

## Background

COVID-19 has created unprecedented disruption for global health. Hospitals are fighting to provide appropriate healthcare services and require substantial resources to improve their delivery of care, managing the tension between safety needs and the unexpected priority to redesign their healthcare processes (Gilmartin & D’Aunno, 2007). In this regard, **COVID-19 has imposed huge investments for the proper management of hospitalized COVID-19 individuals**

Despite little attention was initially paid to the economic aspects, today **the investigation of the economic resources absorption is becoming of particular importance, specifically with regard to the management of a COVID-19 patient requiring a hospitalization, to support the decision-making process, and to implement adequate health planning policies**

## Objectives

The study aims at investigating the costs related to COVID-19 patients’ hospital management (from positivity confirmation to discharge, including also rehabilitation activities), defining overall resources’ absorption with regard to both the COVID-19 per day and the COVID-19 clinical pathway costs, based on the patients’ clinical condition

- How many resources does the hospital management of a COVID-19 patient absorb within the different care intensity settings (low, medium or high care intensity), considering a single hospitalization day?*
- How many resources does the hospital management of a COVID-19 patient absorb, considering the entire hospital stay, from diagnosis to discharge?*

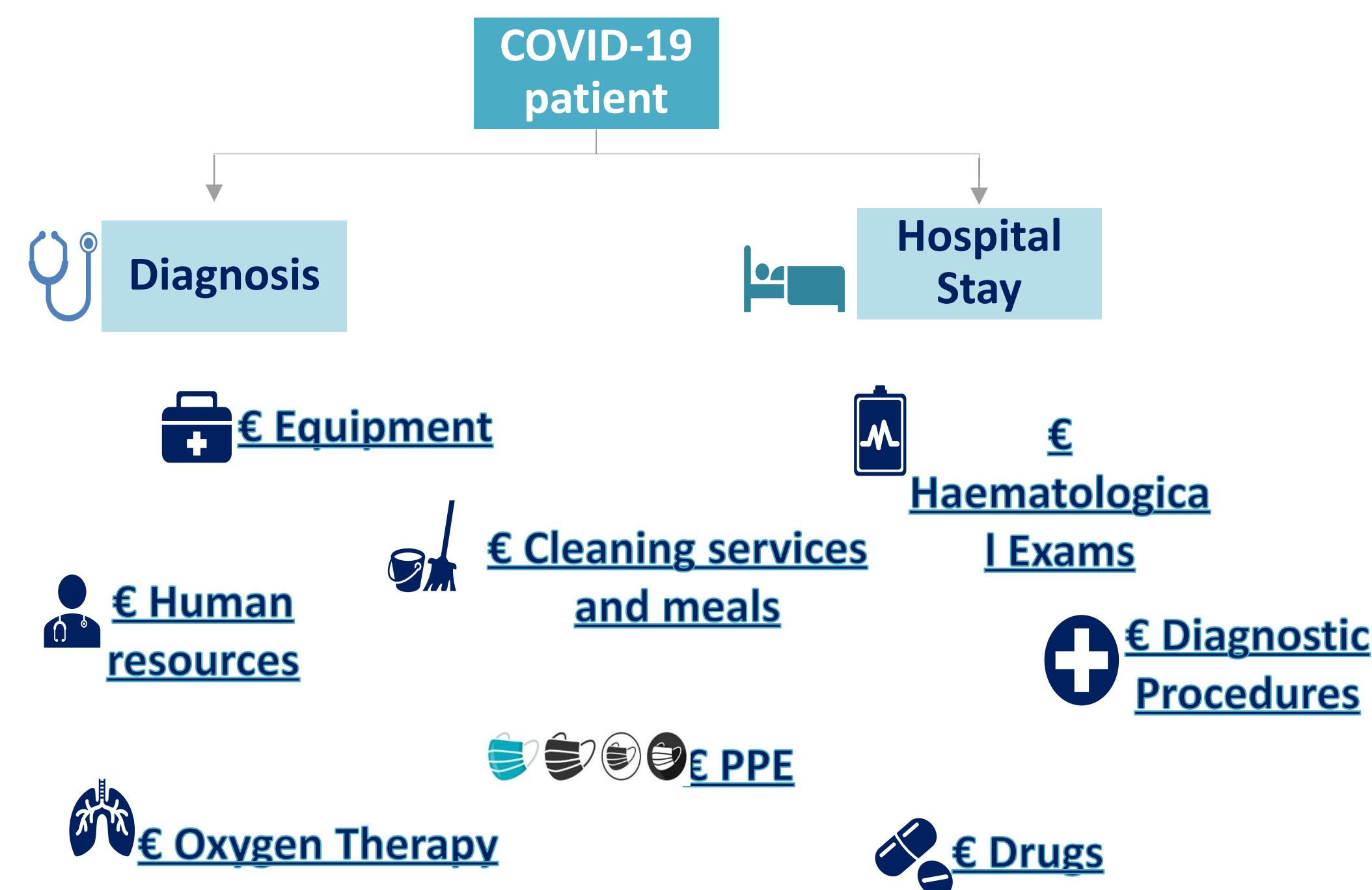
## Methods

A time-driven activity-based costing approach was implemented to define the costs related to the hospital management of COVID-19 positive patients, according to real-word data derived from six Italian Hospitals, in 2020

The average per day cost and the average most frequent clinical pathways (considering the internal transfers between wards, based on the patient’s clinical improvement or deterioration), were accordingly valorized on the basis of:

- low-complexity medical hospitalizations**
- medium-complexity hospitalizations, with the presence of hospital beds equipped with C-PAP or non-invasive ventilation**
- high-complexity intensive care unit hospitalizations, for treating COVID-19 patients requiring invasive ventilation, through intubation**

*A focus on the items of Healthcare Expenditure considered*



## Results

*If the entire COVID-19 positive patients’ clinical pathway was analyzed, considering the potential internal wards transfer, due to an improvement or a deterioration of the patients’ clinical conditions, 8 main clinical pathways emerged*

| Clinical Pathway of reference and % of patients | Complexity Area of Access                   | Length of stay in the area of Access (# days) | Internal Wards’ transfer          | Length of stay after the Internal Wards’ transfer (# days) | Economic evaluation of the clinical pathway (€) | Total Length of stay (# days) | Rehabilitation clinical pathway [€] | Total costs (Hospital pathway + Rehabilitation clinical pathway) [€] |
|-------------------------------------------------|---------------------------------------------|-----------------------------------------------|-----------------------------------|------------------------------------------------------------|-------------------------------------------------|-------------------------------|-------------------------------------|----------------------------------------------------------------------|
| Clinical Pathway #1 (5.38% of patients)         | Low-complexity hospitalization              | 8.8                                           | High-complexity hospitalization   | 9.6                                                        | 17,629.63 €                                     | <b>18.4</b>                   | 5,802.00 €                          | <b>23,431.63 €</b>                                                   |
| Clinical Pathway #2 (15.84% of patients)        | Low-complexity hospitalization              | 6.5                                           | Medium-complexity hospitalization | 11.2                                                       | 10,941.41 €                                     | <b>17.7</b>                   | 2,960.60 €                          | <b>13,902.01 €</b>                                                   |
| Clinical Pathway #3 (8.34% of patients)         | Medium-complexity hospitalization           | 9.1                                           | High-complexity hospitalization   | 14.2                                                       | 26,339.20 €                                     | <b>23.4</b>                   | 5,802.00 €                          | <b>32,141.20 €</b>                                                   |
| Clinical Pathway #4 (29.06% of patients)        | Medium-complexity hospitalization           | 8.6                                           | Low-complexity hospitalization    | 10.0                                                       | 10,778.04 €                                     | <b>18.6</b>                   | 0.00 €                              | <b>10,778.04 €</b>                                                   |
| Clinical Pathway #5 (11.67% of patients)        | High-complexity hospitalization             | 10.0                                          | Medium-complexity hospitalization | 12.6                                                       | 22,857.28 €                                     | <b>22.6</b>                   | 2,960.60 €                          | <b>25,817.88 €</b>                                                   |
| Pathway #6 (9.01% of patients)                  | Only Low-complexity Ward hospitalization    |                                               |                                   |                                                            | 6,198.02 €                                      | <b>13.0</b>                   | 0.00 €                              | <b>6,198.02 €</b>                                                    |
| Pathway #7 (16.91% of patients)                 | Only Medium-complexity Ward hospitalization |                                               |                                   |                                                            | 7,152.53 €                                      | <b>10.2</b>                   | 2,960.60 €                          | <b>10,113.13 €</b>                                                   |
| Pathway #8 (3.79% of patients)                  | Only High-complexity Ward hospitalization   |                                               |                                   |                                                            | 15,544.32 €                                     | <b>11.0</b>                   | 5,802.00 €                          | <b>21,346.32 €</b>                                                   |

## Conclusions

COVID-19 has highlighted the importance of being able to rely on valid and real-time information, **emphasizing the relevance of real-world information**

The information obtained could represent not only the baseline cost for COVID-19 positive patients hospital management, but also could **support hospitals’ benchmarking activities**

These economic results could be useful in the **definition of the proper reimbursement tariffs devoted to the hospitalization of COVID-19 positive patients**, on the basis of their clinical conditions, thus being more appropriate and sustainable for all the countries based on a National Healthcare System

## Contacts



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