




# Successful management plan of COVID-19 in a pediatric hemato-oncology department: a single-centre experience

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## ABSTRACT

COVID-19 pandemic raised concern about management of patients with paediatric cancer. We present the operating system that the Hemato-Oncology Department of the Santobono-Pausilipon Hospital applied. We divided our department in three zones: surveillance and screening; quarantine and COVID free, in order to screen admitted patients and to reduce the risk of cross infection. From 3 April until 29 May 2020 (56 days), 662 patients and caregivers underwent rapid serological tests for a total of 1397 assays. No patient or parent with SARS-CoV2 infection was found, demonstrating the effectiveness of COVID-19 screening process.

were isolated in zone 2 where nasopharyngeal swab was performed. Confirmed cases would have transferred to the regional paediatric COVID-19 unit.

Additional measures were taken according to GITMO (Italian Group for Bone Marrow Transplant) and EMBT (European Society for Blood and Marrow Transplantation) indications for the stem cell transplantation unit; therefore, the conditioning regimen could start only after the stem cells were collected, transferred, cryopreserved and available at the recipient unit. Furthermore, all related donors underwent SARS-CoV-2 swab on the same day of donation while recipients within 3 days of admitting to transplant isolation area. The weekly agenda has been significantly modified to reduce the admission of outpatients with benign haematological disorders and were constantly monitored remotely to ensure continuity of care.

From 3 April until 29 May 2020 (56 days), 662 patients and caregivers underwent rapid serological tests (a qualitative colorimetric lateral flow assay method) for a total of 1397 assays with an average of 2.11 tests per subject (range 1–7). Only six rapid tests were positive, two of which were in the same parent; all underwent nasopharyngeal swab resulted negative. Three different kits were used to conduct the screening but only one manufacturer (VivaDiag) declared specifications (total accuracy 95.1%; specificity 100%; sensitivity 81.25% with infection time within 4–10 days and 97.1% with infection time within 11–24 days). During the same period, 249 health workers underwent the test, 5 were positive but only 1 tested positive for nasopharyngeal swab. In addition, all the personnel underwent negative nasopharyngeal swab starting

COVID-19 pandemic raised concern about management of paediatric patients with malignancies. Herein, we present the operating system that the Hemato-Oncology Department of the Santobono-Pausilipon Hospital applied. We are a detached tertiary unit of the biggest paediatric hospital of southern Italy with a high daily frequency of patients; therefore, we decided to divide the department in three zones ([figure 1](#)): zone 1—surveillance and screening; zone 2—quarantine and zone 3—COVID free.

In the 24 hours preceding hospital admission, all patients received a phone call to check for fever or other symptoms in the last 3 days. In zone 1 everyone who entered the hospital was screened for body temperature, symptoms or close contact with a suspect case; a facial surgical masks and disposable overcoats were provided and have to be worn at all times.

Since 3 April 2020, all patients and their caregivers underwent rapid serological tests every 6 days in zone 1 before admission. Patients screened negative were admitted to zone 3 while positive ones (IgG, IgM or both)



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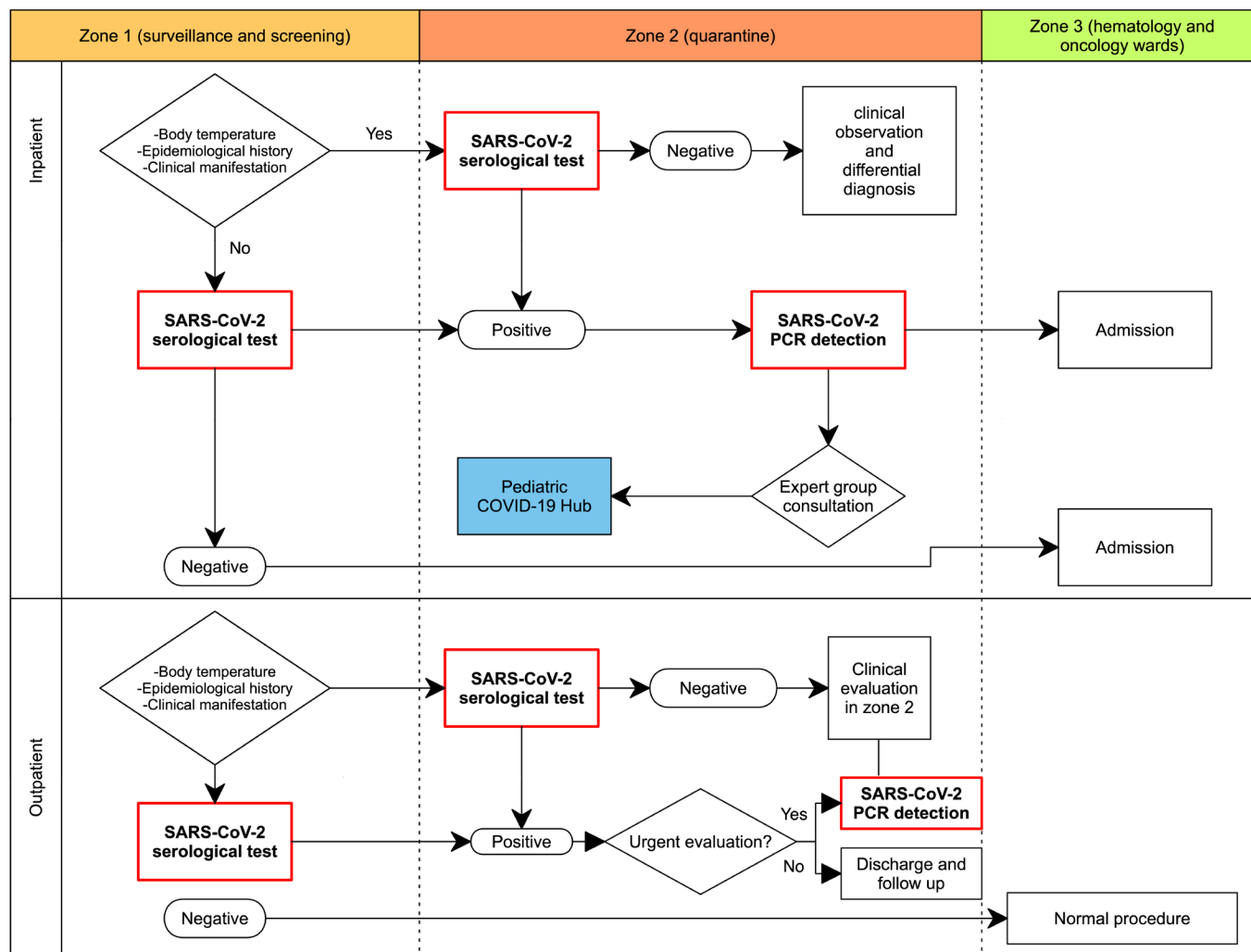
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**Figure 1** COVID-19 screening process for a paediatric hemato-oncology department.

30 May 2020. At the time of writing, no patient or parent with SARS-CoV2 infection was found, neither among screened subjects nor among patients undergoing nasopharyngeal swab for clinical or epidemiological criteria.

Recently,<sup>12</sup> the results of a screening conducted in some Italian centres of paediatric haematology with nasopharyngeal swabs reported a total of 31 cases. Hrusak *et al*<sup>8</sup> reported 9 cases from an international survey conducted over 25 countries. All these papers account for patients with mild to asymptomatic disease; only two in the Italian case series experienced complications, and only two patients of the survey were treated with hydroxychloroquine together with lopinavir/ritonavir in one patient. Our management plan adhered to the recommendations provided by the Italian ministry of health and the subsequently published guidelines by the major paediatric cancer organisations.<sup>4</sup>

The epidemic forced us to redesign our organisation, so we fully accept the invitation to learn as much as possible from this emergency and to share experiences to better face possible future pandemics. Our strategy proved valid in avoiding COVID-19 infection among patients with

paediatric cancer and relatives, such as all the hospital personnel with a favourable cost-effectiveness ratio.

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