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Letter to the Editor

Responding to COVID-19 in Istanbul: Perspective from genomic laboratory

Levent Doganay,[1] Nihat Bugra Agaoglu,[1,2] Arzu Irvem,[3] Gizem Alkurt,[1] Jale Yildiz,[1] Betsi Kose,[1] Yasemin Kendir Demirkol,[1,4] Ozlem Akgun Dogan,[1,4] Gizem Dinler Doganay[5]

[1]Genomic Laboratory (GLAB), Umraniye Teaching and Research Hospital, University of Health Sciences, Istanbul, Turkey
[2]Department of Medical Genetics, Umraniye Teaching and Research Hospital, University of Health Sciences, Istanbul, Turkey
[3]Department of Microbiology, Umraniye Teaching and Research Hospital, University of Health Sciences, Istanbul, Turkey
[4]Department of Pediatric Genetics, Umraniye Teaching and Research Hospital, University of Health Sciences, Istanbul, Turkey
[5]Department of Molecular Biology and Genetics, Istanbul Technical University, Istanbul, Turkey

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The COVID-19 pandemic emerges as the most critical global health threat of our time and brings on serious medical and socio-economic problems in Turkey, as well as in the world [1, 2]. In the COVID-19 pandemic, which has started to show its effects since the end of last year, early detection of the virus by RT-PCR is the most important armament that is in use against the disease via managing the actual cases and preventing transmission by identifying infected individuals [1, 3, 4]. In addition to the reliability of the PCR test results, the turnaround time of the test affects the benefit of the actions to be taken on the control of the pandemic [4]. However, a large number of cases cause several difficulties in diagnostic laboratory processes, such as workflow and workforce planning, that result in long result turnaround time. It is of great importance in the control of the pandemic that the existing laboratories adapt rapidly to the process, both as infrastructure and human resources, in this period [5].

As a result of the taken precautions [6], Turkey is one of the last countries that SARS-CoV2 was detected. The number of cases reported is approximately 126,000 in Turkey so far, and Istanbul province is reported to be the epicenter of the pandemic. After the first case was detected in Istanbul on March 11, 2020, considering the population which reached 16 million, it was planned to establish more than one diagnostic laboratory in Istanbul. GLAB-Corona, which is determined as one of these centers, was established with the contributions of TUSEB (Health Institutes of Turkey) and Molecular Genetics Association, within the body of the GLAB (Genomic Laboratory) operating in the fields of rare genetic diseases and cancer genetics before the pandemic in the Umraniye Teaching and Research Hospital [7]. In the GLAB-Corona, where the PCR analysis took place after the first 72 hours after the establishment decision, coordinated work and planning by the multidisciplinary team provided taking action in such a short time.

To explain the setup stages briefly, firstly, a core crisis team was formed with molecular biologists, geneticists, a microbiologist, information technology (IT) specialists and a technical team supervisor. After the appropriate area was provided for the laboratory in our hospital, the laboratory infrastructure was completed within 72 hours with the device and consumables provided by TUSEB and the work of the technical team. Simultaneously with this process, 40 molecular biologists who volunteered to

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Correspondence: Dr. Levent DOGANAY. Saglik Bilimleri Universitesi, Umraniye Egitim ve Arastirma Hastanesi, Gastroenteroloji ve Hepatoloji Klinigi, Istanbul, Turkey.
Tel: +90 505 525 04 91 e-mail: ldoganay@hotmail.com

work in wet-lab, sample acceptance and triage departments were accepted by interview, and personal protection training was given to such volunteers by clinicians. The IT department also completed its work on sample registration, acceptance, reporting and entering the results in the national information system at that time. The core crisis team met daily to identify deficiencies and put the necessary efforts to remedy them. We formed four teams with 10 people from molecular biologists who will work in our laboratory, where 5000 samples are planned to analyzed daily. Two staff members in each group were assigned as data reception and triage officers. Thus, the maximum efficiency was achieved by ensuring that the wet-lab process continues 24 hours a day, with four shifts. A team leader was determined for each group, and the coordination of communication and operation was carried out through this person. Shift layout allowed staff to be less exposed to the virus load and work burden. In the post-lab process, four clinicians analyzed and reported the data. The reports were entered into the national data system by medical secretaries previously working within GLAB. With the work of medical secretaries also in shifts, data flow was provided for 24 hours. The initial turnaround time, which was 40 hours on average, was reduced to a critical value, such as below 24 hours. Every day, team leaders and core group met to discuss the disruptions in operation, precautions to be taken, and also the working strategy of the next day according to the current sample flow rate. With this planning, the goal of analyzing approximately 5000 samples per day was achieved by using both voluntary molecular biologists and the workforce within GLAB according to their knowledge and skills. Since the start of the active sample acceptance from April 1, 2020, in the approximately 1-month period, GLAB Corona has analyzed 86.619 samples and administered 8% of the tests carried out in Turkey.

While taking fast action in this pandemic, where days or even hours are important, it is very important to carry out appropriate workflows and plan the efficient use of available human resources to give fast and accurate results. By writing this letter, we wanted to share our experience by elucidating the processes we experienced during the establishment phase of our laboratory, which serves as the reference center for the Anatolian side of Istanbul with approximately 4500–5000 sample entries daily.

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