

المخبر AL-MAKHBAR

Laboratory Medicine & Pathology Newsletter



مؤسسة حمد الطبية
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إدارة المختبرات الطبية وعلم الأمراض
Department of Laboratory Medicine and Pathology

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Editorial Board



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Department of Laboratory Medicine and Pathology, HMC



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Department of Laboratory Medicine and Pathology, HMC

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DLMP Contact details

Department of Laboratory Medicine and Pathology

email: pathlabmed@hamad.qa

Tel.: 40264130 – 40264011

The Chairperson Message



Dr Einas Abdulaziz Eid Al-Kuwari

It is my great pleasure and privilege to serve you and work closely with you. The journey that we have all experienced since the arrival of the Corona Pandemic in our beloved nation has been both a challenging and extraordinary one and quite rightly we have decided that the very first issue of our newsletter is dedicated to our experience with this Pandemic. As much as it was challenging it has also been fascinating how we worked together to combat it. You have worked tirelessly and diligently together and have applied the most modern and cutting edge technology and evidence-based practice in order to contain and ultimately defeat this Pandemic. Your dedication, determination and “can do” and “will do” attitude have truly inspired me. Despite all the odds and complexities of the demands of the service, you have never wavered and remained resilient and strong. Your main and only aim has always been protecting our dear patients and the community and safeguarding their welfare and striving to protecting the health of Qatar no matter what it takes and how much effort and energy you put in during and outside working hours. The spirit of multi-professional and multi-disciplinary working in a concerted manner has been so admirable and powerful.

Going forward, what I see is a bright future thanks to you, our most valuable asset. We have huge opportunities ahead of us and we want to deliver the very best services because the people of Qatar and Qatar deserve the very best. We all aspire for a better tomorrow and hence, hand in hand we shall continue our journey together to new horizons and achievements and without you, your passion and diligence this cannot be achieved.

I wish to express my heartfelt gratitude to all of you and wish you continued success and achievements for the new year.

Dr Einas Abdulaziz Al-Kuwari

Chairperson of the Department of Laboratory Medicine and Pathology

Preamble

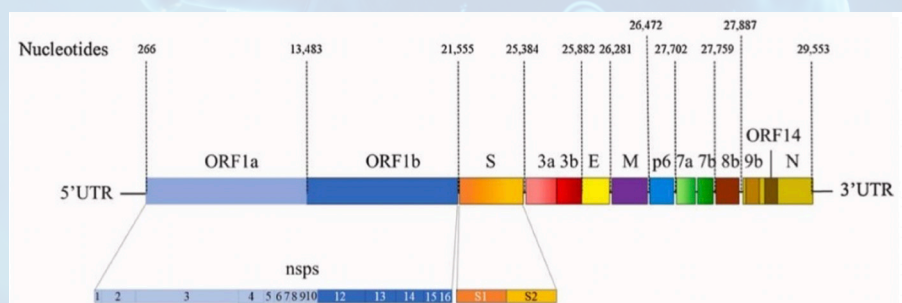
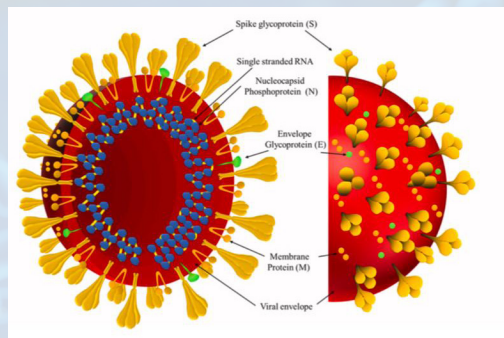
The story started when a number of patients presenting with viral pneumonia, and the isolation of SARS-Cov-2 were reported in the City of Wuhan, China on 9 January 2020. This new infection was

named as Coronavirus Infectious Disease-2019 (COVID-19) and was declared as a Public Health Emergency of international concern on the 30 January 2020. The Pandemic was subsequently declared in March 2020.

Since January 2020, the Department of Laboratory Medicine and Pathology has been pivotal in taking up this challenge and succeeding in its endeavours.

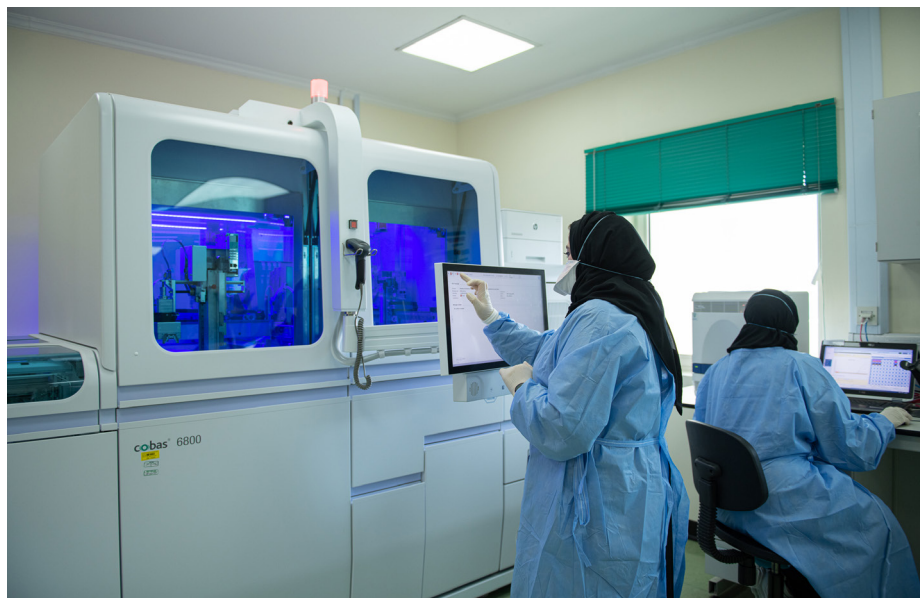
Getting ready for Covid-19

- Following the emergence of this novel virus, its gene sequence was promptly identified leading to the development of a molecular test (RT PCR) with the help of WHO to detect this virus since 16th January 2020.
- The Laboratory quickly obtained all the necessary equipment and reagents and in addition to the necessary controls to validate this test.
- The technique was validated 2 weeks later and testing for COVID-19 was declared operational as of 31 January 2020 which was followed by rolling out of this test at national level.
- Following recommendations of the WHO, the first tested samples were retested and confirmed by an international laboratory in the Netherlands: Erasmus MC, Dept. Viroscience. There was 100% correlation and the first cases detected in the State of Qatar were in February 2020.



Laboratory Preparedness

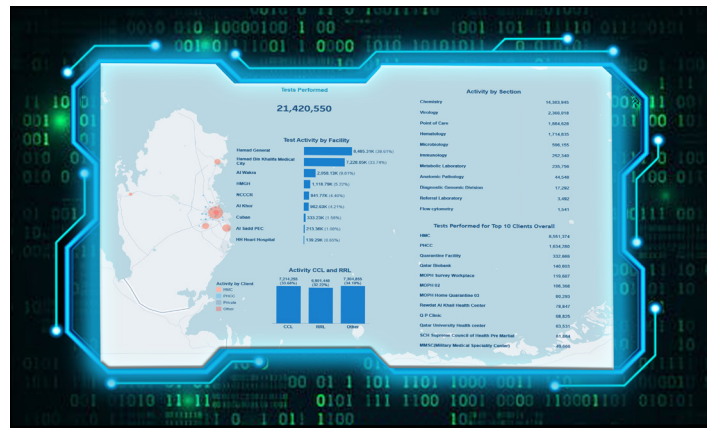
- With the challenging increase in demand of tests, it was imperative to secure reliable kits and reagents and ensure sufficient quantity for the whole country without interruption.
- Automated and semi-automated technologies were obtained despite fierce international competition of demand which saw the process of procurement curtailed in most countries.
- Extension of the building for site of testing took place followed by expansion of testing by the use of other laboratory sites of the HMC.
- At the same time a central reception and distribution area was created to streamline the process and obtain an optimal turnaround time of test results.
- All testing laboratories complied with accreditation requirements and WHO recommendations.
- The workforce capacity was significantly enhanced with the arrival of volunteers from other Departments of DLMP and new recruits to provide a 24/7 service.
- The Quality Management Team ensured accuracy and reliability of test result through quality assurance by having robust internal and external quality control mechanisms.



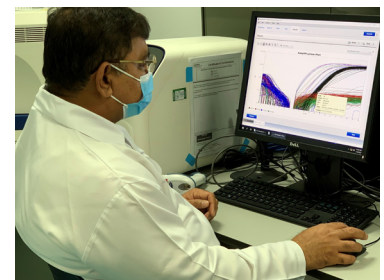
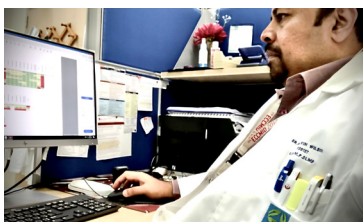
Performance Dashboard

A performance dashboard was introduced in order to monitor the overall performance of the output of the Clinical Virology Laboratory. This was important in order to optimize and at the same time maximize efficiency of the testing process. This included measuring the following:

- Number of samples received for testing
- Number of positive results
- Turnaround time taken for the specimens to be tested.
- Distribution of results by ethnicity
- Distribution of results by gender
- Trends of results over period of time
- Source of requested tests
- Types of tests performed.



Establishment of the Focal Points



- Designated professionals as Focal Points were identified for both individual Facilities and the DLMP.
- The DLMP Focal Points were Clinical

Microbiologists who played a pivotal role in facilitating and optimizing Covid-19 tests including initially prioritization and interpretation and

assisted in the optimal management of patients.

- Their role has also helped in reducing the demands on the clinical virology team.

Internal and External Partnerships

- It is admirable to see how close working relations manifested between different the various stakeholders with the common aim of combatting the pandemic.
- When the workload for testing overwhelmed capacity initially, the process was continuously reviewed in order to accommodate the increasing demand.
- Clinically, Virology has become an integral part of high profile committees managing the Pandemic such as SWICC and NHSCG.
- Clinical Virology was also engaged in Various epidemiologic studies at national level
- The collaboration with professionals of LIS and HICT led to the generation of innovative approaches in the reporting of Covid-19.



Hazm Mebaireek General Hospital



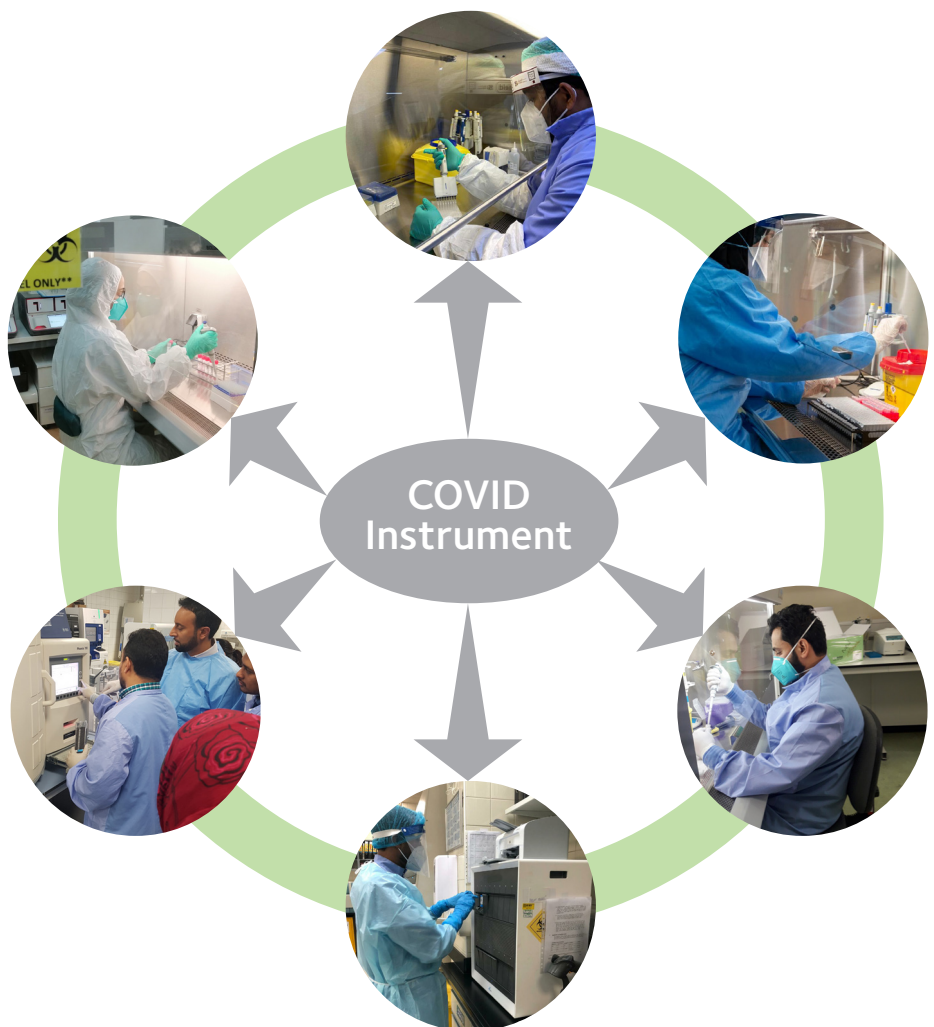
Sharing of Learning and Experience

- The DLMP has been proactive in sharing learning and experience with relevant colleagues at international level.
- It has been a two-way process with mutual benefits that serves combating Covid-19 globally.



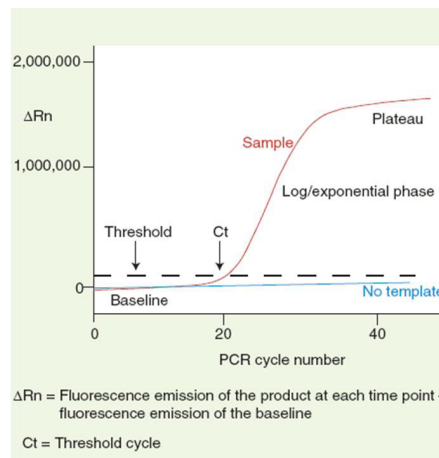
Horizontal Expansion of Testing Capacity

- The Molecular testing capacity for COVID-19 has significantly increased from around 1,700 per week at the end of January 2020 to 30,000 per day in July 2020 and could have been further increased if required.
- This was made possible by the creation of additional COVID-19 testing sites at various multiple rapid laboratories of the HMC mainly by designating three Covid-19 testing platforms
- Looking towards the future, it is obvious that fully automated solutions are the most promising for extended test capacity and optimal quality.
- These solutions represent the key to solving problems related to the structure and the organization of laboratory spaces, the number of staff, the turnaround time and finally the quality of service.



Interpretation of Test Results and Further Granularity of Reporting (CT Value)

- RT-PCR amplifies over 40 cycles, with the cycle threshold (CT) where the signal exceeds the background and a positive or negative result is reported.
- In order to help in the interpretation of a COVID-19 infection and with the support and expectation of SWICC and NHSCG, CT values were added to the reporting process and quickly impacted on services leading to a more rational use of quarantine facilities and facilitating patient transfers between COVID-19 and non-COVID-19 hospitals.
- Subsequently average CT values with interpretive comments replaced the categorical positive /

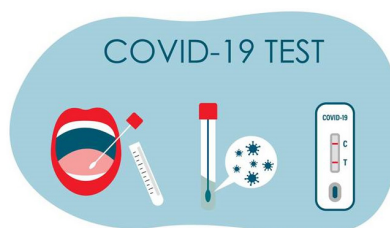


negative reporting system and a new category of Reactive, for CT >30 values, was introduced. A Reactive test result indicated patients with likely recovery, and was also featured on EHTERAZ by the Yellow indicator.



Introduction of Rapid Testing

- During the COVID-19 Pandemic, the DLMP at HMC received several point of care testing (POCT) rapid kits for validation.
- Rapid and user-friendly test kits are based either on detection of proteins (Ag) from the COVID-19 virus in respiratory samples (e.g. Nasopharyngeal swab (NPS), Oropharyngeal swab (OPS), and sputum) Or detection of antibodies (IgG/IgM) generated in response to infection, in serum, plasma or whole blood. Both tests can be carried out manually or by automation technology.



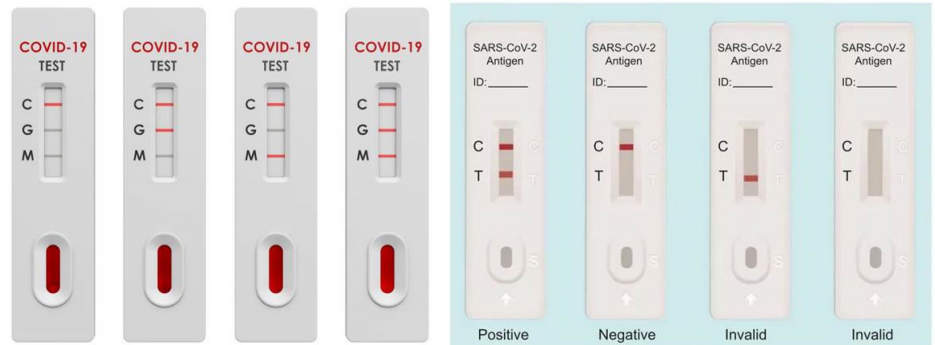
- Several Rapid Antigen Detection Test (RADT) kits were introduced in various Covid-19 HMC facilities
- The sensitivity and specificity achieved locally for these kits were ≥85% and 100%, respectively.
- The antigen(s) detected are expressed only when the virus is actively replicating (Ct values for

PCR < 30) and therefore, such tests are best used to identify acute or early infection.

- WHO recently announced that RADT that meets the minimum performance requirements of ≥80% sensitivity and ≥97% specificity can be reliably used to diagnose SARS-CoV-2 infection.

Introduction of Rapid Testing (contn'd)

- The test could be used as a triage test to promptly identify patients who are very likely to have COVID-19 infection and therefore reduce or eliminate the need for expensive molecular confirmatory testing.
- The POCT Team has undertaken the task of training and competency assessment of all end users across the HMC in line with accreditation standards



NOTE: This figure is only used as a reference.

Continuous Engagement with the Media



The Chairperson and staff of DLMP have been very instrumental in engaging with the media whether Qatar TV, Al-Jazeera TV, Radio Channels, local newspapers, HMC Communications and social media. The benefits were rewarding in increasing awareness of the Public in all aspects of the diagnosis, management, prevention and control of Covid-19.

Conclusion

In the face of a once-in-a-lifetime pandemic of exceptional transmissibility within all countries in the world communities globally, DLMP in collaboration with many partners in the academic, hospital and MOPH settings responded swiftly and effectively to provide a quality assured diagnostic service supporting all sectors in the State of Qatar. Per capita globally, Qatar has one of the highest testing services compared to anywhere in the world. This played a key role in the response in combatting the pandemic and therefore led to assist in the reduction of mortality due to this infection to one of the lowest rates in the world.

It has truly been an inspiring experience in the way that all professionals of DLMP and other diverse Organizations have diligently worked together in such a concerted manner in defeating Covid-19 in the State of Qatar.

