EHMA 2021 sub-theme: improving healthcare access and outcomes

Presentation type *(Oral, Poster, E-Poster*): poster

Title: The innovative drugs economic impact in the management of COVID-19 hospitalized patients

Authors

Fabrizio Schettini [1], Francesco Bertolotti [2], Emanuela Foglia [1], Lucrezia Ferrario [1], Elisabetta Garagiola [1], Daniele Bellavia [1], Emanuele Porazzi [1]

Affiliation

[1] Health Care Datascience Lab, Centre for Health Economics, Social and Health Care Management, Carlo Cattaneo – LIUC University, Castellanza, Italy

[2] Carlo Cattaneo – LIUC University, Castellanza, Italy

Context

Literature reported the innovative drugs capability to reduce the COVID-19 patients' length of stay and the need of oxygen therapy (Dawoud et al., 2020; Beigel et al., 2020; Recovery Collaborative Group, 2021; Wadaa-Allah et al., 2021). The study aims at defining the real-life impact of innovative drugs introduction on the overall economic resources' absorption required for the hospital management of COVID-19 patients, from their first access to discharge, thus comparing an initial condition of absence of such medications to their routinely use in the Italian clinical practice, where their implementation is not standardized yet.

Methods

A time-driven activity-based costing analysis was implemented for the definition of economic resources' absorption considering the COVID-19 patients' hospitalization, according to real-word data derived from six Italian Hospitals. Data related to *i)* human resources; *ii)* hematological exams; *iii)* diagnostic procedures; *iv)* drugs; *v)* equipment; *vi)* personal protective equipment; *vii)* cleaning service and meals; *viii)* general hospital costs, were collected from anonymous administrative and accounting flows by cost center provided by the management control of the hospitals, estimating the COVID-19 resources absorption related to the length of stay. For the economic assessment of innovative drugs, the technical indications were considered.

Once having collected the flows, the most frequent hospital clinical pathways (considering the internal transfers between wards, based on the patient's clinical improvement or deterioration), were valorized according to: *i)* Low-complexity medical hospitalization; *ii)* Medium-complexity hospitalization, with the presence of hospital beds equipped with C-PAP or non-invasive ventilation; *iii)* High-complexity hospitalization-ICU.

Results

Innovative drugs introduction could lead to an average reduction of the entire hospital stay equal to 29% and a consequent decrease in oxygen therapy's days (-38%).

These advantages result in a significant saving in the overall economic resources' absorption, with regard to the main clinical pathways conducted by COVID-19 patients, with respect to the same situation without innovative drugs: *i)* 29% spent 13.28 days between a medium and a low-complexity hospitalization (€10.042;-7%); *ii)* 16% spent 12.64 days between a low and a medium-complexity hospitalization (€10.073;- 9%); *iii)* 8% spent 16.69 days between a medium and a high-complexity hospitalization (€20.556;-28%); *iv)* 12% spent 16.14 days between a high and a medium-complexity hospitalization (€18.175;-26%), and *v)* 5% spent 13.15 days between a low and a high complexity hospitalization (€14.666;-20%).

In low-intensity and medium-intensity areas, additional investments are needed for innovative drugs introduction (respectively +9% and +16%).

Discussion

The study presented the results about the economic evaluation of COVID-19 pandemic in Italy, thus showing a comprehensive picture of the hospitalized individuals' analysis in six Italian hospitals, and comparing the presence or the absence of innovative drugs administration.

In this view, despite huge investments are required for the drugs' acquisition and the related increase of the general drugs cost by more than twice a time, the medical and hospitalization costs would present a decrease of 30%, with important organizational advantages in terms of hospital beds release, thus leading to the potential capabilities for hospitals to take in charge more COVID-19 patient requiring an hospitalization.

In conclusions, the introduction of new innovative drugs could represent a relevance strategy to save scarce healthcare resources during this pandemic, with a shorter hospital stay and fewer ICU admissions.

References

Beigel JH, Tomashek KM, Dodd LE, et al. Remdesivir for the Treatment of Covid-19 —Final Report. N Engl J Med 2020; 383:1813-1826

Dawoud DM, Soliman KY. Cost-Effectiveness of Antiviral Treatments for Pandemics and Outbreaks of Respiratory Illnesses, Including COVID-19: A Systematic Review of Published Economic Evaluations. Value Health. 2020 Nov; 23(11): 1409–1422.

The RECOVERY Collaborative Group. Dexamethasone in hospitalized patients with Covid-19 — preliminary report. N Engl J Med 2021; 384:693-704

Wadaa-Allah A, Emhamed M, Sadeq M. Efficacy of the current investigational drugs for the treatment of COVID-19: a scoping review. Ann Med. 2021. 2021 Dec;53(1):318-334 Tarighia P, Eftekharia S, Chizari M, et al. A review of potential suggested drugs for coronavirus disease (COVID-19) treatment. European Journal of Pharmacology; 2021; 15;895:173890