

Ensuring the pipeline: Risk Assessment for laboratory teaching

These suggestions are based on the UK Governments “Working safely during COVID-19 in labs and research facilities” (June 14, 2020 Edition), which gives detailed advice and risk assessment guidance for laboratory work in commercial settings.¹

The UK Government has also suggested it could be used for risk assessment in teaching laboratories.²

This document aims to give guidance on the aspects relevant to the teaching laboratory itself, specifically *Section 1: Thinking about risk*, and *Section 6: Personal Protective Equipment (PPE) and face coverings*.

The basic requirements apply in all situations – good signage, good markings, frequent hand washing. Students are learning how to work safely and effectively in laboratory and field situations, and should be taught what precautions are being taken and why.

It would not be unreasonable, for instance, to include assessment of their behaviour and safety practices as part of the learning outcomes of a practical module. Assessment practices are often helpful in behavioural modification for students, couple with University disciplinary procedures as required – the carrot and stick approach.

All activity outside the laboratory should be covered by the general requirements and risk assessment carried out by HEIs, including how students dress for, enter and leave laboratories – these will have to address very local conditions.

Managing risk

Text in *italics* below has been taken directly from the UK Government guidance.

Objective: To reduce risk to the lowest reasonably practicable level by taking preventative measures, in order of priority.

Employers have a duty to reduce workplace risk to the lowest reasonably practicable level by taking preventative measures. Employers must work with any other employers or contractors sharing the workplace so that everybody's health and safety is protected.

In the context of COVID-19 this means working through these steps in order:

- *In every workplace, increasing the frequency of handwashing and surface cleaning.*

¹ UK Government, *Working safely during coronavirus (COVID-19)*, viewed 19/06/2020
<<https://www.gov.uk/guidance/working-safely-during-coronavirus-covid-19/labs-and-research-facilities>>

² HM Government, *Higher education: reopening buildings and campuses*, viewed 19/06/2020
<<https://www.gov.uk/government/publications/higher-education-reopening-buildings-and-campuses/higher-education-reopening-buildings-and-campuses#reopening-laboratories>>

- *Businesses and workplaces should make every reasonable effort to enable working from home as a first option. Where working from home is not possible, workplaces should make every reasonable effort to comply with the social distancing guidelines set out by the government (keeping people two metres apart wherever possible).*
- *Where the social distancing guidelines cannot be followed in full, in relation to a particular activity, businesses should consider whether that activity needs to continue for the business to operate, and if so, take all the mitigating actions possible to reduce the risk of transmission between their staff.*

The question here is whether it is possible to deliver the training needed in laboratories just using the current 2 metre social distancing advice, or, later, possibly reduced distancing.

Our accompanying brief *Ensuring the pipeline: laboratory training in the time of coronavirus* argues that simple social distancing approaches will not be effective for several reasons:

- Laboratories are by their nature dynamic places, with layouts designed for safe handling rather than social distancing – the effect is to reduce occupancy to around 25% in many cases.
- Social distancing aims for a fixed workstation approach: while possible for some techniques, this is not a good training environment, where academic and technical staff have to move around to teach and support students.
- The reduction in numbers and available laboratory time will pose huge challenges in delivering the technical and skills learning outcomes required for future employability of graduates, and therefore the needs of employers in the health and life sciences sector.
- It is not unlikely that there will be waves of infections, with different national governments raising or lowering risk levels. While it may be possible to recoup the loss of one semester, more than that could be very damaging to student outcomes – it makes sense to plan for delivering the key learning outcomes in a safely managed environment.
- Effective teaching is often done in pairs or groups – this is a key part of learning to work in teams, and risk-assessed approaches to maintaining this structure can be developed.

Given these issues, the risk assessment would look for mitigation – physical and behavioural barriers to protect students and staff and prevent, as far as possible, the risk of transmission.

Further mitigation

Further mitigating actions include:

- *Further increasing the frequency of hand washing and surface cleaning.*

We therefore suggest producing a cleansing regime for the laboratories – as noted elsewhere, this is likely to reduce further access time for learning and teaching.

Part of student education should be about hand washing – students should be wearing disposable gloves, so a regime of disposing of gloves and using hand sanitiser, and replacing the gloves associated with movement around the laboratory and/or the use of shared equipment will act to limit surface spread. Think about how this might work for each experimental session.

Students should be taught to wipe down their benches and equipment during and after use, especially if partnering is in operation (see later).

- *Keeping the activity time involved as short as possible.*

Redesigning practical sessions around a two-hour window may be the optimal approach here.

If access and exit from the laboratory needs to be staggered because of corridor configurations outside the lab, consider even shorter sessions which allow a flow of students and practical work around the 2-hour session. This may also be useful in reducing staff contact time with students.

- *Using screens or barriers to separate people from each other.*

In terms of physical barriers, this is likely to be one of the most useful approaches. Most teaching laboratories have double sided benches, and while more recently built facilities may have two metre widths, it may still be useful to put transparent screens along the central length of a bench – this is where most direct face to face activity will be occurring, with students facing each other as they work.

It is likely that this simple intervention can often double student occupancy. Shared equipment can be surrounded on three sides by screens, or located in side rooms where students enter either singly or in bubbled pairs.

- *Using back-to-back or side-to-side working (rather than face-to-face) whenever possible.*

With screens in place to mitigate face-to-face working, it may be possible for students to work back to back, either directly or at an angle. This would need significant reinforcing for students, as part of their introduction to COVID-19 working and their ongoing work.

- *Reducing the number of people each person has contact with by using 'fixed teams or partnering' (so each person works with only a few others).*

As mentioned above, students are used to working in pairs or groups: being able to use a partnering system would support their team working – this will still allow for social distancing with pairs of students sharing a single bench side, coming closer only when the experiment needs it: in practice, this is likely to be most of the time, but with the other prophylactic measures in place, the risk can be mitigated.

- *Finally, if people must work face-to-face for a sustained period with more than a small group of fixed partners, then you will need to assess whether the activity can safely go ahead. No one is obliged to work in an unsafe work environment.*

Experimental techniques and approaches will need to be reviewed to minimise unnecessary mixing of large groups of students.

- *In your assessment you should have particular regard to whether the people doing the work are especially vulnerable to COVID-19.*

There must be alternative teaching strategies and assessments for vulnerable students – RSB accreditation does not require that everyone be proven competent in hands-on technical and other skills, only that they have had the opportunity and been assessed.

There will always be personal situations which HEIs have to consider for a variety of reasons and solutions: these have never affected accreditation status.

The recommendations in the rest of this document are ones you should consider as you go through this process. You could also consider any advice that has been produced specifically for your sector, for example by trade associations or trades unions.

In summary: it will not always be possible to keep a distance of 2 metres in labs and R&D facilities that may be designed for close-proximity collaboration. Fixed equipment may mean that changing layouts to create more space may not be practical.

Where the social distancing guidelines cannot be followed in full in relation to a particular activity, businesses should consider whether that activity needs to continue for the business to operate, and, if so, take all the mitigating actions possible to reduce the risk of transmission between their staff.

Mitigating actions include:

- Keeping the activity time involved as short as possible.
- Using screens or barriers to separate people from each other.
- Using back-to-back or side-to-side working (rather than face- to-face) whenever possible.
- Reducing the number of people each person has contact with by using “fixed teams or partnering” (so each person works with only a few others).
- Increasing the frequency of hand washing and surface cleaning.
- Social distancing applies to all parts of a business, not just the place where people spend most of their time, but also entrances and exits, break rooms, canteens and similar settings. These are often the most challenging areas to maintain social distancing.

Personal Protective Equipment (PPE) and face coverings

PPE protects the user against health or safety risks at work. It can include items such as safety helmets, gloves, eye protection, high-visibility clothing, safety footwear and safety harnesses. It also includes respiratory protective equipment, such as face masks.

Where you are already using PPE in your work activity to protect against non-COVID-19 risks, you should continue to do so.

Reinforcing the need for lab coats, protective safety glasses and the use of disposable gloves as part of laboratory training will be needed – this is all PPE that is routinely used in laboratories, and is already designed to protect the wearer from the experiment and environment in which the experiment is done.

More emphasis will be needed on the behavioural aspects of using this PPE, and on cleansing approaches in particular (hand washing, surface wiping).

The question also arises as to how this equipment is cleaned between sessions. Should students have their own lab coats and safety glasses, and be responsible for cleanliness? Should HEI's be responsible for storing, managing and cleaning lab coats and/or safety glasses?

... managing the risk of COVID-19, additional PPE beyond what you usually wear is not beneficial...

The possible exception to this is face masks or coverings. While there is still some debate about the usefulness of face coverings, the view is coming around to using face coverings in places where proximity to others is unavoidable – hence their required or advised use on public transport.

Many overseas students are already accustomed through social practice to wearing face coverings, and it is becoming the norm post COVID-19 in our societies as well. The question for the risk assessment is:

- Should coverings be compulsory in labs for staff? For students? For both?
- Are 'coverings' adequate, or should masks be used?
- Should the HEI provide the masks/coverings?
- Should they be disposed of after each session?

Workplaces should not encourage the precautionary use of extra PPE to protect against COVID-19 outside clinical settings or when responding to a suspected or confirmed case of COVID-19.

Unless you are in a situation where the risk of COVID-19 transmission is very high, your risk assessment should reflect the fact that the role of PPE in providing additional protection is extremely limited. However, if your risk assessment does show that PPE is required, then you must provide this PPE free of charge to workers who need it. Any PPE provided must fit properly.

We recommend this is adhered to as fully as possible.