

# Working as an NHS Medical Laboratory Assistant during the COVID-19 Pandemic

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## What is LAMP testing and how has this developed over the course of the SARS-COV-2 pandemic?

RT-LAMP (Reverse transcriptase loop-mediated isothermal amplification) testing is a novel technique used to detect the SARS-CoV-2 virus in saliva samples. As this type of testing does not require thermal cycling at different temperatures, it can produce results faster than standard laboratory PCR tests. However, LAMP still needs to be conducted in a laboratory environment and is not suitable for the large-scale requirements of public testing.

LAMP testing has been offered for asymptomatic testing of NHS patients and staff at the Royal Liverpool University Hospital. The lab has been built up from ten original staff to over 130 colleagues as of March 2021. Our lab provides an essential testing service for frontline workers who are vulnerable to contract and spread SARS-CoV-2.

A Medical Laboratory Assistant is responsible for carrying out general duties around the lab. The specific jobs are specimen reception, sample preparation, and template addition. The main skills we perform are accurate pipetting, preparation of reagents and inputting of patient details.

The first stage for our samples involves booking them into the Laboratory Information Management System known as Telepath. This links the sample to the patient request form and allows the final test result to be issued directly to the patient. The samples arrive at the lab in sample bags that need to be removed, and the primary sample tubes are arranged to match a plate map. Each sample now has a unique barcode identifier that links the entry in Telepath to

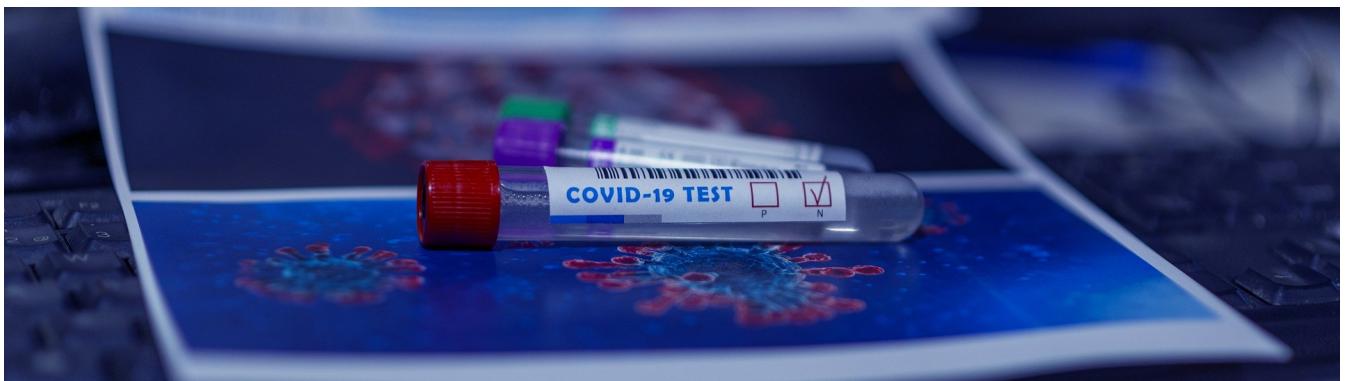
the sample as it moves along the testing process.

The next stage is sample preparation, where the primary saliva samples are aliquoted with a buffer to deactivate any virus present. The eppendorf tubes are then heated at 98°C for two minutes to begin the reaction. The eppendorf tubes are then added to a template with a reaction mixture which is then run for genomic analysis on an OptaGene Genie HT machine. At this point, the results, either positive or negative, are issued to patients.

**“Working in the lab has allowed me to develop both laboratory-based and interpersonal skills”**

LAMP has the potential to be adapted for large-scale testing programs but is still an emerging technique and at time of writing has not yet been approved for mass testing pilots of the general public. The timeframes for processing and result issuing are faster than other types of tests. However, there is still the need for sample processing, reagents, and genomic analysis, all of which require a laboratory setup such as in a clinical or research setting. Therefore, whilst LAMP testing has the potential for larger-scale uptake, it has limits in its potential as a mass testing tool.

As the lab capacity builds up, we will be taking on more hospital and NHS trusts to the point where the Liverpool lab will become the main NHS testing service for the Merseyside region. Since I started in December, the



capacity has increased such that the lab operates 7 days a week and is open twelve hours on weekdays. To match the continual increase in sample volumes, the number of new staff has also increased with approximately 100 Medical Laboratory Assistants working here as of the beginning of March 2021.

### How has this role helped me, and what skills have I learned?

When I started at the lab in early December 2020, we were validating equipment and standard operating procedures, accepting samples from only a few departments within the Royal Liverpool University Hospital. Once the lab was “live” we began accepting samples from other hospitals in the Liverpool University Foundation Trust. Since then, we have gradually taken on other NHS trusts so that the volume of samples has increased to approximately 3000 samples per week at the beginning of March. As we take on more trusts across Merseyside, the volume of samples we will process is projected to increase further.

The coronavirus pandemic has meant that my final year undergraduate honours project was adapted to a systematic review. There is limited lab access and, therefore, little possibility for a lab-based project. As I felt that practical skills remain an essential part of being a life sciences student I wanted to take the opportunity to develop my skills despite the impact of the pandemic restrictions.

Working in the lab has allowed me to develop both laboratory-based and interpersonal skills. By learning the processes required for LAMP testing, I have extended the skills base I developed during the first years of my degree. I feel this will be advantageous for my progression onto postgraduate study and possible lab-based careers.

Before taking this role, I had little experience working in a clinical lab. Now, having seen the lab develop in the short time I have been there, I am considering working in the biomedical sciences field, which has influenced my decision for postgraduate study at master's level. I have also become more open to the idea of working in a clinical laboratory in my future career.

**“Overall, this work has helped me develop my skills as a scientist which I feel has been useful preparation for life post-graduation”**

Being part of a large workforce has forced me to develop team working skills and good communication to ensure colleagues are comfortable in their tasks and that processes are running smoothly. When I have been given the responsibility of “room lead,” I have been involved in training newer staff and delegating job roles to ensure we are continually processing samples throughout the day. Overall, this work has helped me develop my skills as a scientist which I feel has been useful preparation for life post-graduation. ■