March 9, 2023

To: Laura Buhlmann, Lab Regulatory Compliance Specialist
Kathline Castillo, Manager Lab Hematology

RE: Bridgeport Hospital Lab Ergonomic Evaluation Report

Overview: Please review my findings and suggestions of improvement below.

General overview of computer workstations equipment.

Opportunities for Improvement	Suggestions/Solutions
1. **Chair:** • Employees do not fully understand how to adjust the ergonomic controls of the desk or countertop style chairs. Some counter height chairs, and desk chairs are used interchangeably, and employees do not appreciate the difference of intended use. • Seat heights are ergonomically adjustable. • Footrests, most workstations have them available if needed. • Seat pan depth are adjustable in most chairs. • Seat pan tilt: most chairs are neutral or can tilt retro. Very few have an anterior tilt and that is fine. • Backrest lumbar support have set thickness but are adjustable for height. • Backrest tilt most are upright but can recline and are able to lock in multiple angles. • Armrests, most have adjustable armrests for height, width, and some for angle.	1A. The chairs are ergonomically adjustable, but the employees consistently do not know how to operate the adjustments. Strongly recommend an in-service to train employees in the operation of the chair adjustment controls. In addition, education concerning ergonomic neutral positions, why they are important and how they vary depending on the individual employee's needs. There are enough of the proper height chairs around, but they need to be placed in the proper locations. 1B. Purchase and have available footrests when shorter employees are working on the desk/counter tops and the chair is required to be higher. 1C. Long term look to replace stationary work surfaces with electronically powered adjustable table surfaces. This can eliminate the need to retrofit workstations with footrests and keyboard trays, while affording employees the opportunity of changing positions from sitting to standing.
2. **Keyboard**: • Few have keyboard trays, and most are on top of the desk/counter tops. • Have wrist rests, mostly no, but currently no complaints of contact pressure pain. • Height was often too high due to a low chair position and placement of keyboard on top of the desk/counter tops. • Tilt was fine, mostly upward, or flat. • Depths are fine but at times too far away to allow for writing o the counter tops. • Can be centered on the "J" key, or the middle of the keyboard.	2. Same as suggestion 1A, but specific to keyboard position adjustments.
3. **Mouse:** • Few have mouse trays, and most are on top of the desk/counter tops.	3. Same as suggestion 1A, but specific to mouse position adjustments. .

Opportunities for Improvement	Suggestions/Solutions
• Mouse pads, mostly no, but no reported complaints of pain resulting from contact pressure. • Wrist rest, mostly no. • Height was often too high due to a low chair position and placement of mouse on top of the desk/counter tops. • Depths are fine but at times too far away.	
4. **Monitor(s)**: 1 mostly, but occasionally 2. • Monitors heights in general are too high. • Monitor tilts tend to be too flat. • Depth tends to be fine. • Monitors tend to be centered, but sometimes to make space for paperwork they are positioned off to one side. • Eye wear: Varies and depending on the employees' needs and will affect the positioning of the monitor.	4. Monitors tend to be positioned too high and angled too flat, and long term these positions can have a negative effect with the development of cervical and upper extremity pathologies. Same suggestion as suggestion 1A, but for monitors.
5. **Phone:** • Has a headset? Mostly no but there is not much computing while on the phone in the lab area. • Has a handset wedge, no. • Needs to type while on the phone, no.	5. None
6. **Copy holder:** • Has a copy holder, mostly no.	6. Over all none, but the occasional purchase of a copy holder may be helpful to some employees.
Overall, the chairs, keyboards, mouse, footrests, and monitors are all ergonomically adjustable. Further training concerning the importance of setting workstations to the employees' ergonomic neutral would be helpful. Long-term upgrading of worksurfaces would be helpful in allowing for further ergonomic adjustability. Many of the old workstations have drawers that limit height adjustability of the chairs, but most of those station have been converted to partial use standing stations. Upgrade to lab benches would be a major capital project.	

Specific Area Assessments:

1. **Central Processing Area (send out area):**
    a. Findings:
        i. A countertop height work area with 1-computer workstation. The chair is of countertop height and in line with our ergonomic furniture standard for adjustability. Computer is fully adjustable.
        ii. A second computer workstation was converted to a standing centrifuge workstation at a proper standing height.

    b. Recommendations: Ergonomic in-service focused on proper computer workstation alignment.

2. **Central Lab Processing Area**

a. Findings:
    i. A desk height, built in countertop around 3 sides of the room with 6 workstations spread throughout the countertop. One of the 5 workstations is the BCA downtime computer.
        1. All have ergonomically adjustable chairs, adjustable monitor stands, keyboards, and mouse set ups on top of the countertop. Previously some monitors were raised on monitor risers, but all the monitor risers have been removed as previously recommended.
        2. Each has a desk style ergonomically adjustable chair, except for the BCA downtime computer, which is not used as a standard workstation.
    ii. Another workstation is at a countertop height. It has an appropriate countertop height chair with a foot ring that meets the ergonomic furniture standard. The computer components are all adjustable.

b. Recommendations: Ergonomic in-service focused on proper computer workstation alignment.

3. Chemistry:

a. Findings:
    i. Label scanner holders throughout, which eliminate hold on the scanners and pulling the triggers.
    ii. Electronically adjustable tables that can rise from sitting to standing position heights. They are also programmable for 3 different employee set ups.
    iii. 8100 “The Line” is an automated testing machine. The keyboard/mouse tray is set too high to allow printer access. It is angled too far forward. I adjusted it flat and lowered it. Height is adjustable. The monitor is too high, especially for someone with progressive or bifocal lenses. Not an abundance of time is required for the machine set up.
    iv. 502/602Roche computer stand has the same issues as the 8100.
    v. 411 is used infrequently, has an adjustable chair and the ergonomics are fine in this area.
    vi. Radiometer counter is countertop height with a drawer under the countertop, which makes sitting at the countertop with the proper chair difficult because the drawer does not allow the person to rise high enough to work ergonomically at the counter because the drawer obstructs the person’s legs. There is now a counter height chair available, but mostly used as a standing station.

b. Recommendations:
    i. Training about the 8100 and 502/602 ergonomic adjustability functions concerning the monitors and keyboard/mouse trays.
    ii. Long term when this area is redesigned then replace the counters of the Radiometer with adjustable electronically controlled tables. Until then use the station as a standing station.

4. Immunology:

a. Findings:
    i. One workstation with the same situation as within chemistry with the counter tops having drawers beneath the countertop where computers are located. The countertop height chairs are appropriate, but the drawers restrict the ability of raising the chairs high enough for using a keyboard on the countertop by blocking the employee legs. It appears that the drawers may not be able to be removed.

ii. One lower workstation that is fully adjustable for chair, monitor and keyboard/mouse issues.
iii. Storage pallets have been replaced with lengths that do not stick out as trip hazards, an improvement. However, they still take away foot space from employees working at the sitting workstations. Where employees sit for longer periods at the computers the foot areas have been cleared out more constantly.
iv. Other counters have 2 workstations total but have a drawer or 4-inch cross bar beneath it that obstructs the legs and inhibits a chair from raising to an appropriate work level.

b. Recommendations:
i. Short term: use the one sitting workstation as the primary sitting station.
ii. Long term when space is redesigned replaces the counter tops with electronically controlled tables allowing them to be adjusted to sitting and standing workstation heights. No drawers.
iii. Continue to find alternate storage areas to improve leg space at sitting workstations.

5. Histology-IHC:

a. Findings:
i. The buffer spill tray on the floor no longer sticks out too far, reducing the trip hazard. It also requires one working at that standing workstation to reach out for the keyboard and mouse.
ii. Bond IHC Stainer has a new ergonomic chair, Amia by Steelcase.
iii. The second IHC special stain station is a standing workstation and ergonomically fine.
iv. Imbedding stations (2):
1. Both use the laptop and ergonomic arm but are often left in an elevated position requiring vertical reaching.
2. Chairs are ergonomically appropriate.
3. Recommendations:
a. See V4 as they are the same.
v. Microtome stations (6):
1. A mix of appropriate chairs; three hospital ergonomic standard desk task chairs (Amia) and three countertop height chairs with foot rings.
2. Adjustable arms for holding the laptops. These arms are not being used to their full ergonomic advantage and are often left positioned too high.
3. Microtome cutting stations: Stations that utilize laptops attached to metal arms allow movement, but all are positioned too high for the keyboard and monitor use and off to the right side of each station resulting is some neck and torso twisting. The mouse is placed on the counter tops and employees are continuously reaching outward and upward to use them. The printer label machines are positioned high or to the side requiring some reaching. There is a foot pedal to operate the shaver, which is a nice addition.
4. Recommendations:
a. Long term a redesign of the entire microtome cutting area. This area should be redesigned first. Suggest researching what other healthcare networks do in their labs. Facilities Design and Construction needs to be involved in the redesign. Major ergonomic attention to heights and equipment proximities. Long term, replace the counters with adjustable tables that allow seated and standing work abilities. Consider wrap around style workstations to allow the employee to

pivot/rotate on chair to go between computer entry, microscope and wax slide slicer and label machine.

b.

c. Short term microtome cutting area, use footrests where appropriate when the employees' feet dangle. Lower the laptops and label printers to more appropriate heights.

d. Grossing area: remount the keyboard tray to allow for better adjustability. Use the pivot movement of the chair to turn to use the keyboard instead of reaching. Lower the monitors.

vi. Histology intake has 2 desk stations: All adjusted to proper ergonomic levels.

vii. Grossing area:

1. 3-hoods
2. 2 countertop height chairs.
3. One of the computers set ups (wall mounted track) is broken and needs to be fixed.
4. They use voice recognition for hands off use of computer and really like it.
5. Recommendations:
   a. Need one additional higher counter chair with foot ring. They like the lab style and not the Amia style, as they think it is too big.

6. Hematology:

a. Findings:

i. All computer work stations (4) are ergonomically adjustable.

ii. The Coags machine set-up station (2), have a low keyboard at a standing station. Not a lot of time spent at these keyboards.

iii. Nonporous storage pallets get in the way of the employees' legs while at the sitting stations (4).

iv. The fluid differential work areas (3) are ergonomically adjustable. One station still has the drawer that limits height adjustability, but this station has low use and would require long term planning to correct this issue.

b. Recommendation:

i. Raise the keyboards at COAG stations.

ii. Remove storage pallets to provide better leg room at the workstations.

7. **Blood Bank:**

a. Findings:

i. All workstations were ergonomically adjustable.

b. Recommendations:

i. The monitors were lowered and tilted upward.

ii. Need new keyboard trays that are wide enough to hold a keyboard and mouse.

8. Microbiology:

a. Findings:

i. Room 1: 1-ventilation hood and a computer workstation.

ii. Room 2: 2-ventilation hoods, 1 bench with a microscope and one computer workstation.

iii. Room 3: 3-computer workstations.

iv. Room 4: 1-ventilation hood, 1-computer workstation and 1-microspope area.

v. The same issues remain in some areas with the countertop drawers getting in the way of legs when trying to work on counter tops in countertop style adjustable chairs. This is because of older style benches.

b. Recommendations:
    i. Long term: replace the counter tops that have the old-style drawers with adjustable height tables without drawers.

9. Cytology

a. Findings:
    i. Screening/cytology:
        1. 1 desk height workstations.
        2. Computers and monitors are adjustable.
        3. Stool for sitting.
        4. Has a footrest.

b. Recommendations:
    i. Purchase an Amia task chair for a seated workstation with a 7-inch pneumatic height range and covering appropriate for the lab.

Inservices for proper use of chairs and proper set-up of workstations will be scheduled. Chairs will be ordered.

If I can be of further assistance, please feel free to reach out to me.

Sincerely,

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Attachments: Sitting Computer Workstation Set Up Instructions
Standing Computer Workstation Set Up Instructions