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Letter to the Editor

New Early Warning Score: off-label approach for Covid-19 outbreak patient deterioration in the community



To the Editor,

The spread of the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in China at the end of 2019 is challenging most health systems worldwide¹. In Italy, the first “wave” hit Lombardia on February 20, 2020, with such a high proportion of patients to impact substantially both admission to emergency department and intensive care treatment, and arising new concerns². The Italian Ministry of Health and the National Health Service strongly recommended to all citizen to reduce access to healthcare facilities (e.g. emergency departments, ambulatory and elective surgery) for non-urgent reasons. Government also imposed several measures to contain the outbreak (e.g. closing of schools, limited access to public places, social isolation and preventive public health interventions). On April 9th, at about forty eight days from the beginning of outbreak in Italy, the total number of cases have been 143.626, with 96.877 positive tests, and 28.470 discharged in healthy condition³. Unfortunately, the amount of death cases (18.279) has claimed Italy at the first place worldwide since the beginning of the outbreak. The Emilia Romagna is the second most affected Italian region after Lombardia. This condition led the local infectious disease task force to plan a change of paradigm basing prevention actions directly at home of the patients with infection. The aim is to assess patients at home to allow prescriptions of potential effective therapies (e.g. antiviral and chloroquine) when possible or intercepting those in borderline or warning conditions. Accordingly with this new approach, a research project was started on voluntary bases by a multidisciplinary teams (e.g. healthcare professionals, software developers, engineers, social manager etc.) with the aim to develop a web app based system to monitor deterioration of patients directly at home. The idea is based on the National Early Warning Score (NEWS) applied to a home context: by the use of an experimental app for smartphones, the in-built features of the device can measure directly parameters included in NEWS (e.g. accelerometer for respiratory rate and photo camera for heart rate measurements). This NEWS “off-label” approach in community setting with “homemade” measurements could facilitate self-calculation of the score, thus helping pre evaluation by healthcare professionals and recognising deterioration of patients at risk especially in conditions of overwhelming requests as during a pandemic. The hypothesis of early interception of deterioration could be useful to prevent potential increase in mortality that unfortunately did happen last month in Italy. We created a free open source platform

called CovidUP19⁴ ad hoc for citizens to increase awareness about potential deterioration in case of covid-19 infection. We invited all the international health system researchers to allocate time and resources on this innovative approach for potential “off label” application of NEWS in Covid-19 patients.

Conflict-of-Interest Statement

Federico Semeraro, Tommaso Scquizzato, Andrea Scapigliati, Giuseppe Ristagno, Lorenzo Gamberini, Marco Tartaglione, Oscar Dell’Arciprete, Fabio Mora, Fiorella Cordenons, Donatella Del Giudice, Cosimo Picoco, Giovanni Gordini

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REFERENCES

- [1]. Berdowski J, Berg RA, Tijssen JG, Koster RW. Global incidences of out-of-hospital cardiac arrest and survival rates: Systematic review of 67 prospective studies. *Resuscitation*. 2010;81(11):1479–87.
- [2]. Zangrillo A, Beretta L, Silvani P, Colombo S, Scandroglio AM, Dell’Acqua A, et al. Fast reshaping of intensive care unit facilities in a large metropolitan hospital in Milan, Italy: facing the COVID-19 pandemic emergency. *Crit Care Resusc*. 2020.
- [3]. Civil Protection Department COVID-19 Italy Monitoring at <http://opendatadpc.maps.arcgis.com/apps/opsdashboard/index.html#/b0c68bce2cce478eaac82fe38d4138b1>.
- [4]. CovidUP19 Project website at <https://covidup19.it>.

Federico Semeraro
Department of Anaesthesia, Intensive Care and Emergency Medical Services, Ospedale Maggiore, Bologna, Italy

Tommaso Scquizzato^{a,b}
^a*Department of Anesthesia and Intensive Care, IRCCS San Raffaele Scientific Institute, Milan, Italy*

^b*Vita-Salute San Raffaele University, Milan, Italy*

Andrea Scapigliati
*Fondazione Policlinico Universitario A. Gemelli, IRCCS, Institute of
Anaesthesia and Intensive Care, Catholic University of the Sacred
Heart, Rome, Italy*

Giuseppe Ristagno^a
^a*Department of Pathophysiology and Transplantation, University of
Milan, Milan, Italy*

Lorenzo Gamberini
Marco Tartaglione
*Department of Anaesthesia, Intensive Care and Emergency Medical
Services, Ospedale Maggiore, Bologna, Italy*

Oscar Dell'Arciprete
Fabio Mora
Fiorella Cordenons

EMS 118 Dispatch Center, Ospedale Maggiore, Bologna, Italy

Donatella Del Giudice
EMS 118 Regional Programme, Ospedale Maggiore, Bologna, Italy

Cosimo Picoco
Giovanni Gordini
*Department of Anaesthesia, Intensive Care and Emergency Medical
Services, Ospedale Maggiore, Bologna, Italy*

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