

Repetitive stress in pre/post analytical tasks

By Reda Iskarous

In 2000, OSHA's Assistant Secretary, Charles Jeffress, offered the following words of wisdom, "Work-related musculoskeletal disorders (MSDs) are the most widespread occupational health hazard facing our nation today. Nearly two million workers suffer work-related musculoskeletal disorders every year, and more than 600,000 lose time from work as a result. Although the median number of lost workdays associated with these incidents is seven days, the most severe injuries can put people out of work for months and even permanently impact their ability to perform their job. In addition, \$1 of every \$3 spent on workers' compensation stems from insufficient ergonomic protection. The direct costs attributable to MSDs are \$15 to \$20 billion per year, with total annual costs reaching \$45 to \$54 billion. Yet today, fewer than 30 percent of general industry employers have ergonomics programs."¹

In 2004, the average age of a certified medical technologist was 43.7 and was aging at a 78 percent faster rate than the entire U.S. labor market.² Repetitive Stress Injury (RSI) knows no age, but with a growing average age of personnel in the clinical laboratory, the problem continues to compound.

Three major areas of concern

Today, the three major areas of concern in exposure to RSI in the clinical laboratory are: (1) manual pipetting, (2) manual decapping, and (3) manual recapping. Fortunately, there are now companies that design and manufacture automated bench top decappers and recappers. As a result, the conversation is rarely about RSI thanks to automation in the laboratory environment. As reported in the January 2012 Center for Disease Control and Prevention's MMWR (Morbidity and Mortality Weekly Report) regarding manual removal of sealed caps, "Several manufacturers market safety devices to help remove caps from tubes (e.g. the Pluggo from LGP, Wood River, IL). Also use automated and semi-automated pipettes and safety transfer devices."³

Tasks such as recapping and decapping sample tubes can irritate tendons and ligaments in the wrist. Over time, these motions take their toll and could permanently damage nerves in the hand. In *Efficiency, Safety, and Profitability*, the authors state, "Treating this type of injury is costly, to say the least. The estimated tab for non-surgical carpal tunnel treatment is \$3,500. Surgery brings the total closer to \$20,000. For a long-term disability, the expense could reach \$100,000."⁴

According to an AABB Abstract from Blood Systems Laboratories, "A single employee unable to work due to RSI such as Carpal-Tunnel Syndrome (CTS) can result in the disbursement of thousands of dollars in worker's compensation. One cause for CTS is the repetitive motion of decapping sample tubes. The Red Cell Serology (RCS) laboratory decaps over 1.5 million donor sample tubes annually. The average RCS technician decaps between 800 to 1000 tubes per shift."⁵

Angelo DePalma, PhD, writes in a piece for Biocompare; "Injuries resulting from pipetting are among the most common laboratory RSIs. You've probably heard of carpal tunnel syndrome, a disorder affecting the wrists that is also common among typists. Carpal tunnel causes pain, numbness, and tingling in the hands and fingers that limits your

ability to grip everyday objects. Unfortunately carpal tunnel is just one of several RSIs caused by strained or damaged muscles, nerves, tendons, ligaments, joints, and cartilage as a result of many repeated actions sustained over a long period of time. The risk of incurring such injuries varies greatly among lab workers but is related to the degree of repetition and force demanded of specific operations."⁶

Finding solutions to minimize or alleviate possible RSI from manual tasks needs to be at the forefront of issues at the workplace. "Repetitive motion injuries are a significant cause of lost work time, medical expenses, and worker's compensation claims in the U.S. A single employee unable to work due to repetitive motion injury can result in thousands of dollars in worker's compensation claims and medical bills. Over 15,000 cases per year of healthcare workplace acquired CTS/tenosynovitis are reported annually to the Department of Labor."⁷

The question is: are we to go out of our way to find methods to protect our workforce? Kris Kyes puts it very eloquently in a piece for *CLP*; "No laboratory would expose its staff to the risk of blood-borne illness in the course of daily routine, obviously. The risk of infection, therefore, is tied to the risk of an accident that places the worker in direct contact with blood. Reducing the risk of accidents is the purpose of improving safety."⁸

The answer is, yes. As suggested earlier by the CDC, there are solutions out there that are cost effective while being productive and efficient at the same time. It is our task, if not our responsibility, to find fitting solutions to limit and eliminate the exposure to RSI in the laboratory workplace. 📌

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