Six Ways to Manage Lab Ergonomics More Efficiently

By Jessica Ellison and Ketil Jensen

Every laboratory safety manager enforces fundamental safety rules such as "use protective gloves" or "always wear safety glasses." Yet, repetitive strain injuries (RSIs) that develop over time are much harder to prevent and can be just as damaging, if not more so. In fact, work-related musculoskeletal disorders are the country's most costly category of workplace injuries and illnesses. In 2004 companies spent an estimated $510 billion to treat musculoskeletal disorders, according to the American Association of Orthopaedic Surgeons.

Preventing RSIs requires more than providing industry standard PPE. It requires evaluating each employee and his/her lab setup, analyzing how that employee uses equipment, determining where injuries may occur, and adjusting either the task or equipment. Managing these tasks and following up with at-risk employees can become overwhelming if the right resources and processes are not in place to address these factors consistently, economically and effectively.

Following are six practices for improving the efficiency and manageability of a laboratory ergonomics programs.

Look to the Data

In ergonomics programs, content is king. The more information that can be collected about the types of injuries that occur and the risk factors which lead to those injuries, the better chance your team will have of identifying potential solutions. However, it can be daunting to imagine having to analyze all the data after collecting it and leveraging those insights to make improvements.

Laboratory environments, with the demands of performing work differing from one department to the next and with the high rate of task variation, can make this step challenging. For example, a lab technician may perform a few hours of pipetting and sampling, writing reports and conducting an analysis. The next day's activities may consist of looking through a microscope for 4 hours. Yet, the way in which the technician uses standard equipment, such as a pipette, as well as how many hours per day s/he uses it, are key factors in determining whether that technician will eventually feel discomfort.

Safety managers can avoid treating costly injuries down the road by proactively assessing the risk of injury for each employee to determine how to most efficiently allocate limited resources. Five types of data are critical to capture during an assessment:

- which equipment the employee uses for each task;
- how often the employee uses the equipment;
- how the employee uses the equipment (as well as the head, neck, arms, hands and back postures engaged to perform each task);
- task duration.

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Using these data, safety managers should use a concrete, measureable risk assessment, such as rapid upper limb assessment (RULA) method or the NIOSH lifting equation, rather than subjective data (e.g., "this looks bad") to understand which tasks might lead to discomfort, the first sign of a possible injury. Then, they can better prescribe a safer way to perform each task.

Gathering the data from each assessment can be done in person and added to a spreadsheet. To achieve greater efficiency and accuracy, employees can perform a self-assessment using an online survey or software program that the evaluator can update following the in-person evaluation. Using software to manage assessments enables laboratory safety managers to collect data consistently and quickly, identify potential risk patterns across employees and jobs, and prioritize how they follow up.

Focus on Service Quality

A groundbreaking study published in the *Journal of the American Medical Association* showed there was a positive correlation between the quality of patient service, factors such as improved wait time and communication, and its subsequent impact on health outcomes (Kenagy, Berwick & Shore, 1999). This correlation might sound sensible to patients, but it is contrary to the discipline of medical practitioners, who perceive that health outcomes are driven by the technical accuracy of diagnosis and the effectiveness of available treatments. This insight into general medicine holds true in laboratory ergonomic programs as well.

Consider this example: At a major biotechnology corporation, 98% of employees completed online ergonomic self-assessments. However within a 2-year period, ergonomic injuries increased nearly 42%. The corporation's safety committee discovered that employees weren't implementing the suggested recommendations from their assessments, despite the fact that 16% of the population was at high risk of injury.

In response, the committee created an in-house task force consisting of varying levels of peers and managers, and trained each in basic office ergonomics setup so they could address the problem by bringing a more personal touch to the ergonomics program.

Each month, the safety committee assigned a task force representative to visit each employee identified by the online self-assessment system as having high or moderate risk of injury. The representatives observed an employee's work setup, provided feedback on posture, helped organize workflow and answered questions. The representatives also worked directly with employees to update their online assessment profile and risk score based on changes made to their work setup.

In just 7 months, the safety committee substantially improved employee assessment follow-through and engagement, and reduced the number of high-risk employees to less than 5% of the population. By providing more personalized service to at-risk employees, the group was able to prevent injuries more effectively.

Manage Ergonomics Process Implementation

Some lab managers know their environment can be risky and are familiar with some solutions for reducing risk, but they do not necessarily know how to create accountability or implement efficient

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corrective solutions. In these situations, consider these suggestions for how a team can stay accountable and manage ergonomics process implementation with limited resources:

- Prioritize and tackle the highest risk issues first. Using the assessment data collected, focus resources on employees most likely to develop an RSI; these cases will be more costly to treat once they are claims.
- Assign owners and create deadlines. Once priority issues are identified, keep the team accountable by assigning a deadline for each follow-up task and an individual responsible for its completion. Some companies keep track of tasks, owners and deadlines with a white board or Excel spreadsheet; others use software to automate and track completion of ergonomic evaluations and follow-up tasks.
- Implement a buddy system. If one team member is falling behind, pair that individual with another employee who is always ahead in fulfilling his/her tasks, so one can learn from the other and stay accountable.

Try Peer-Driven Programs

While inspiring employees to engage in their own safety and health can be effective, encouraging them to oversee and teach one another has proven influential in creating a culture of injury prevention and getting results. One 2005 EPA study of laboratory environmental management at university laboratories in New England found that at the University of Vermont, which reported a 40% turnover among laboratory workers each year, peer training proved more effective than training provided by management in reducing risk of injury.

For example, the ergonomics team for a leading biopharmaceutical company realized that many employees were unaware of the ergonomics program when it was overwhelmed with employees' requests for help after these employees felt discomfort. The safety management team implemented an educational campaign explaining where and how employees could receive job and task evaluations.

The team also created a task force that assigned a laboratory employee "peer champion" to interview employees within his/her department and gain further insight into the work, equipment or culture issues driving employee injuries.

These one-on-one peer conversations provided a safe environment for employees to share certain job details that a basic injury assessment might overlook, such as being asked to process 2,000 samples within a tight time frame. In turn, the consultations provided peer champions with valuable information about key issues and potential solutions that they could share with the management group.

This campaign empowered both employees and champions to make positive ergonomic changes to their own work environments, and more employees sought out ergonomic evaluations proactively as a result.

Additionally, the company's safety team was able to reduce injury rates and focus resources on proactive strategic planning instead of reactively responding to ergonomic injuries.

Add Engineering Controls

Engineering controls protect laboratory workers by improving the environments or equipment at the source of the risk, without relying on the skill or vigilance of technicians to perform the tasks safely. These controls also can improve productivity in laboratory environments where employees may feel pressure to complete experiments quickly and, therefore, might not follow safety rules and regulations as consistently.

By providing equipment that makes the tasks easier and removes associated risks, laboratories can avoid the cost associated with treating RSIs after they develop. Consider these examples of simple equipment changes that can make laboratory jobs safer and more efficient:

- Filling bottles. Instead of asking employees to manually pour liquid into bottles and enforcing short breaks, some laboratories have purchased a foot-pedal-operated machine that automatically fills bottles.
- Capping vials. To eliminate the frequent task of capping and uncapping vials, some laboratories have purchased a machine known as the "Capitator," which screws and unscrews caps, thus decreasing the risk of RSIs.

Measure Program Outcomes

Measurable outcomes are critical to ensuring that safety managers understand the effectiveness of their effort and continue to receive program funding and support. Several methods can be used to analyze whether laboratory ergonomic processes and programs are working, how they are reducing risk and how they affect the bottom line.

In addition to performing employee assessments and collecting discomfort data at the beginning of the program, other critical data must be compiled before one can measure the changes that lead to fewer injuries and lower costs. These data include:

- past illness and injury records, and time away from work (absenteeism) data (which can be gathered from the human resources department);
- past incremental expenditures on workplace injuries, including the purchase of optimal equipment;
- costs of the leading indicators of risks, including incidences of discomfort and first-aid cases;
- costs of lagging indicators of risk, including workers' compensation claims, lost workdays, salary to temporary workers covering shifts and increased insurance premiums;
- engineering controls, including whether employees are using what they have been issued.

Once these data are collected, you have a baseline for measuring them, determining how to act on these data and where to direct resources to achieve the greatest benefit.

References

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