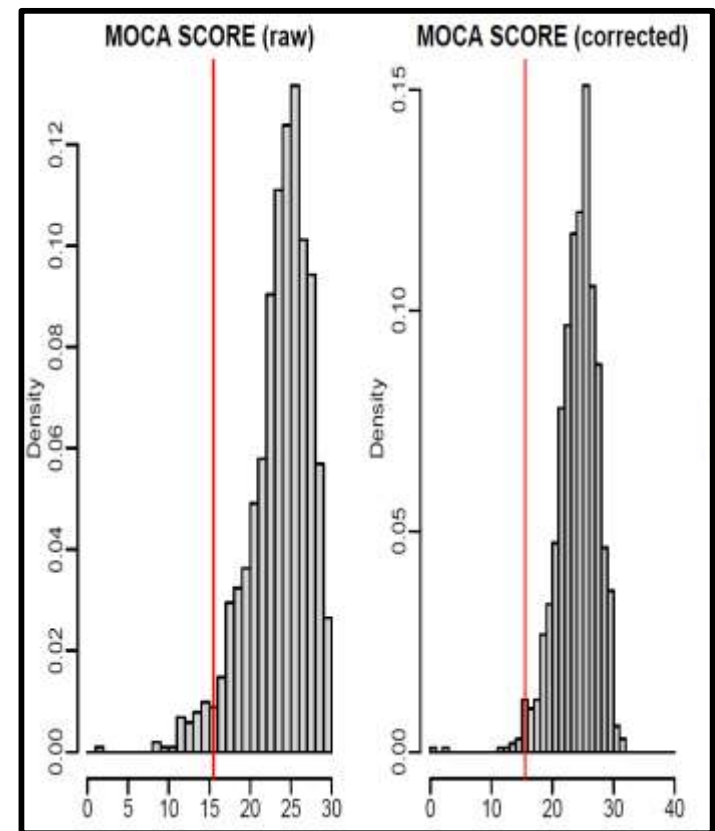
➤ Anosmia 3.9%  
(♀ 5.4%, ♂ 3.0%)

# First post-discharge assessment: psychological evaluation

➤ PTSD (IES-R)	32.5%
➤ Anxiety(HADS)	14.6%
➤ Depression (HADS)	5.7%
➤ No Resilience (RSA)	5.0%

# First post-discharge assessment: MoCA

- Raw score 3%
- Equivalent score 1%





# Referrals following the first assessment

*N = 1,486, more than one referral per patient possible*

RESPIRATORY MEDICINE	472	31,8%
CARDIOLOGY	103	6,9%
NEUROLOGY	113	7,6%
PHYSICAL MEDICINE	80	5,4%
PSYCHOLOGIST	10	0,7%
OTHER	191	12,9%

# What's next?

- During the spring of 2020, scant information was available on COVID-19 consequences; we designed a very comprehensive project, with a large data set, with the aim of improving our understanding of the middle and long-term outcomes of COVID-19 while providing care to a large number of persons.
- Now, with a growing body of available evidence and dealing with large numbers of “COVID-19 survivors”, it seems clear that, outside of research projects with dedicated resources, we should design more selective models of care, feasible and sustainable in the long term, with follow up pathways relevant to individual pts' needs.

# What's next?

- We are planning to analyze our data so as to identify possible different pts' profiles (demography, pre-existing conditions, characteristics of the acute episode, clusters of symptoms/signs in the post-acute phase, ...) which may benefit from specific post-acute phase interventions (screening tools, clinical pathways, ...).
- Any external contribution to the design of the analysis plan would be very welcomed (WHO?).
- Any proposal for collaborative analyses (and dissemination) involving diverse projects and datasets would be very welcomed.

➤ [mrizzi@asst-pg23.it](mailto:mrizzi@asst-pg23.it)  
➤ [sbenatti@asst-pg23.it](mailto:sbenatti@asst-pg23.it)  
➤ [sventurelli@asst-pg23.it](mailto:sventurelli@asst-pg23.it)

# Grazie...

- to all the **patients** who agreed to take part in the project and who allowed to collect their personal data;
- to the scores of **HCWs** who, in the worst of times, made *Surviving COVID-19* possible;
- to **Simone Vasilij Benatti**, who created and maintained the project database;
- to **Serena Venturelli**, who coordinated the whole *Surviving COVID-19* project.



***Grazie per  
l'attenzione***

