

Health Science

General Considerations

Be aware of courses that have a maximum enrollment of students.

Ensure there is adequate space in the classroom or work area (keeping the student/teacher ratio low) and that lab space is located in the classroom or in an adjoining room whenever possible.

Safety is an important part of any occupation, but a healthcare worker has a special obligation to be concerned about the safety of a patient. Because healthcare occupation training takes place in the classroom/lab and in a clinical setting, consider specific safety practices for each area.

Common hazards that teachers and students face in the health science program area are:

- infection and other potentially infectious materials (OPIM);
- cold sterilization chemicals;
- needles and sharps containers;
- bloodborne pathogens;
- radiation; and
- exposure to chemical fumes and materials.

In addition, it is important to restrict who is permitted to have contact with patients. No one is to be permitted to work if he/she has:

- an infectious, contagious, or communicable disease;
- a fever;
- other suspicious symptoms; or
- an inability to perform a task safely due to a lack of psychomotor skills, ethics, critical thinking skills, or any other reason.

Tools and Equipment

Classrooms must include an area that can be locked and used to store chemicals, PPE, special equipment, and tools. Equipment and materials must be clearly labeled.

Some important tools for health science courses, along with the hazards associated with each, are as follows:

- Autoclave:
 - Used to sterilize equipment and supplies by subjecting them to high-pressure saturated steam at 121°C (249°F) for 15-20 minutes (depending on the size of the load and the contents)
 - Hazard—potential exposure to hot steam and burns
- Needles:
 - Hazard—needle sticks
 - Needles must be handled safely and kept in a locked area
 - Proper documentation
- Sharps container:
 - Proper disposal
 - Do not overfill the container
 - Follow specific guidelines, e.g., [Environmental Protection Agency \(EPA\) options for sharps disposal \(https://www.epa.gov/rcra/medical-waste#sharps\)](https://www.epa.gov/rcra/medical-waste#sharps)
- X-ray unit:
 - Hazard—live radiation

- Master power switch must be in a locked area
- Technician must ensure the patient is wearing a lead apron

The teacher must always be present when using health science equipment, and all users must follow the manufacturer's instructions. Restrictions concerning the operation of tools or equipment include the following:

- Authorized teachers must supervise students.
- Hazardous equipment, tools, and chemicals must be locked when not in use.
- All federal and state guidelines must be followed.

For more information, refer to the following resources:

- OSHA Hospital eTool (<http://www.osha.gov/SLTC/etools/hospital/index.html>)
- Occupational Hazards in Long Term Care Nursing Home (<https://www.osha.gov/nursing-home/hazard-solutions>)

Facilities

Health Science programs must ensure maximum safety conditions for all personnel. Safety in the lab and the classroom must be taught and reinforced throughout the year. Make notations in the daily lesson plans for each instructional act regarding safety and maintain a record (log) for each class to document the specific topics of safety instruction and the dates on which they were taught.

Classroom/Laboratory

- Listen to and follow lab directions as outlined by the instructor before each lab. Read the lab instructions and ask clarifying questions if needed.
- Never work on a laboratory experiment without the presence of an instructor.
- Horseplay or practical jokes cause accidents and, therefore, have no place in the classroom/lab.
- Cellphones are to be stored according to school policy or at teacher discretion.
- No food or drink in the lab.
- You must wear appropriate safety equipment (PPE). Shoes must be worn that cover the entire foot. Tie hair back. Make sure sleeves and other clothing are not loose.
- Exercise care in handling equipment and solutions.
- Check labels three times before contents are used; and discard unlabeled bottles.
- Some solutions can be injurious or poisonous; therefore, avoid contact with eyes and skin. Use only as directed.
- Report and attend to the immediate removal of spilled liquids, broken glass, and other hazards as directed by your instructor.
- Have the phone number to Poison Control posted. (1-800-222-1222)
- While working with a partner in patient simulations, observe all safety precautions taught in caring for a patient.
- Always use proper body mechanics when lifting or moving things.
 - Maintain a broad base of support by keeping the feet 6-8 inches apart.
 - Use the stronger and larger muscles of the body. These are the muscles of the shoulders, upper arms, thighs, and hips.
 - Bend from the hips and knees to get close to an object.
 - Use the weight of the body to help push or pull an object. Whenever possible, push or pull rather than lift.
 - Carry heavy objects close to the body.
 - Avoid twisting the body while working. Turn the feet and entire body and face the direction of the work being done.
 - Avoid unnecessary bending, reaching, and bending for long periods of time.
 - Get help from a partner or coworker to move heavy objects or patients whenever necessary.
- Keep electric cords to electric beds, sterilizers, and other equipment in good repair and have ground connectors.
- Equip wheels on beds, stretchers, and wheelchairs with locking devices.
- Place the crank on an adjustable bed under the frame so that it is out of the way.

- Do not operate or use any equipment until instructed on its proper use.
- Observe fire safety procedures.
- Know the evacuation route for responding to a fire alarm.
- Know the location of and how to operate a fire alarm and fire extinguishers.
- Clearly mark all exits with exit signs.
- Know the procedure for responding to all types of school emergency alarms.
- Teachers/instructors need to be aware of any student allergies or color blindness.

Laboratory

Maintenance of Lab and Equipment

- Regularly inspect safety stations and first-aid equipment.
- Replace used items and make any needed repairs. For safety shower and eyewash stations, notify the administration of any hazardous condition (e.g., malfunctioning safety equipment).
- Never use defective equipment.

Recordkeeping

- Keep a log of staff safety and hazardous-materials training as required by the school administration.
- Consider the use of a lab safety contract/agreement outlining the rules and expectations of lab participation. Have both student and parent/guardian sign.
- Keep records of all lab incidents for as long as required by school administration or law.

Safety and Emergency Procedures

- Educate students on the location and use of all safety and emergency equipment before any lab activity.
- Know the steps to take in the event of a spill.
- Provide students with written safety procedures, and orally review what to do in an emergency.
- Keep a list of emergency telephone numbers in a visible location including Poison Control (1-800-22-1222).
- Conduct appropriate safety and evacuation drills regularly.
- Explain in detail the consequences of violating safety rules and procedures.

Maintenance of Chemicals

- Regularly inspect chemicals and other supplies. Annually update the chemical inventory and discard any leaking, damaged, empty, or unlabeled containers according to protocol.
- Maintain a copy of the chemical inventory for local emergency responders.
- Do not allow any food, drink, or personal-care products in the health and medical sciences lab at any time.
- Ensure that chemicals not currently in use are properly segregated and stored. Maintain limited access to chemical storage areas and be sure to display the proper placard and warning signage.
- Know the storage, handling, and safety requirements for each chemical used.
- Properly dispose of all chemicals and chemical waste. Consult the label and the SDS for disposal information and always follow appropriate chemical disposal regulations.

Clinic/Experiential Learning Place

- Always observe the rules for proper body mechanics as outlined in the previous section on classroom/lab safety. Proper medical aseptic techniques must be followed.
- Observe personal hygiene measures.

- Wash hands before and after giving patient care, after urinating or having a bowel movement, and before handling or preparing food.
- Use appropriate personal protective equipment.
- Hold linens and equipment away from your uniform.
- Avoid shaking linens and other equipment; use a damp cloth to remove any dust.
- Clean from the cleanest area to the dirtiest area.
- Clean away from the body and uniform.
- Pour contaminated liquids directly into sinks or toilets.
- Do not sit on the patient's bed, to avoid picking up microorganisms and transferring them to other surfaces.
- Do not take equipment from one patient's room to use for another patient, even if the equipment is unused.
- Properly clean, disinfect, and/or sterilize material and equipment used by one person before reuse.
- Maintain method of isolation recommended for a patient.
- Exercise care in handling equipment and solutions as outlined in the section on classroom lab safety.
- Identify the patient accurately.
 - Call the patient by name.
 - Check identification wristbands.
 - Check the name on the patient's bed or record.
- Do not perform any procedures on patients unless instructed to do so. Always have proper authorization before performing procedures.
- Put the patient's possessions in a safe place. Encourage family members to take care of any valuables.
- Refer to the HIPAA Code of Conduct (<https://aspe.hhs.gov/report/health-insurance-portability-and-accountability-act-1996>).
- Refer to *HHS: HIPAA Basics for Providers: Privacy, Security, and Breach Notification Rules* (<https://www.cms.gov/outreach-and-education/medicare-learning-network-mln/mlnproducts/downloads/hipaaprivacyandsecurity.pdf>).

Common hazards or accidents that occur in healthcare facilities are:

- spills and splatter, such as
 - water,
 - chemical, and
 - other potentially infectious materials (OPIM);
- burns;
- dermatitis;
- parenteral sticks;
- cuts and lacerations.

Report any incidents related to these hazards to a supervisor or instructor. Attend to the incident as directed.