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Dr. Sanjev Dave

Professor, Department of
Community Medicine, I-
SMMH, Government Medical
College, Sharanpur, Uttar
Pradesh, India

Dr. Anuradha Dave

Associative Professor,
Department of Community
Medicine, Subharti Medical
College, Meerut, Uttar
Pradesh, India

Dr. Rajesh Jain

Associative Professor,
Department of Community
Medicine, Jain Medical Centre,
Kanpur, Uttar Pradesh, India

Best practices for returning to lab after lockdown: Role of Agilent company solutions in assisting

Dr. Sanjev Dave, Dr. Anuradha Dave and Dr. Rajesh Jain

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Abstract

Introduction: Due to COVID-19 related lockdown-the various impacts across the Globes have been seen as reported in literature.

Rationale of study: In Past 6 Months the lifting of complete lockdown by governments all across the world is now compelling laboratories in all kinds of settings such as academic and industrial that they must open if they have to survive in this World. But real question is How to open in best way?

Research Question: Can Companies like Agilent provide Sufficient Solutions for lab opening in Post Lockdown Era?

Results: This article elucidates the various impacts of Lockdown on Research Labs due to COVID 19; such as scenarios of limited access to customers & markets, the need for 24-hour operation support, economic uncertainty due to Lockdown, working with Reduction in on-site staff, increased remote working and disruption to supply chains after Lockdown.

Conclusion: COVID-19 Lockdown impact is far from trivial and Role of Agilent Company in offering advices on some of the good practices to overcome lockdown impact on Labs can be adopted.

Keywords: Lab after lockdown, COVID-19, across the world

Introduction

The coronavirus 2019 pandemic has wreaked whole research system across the globe, causing Lockdown of laboratories, suspension of projects, and caused scientists' to work from home. Even when research and development starts resuming, there's no guarantee it won't shut down again, especially as second wave of COVID-2019 is seen in many countries such as UK, US, SA etc. with new COVID Virus strain 2.0 emerged from UK^[1]. But in Past 6 Months the lifting of lockdown by governments all across the world is now compelling laboratories in all kinds of settings such as academic and industrial that they must open if they have to survive in this World.

According to Gartner (2021)^[2] report, in post COVID-2019 Lockdown time, some lab organizations may be reinventing themselves for the long term. Others may be refocusing their capacity. But Government service Lab centres in Post COVID times can offer their services remotely even they may be able to retire some of their physical centres and instead focus on their newfound digital capabilities and digitalized parts of an organization, might rescale permanently^[2].

Impacts of lockdown influencing the laboratories across the globe

Due to COVID-19 related lockdown-the various impacts across the Globes have been seen as reported in literature from a study^[3].

Research lab impacts

As per study from literature^[3] various Impacts of COVID-19 outbreak occurred on laboratories across the globe and various issues which emerged during this outbreak can be categorized in many phases such as:

1. Operational preparedness phase

Easy transmissibility of SARS-CoV-2 via respiratory droplets

2. Pre-analytical phase

Potential occupational hazards in handling COVID-19 patient samples & leakage of samples in containers or during transit.

Corresponding Author:

Dr. Sanjev Dave

Professor, Department of
Community Medicine, I-
SMMH, Government Medical
College, Sharanpur, Uttar
Pradesh, India

3. Analytical phase

Manual processes resulting in contamination of surfaces i.e. centrifugation of samples with aerosol generation and manual pipetting resulting in fomites. Apart from this Samples not identified as COVID-19 might have arrived in the laboratory incognito.

4. Post analytical phase

Transmission and reporting of results securely and in a timely fashion.

Impact on wages of scientists and researchers

According to a recent survey in Genome Biology journal which has reported that 57 percent of life scientists lost some of their work as a result of this COVID pandemic and the inevitable shutdowns. Research, experimentation, and product development required special equipment, materials,

and proper working conditions in lab spaces [3].

Project funding impacts

Despite efforts globally to continue research as much as possible during lockdown, critical factor which had a significant impact was whether vital studies were funded for going forward. The additional restrictions imposed by Covid-19 also had a financial cost. PPE, cleaning products and other equipment needed to ensure personal safety were also factored into research budgets more than ever before [4]. But the real question is how to open effectively in long run, for this one study [4] has given some insights as shown in figure no 1 & 2 also:

Key steps for reopening your research lab [5]

1. Setting up a Reopening Plan
2. Preparing the Employees
3. Assess Lab Readiness
4. Keep the entire facility clean

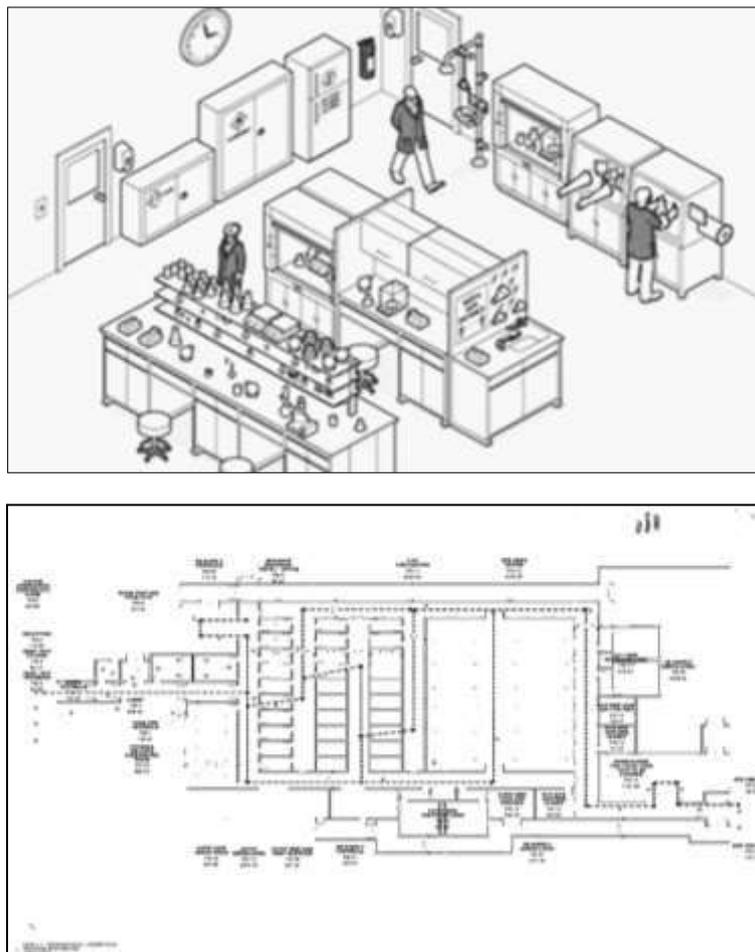


Fig 1-2: Newly designed labs format and plan in post lockdown era

1. How to set up a reopening plan

Essential factors to consider when setting up the plan include:

- Formulating standard operating procedures
- Identifying manageable groups categorized by department, research type, and risk level
- Prioritizing research initiatives within the lab
- Setting up safety training lessons; providing the necessary resources

- Allowing employees to work without urgency
- Stressed and overworked employees are more likely to experience accidents. Also, some personnel may be dealing with loss and grief. Lab mates should be ready to cover for staff who are grappling with coronavirus-related issues.
- Establishing PPE guidelines (and COVID-19 updates)
- Reserving the use of medical PPE to lab personnel and healthcare providers

2. How to prepare the employees

Other issues that lab managers should address include:

3. We must assess lab readiness

Other ways to prepare lab spaces include:

- Establish a schedule for using shared equipment and spaces
- Minimize density within labs to ensure six-foot work zones
- Restrict lab access to deliveries, PIs, and other staff

4. Keep the entire facility clean

Research lab managers need to augment their routine disinfection protocols by developing new cleaning and disinfection plans to minimize the risk of transmission at the facility. The plan should explain decontamination efforts vs. routine cleaning procedures. Personnel should also be updated about individual sanitization and disinfection procedures they should follow daily—within their specific work areas as well as throughout the facility.

Need for better together: How working together can accelerate COVID research ^[6]

Taken together, many questions remain for COVID 2019 infection a few of yesterday's practices and policies may be too old or irrelevant in the post COVID-19 laboratory. According to the Agilent lab solutions company- the pandemic has not changed the way to resolve and ingenuity of scientists the world over. Researchers in every corner of the globe, have been working tirelessly toward a vaccine for the 2019 novel coronavirus. The scientific and medical

research communities stand united in their tireless efforts to find not just a vaccine, but other effective therapeutics such as antiviral drugs, peptide inhibitors, nucleoside analogues, and monoclonal antibodies—and we have never been more honoured to stand with them.

Role of Agilent Company in helping labs to open post COVID 2019 Lockdown ^[6-7]

Agilent has expanded its capabilities to help labs overcome disruption, restart their labs and improve operations.

Adjusting to the new normal: How can Agilent help?

The solutions offered by Agilent will help to labs overcome laboratory lockdown. Today's instruments have smart technology that can self-diagnose, troubleshoot, and support optimal maintenance. New tools like CrossLab Smart Alerts send alerts when instruments need consumables or experience trouble. Lab-wide connectivity lets you monitor all your instruments, access performance data, even troubleshoot, remotely. Ultimately, lab data enables insight analytics that drive good decisions and planning ^[6-7].

The 4 critical ways Agilent can help are:

1. Asset Lifecycle Performance Management
2. Digital Lab Connectivity
3. Operation Expertise
4. Compliance Assurance



It will be further done in the following ways:

1. Guided training and support with Agilent University
2. Lab and instrument management software
3. Agilent SLIMS
4. Research-specific software platforms (e.g. OpenLab CDS, MassHunter, NovoExpress and xCELLigence RTCA and Cary WinFLR, Cary WinUV, Cary UV Workstation, MicroLab (Mobile) and Clarity Software)
5. Maintaining social distancing with iLab

Optimizing instruments and lab operations

Agilent has many solutions available to help simplify, optimize, and transform lab operations, such as:

1. The importance of proper shut down protocols and restart activities
2. Cloud computing options such as (IaaS, PaaS and

SaaS), laboratory management and tracking systems (LIMS/LES/ELN) and analytical data systems (CDS, SDMS)

3. Inventory services
4. Asset monitoring and management
5. Relocation services

Assuring compliance

For Compliance Assurance newer regulations and the importance of maintaining data integrity at every step in the data life cycle, with reference to:

- 21 CFR Part 11 and ALCOA
- Responsibilities of the lab – audit, assess and validate
- General instrument and software qualifications necessary for lab operations

All will be assisted to assure Compliance.

Consumables

Agilent will also help in considerations for consumables and supplies that you may need to adjust to, including:

- Dealing with expired reagents
- Identifying a need for new reagents or changes to supply needs
- Equipment procurement

Multiple roles of Agilent in assisting lab opening ^[5, 6]

- Agilent can support lab with program and project management and additional staff, which can significantly improve your team's efficiency without adding to your payroll headcount.
- Depending on the requirements, a project or program manager can help to manage the details of a complex task, change management, or ongoing lab management requirements.
- Having a team who is familiar with operations can enable to have flexibility in the face of disruption.
- Agilent Cross Lab can support management of suppliers and vendors to manage lab-wide resources, taking administrative burden off the reduced on-site staff.

Summary

It may have been easier to close labs; than it will be to reopen them, and finding the new normal may be a multi-layered complex process. The unforeseen COVID-19 pandemic has compelled temporary changes to the design and work protocols of labs. In the long term, life sciences companies must evolve their design and equipment to ensure that they can keep operating in the face of future pandemics. Innovative design strategies and new technology can be leveraged to create safer, healthier, and more efficient labs. The integration of lab users, equipment, and hazardous materials remains the goal of lab design, but the COVID-19 pandemic has changed the way this is accomplished. It is critical for lab managers to work closely with architects and engineers to ensure they are empowered to develop labs tailored for users' long-term needs. To make a success of this R&D management needs to be structured, have a good top-level strategic message to staff and a disciplined approach to people management and Agilent is one Such way to accomplish this for Labs wanting to open post Lockdown.

Take home message

24-hour shift work, changing office layouts and hand sanitizer stations are just some of what makes up the 'new normal' in labs across the world.

There's different challenges with individual openings because of different types of activities, but essentially the basic protocols and procedures can be a good starting point for what we need to watch out for when opening other facilities or services and Agilent Solutions can be one of the good strategies to adopt for Post COVID 2019 lockdown.

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