Teaching High-Risk Clinical Competencies: Simulations to Protect Students and Models

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STUDENTS IN ATHLETIC TRAINING education programs (ATEPs) are required to learn and practice clinical skills that can involve potential exposure to infectious bodily fluids.[1] To ensure that students are acquiring clinical skills and competencies in the appropriate professional framework, ATEPs are required to demonstrate that the students are "learning over time." The NATA Education Council defines learning over time as the documented continuous process of skill acquisition, progression, and student reflection. "Assessment of learning over time is built around multiple indicators and sources of evidence such as observations (student affective behaviors, interviews); performance samples (clinical skill demonstration); and tests or test-like procedures."[2] In order for an ATEP to meet these criteria it must provide multiple opportunities for students to practice and demonstrate their proficiency in skills that might put them at risk of exposure to blood-borne pathogens.

The risk of students being exposed to blood-borne pathogens during clinical training in medical, nursing, and other health programs has been reported in the literature. Rates of needlestick injury have been reported to be from 13.9%[3,4] to 30%[5] among nursing and medical students. The potential for exposure to bodily fluids in the practice of athletic training has also been documented in the literature. In a study by Middlemas et al.,[6] the rate of exposure to potentially infectious bodily fluids by certified athletic trainers was reported to be 12.9 per 100 athletes participating.

The purpose of this column is to present examples of two methods of teaching and assessing clinical competencies that involve potential exposure to blood-borne pathogens. The simulations suggest ways to minimize the risk to both the student and the model while providing some degree of realism.

Simulation 1: Bleeding Control, Management of Open Wounds, Universal Precautions

Providing realistic opportunities for controlled practice and evaluation of student proficiency on skills involving open wounds is difficult. To reinforce the importance of universal precautions and the consequences of poor or improper technique, we use the following simulation.

Equipment Required

- Wound-care supplies (gauze pads, bandages, roller gauze, tape, etc.)
- Personal protective equipment (latex or plastic gloves, etc.)
- Ketchup bottle with plastic tubing
- Ketchup

Procedure

Open wounds of varying sizes can be simulated at multiple sites by placing ketchup on the model at the location of the wound to imitate blood. Students can then perform wound-care procedures on the model. Bleeding wounds can be simulated by using a small-diameter plastic tube from the ketchup bottle to the wound site (Figure 1). With this technique students can demonstrate bleeding-control measures without

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Figure 1 Management of bleeding wound.

actual exposure to blood. In addition, they can demonstrate infection-control skills such as glove removal and disposal of hazardous-waste materials without risk of infection.

Simulation 2: Blister Care

One of the clinical skills required of athletic trainers is the management of fluid-filled blisters. Blister care might include lancing and draining serous fluid from the blister.[7] Because this simulation involves the use of sharps, it is important to be aware of the safety concerns involving the student and the model. This technique is designed to help minimize risk to all involved.

Equipment Required

- A piece of nonporous moldable thermoplastic large enough to cover the area on which the blister will be simulated, or a heel cup.
- Glad Press'n Seal Sealable® plastic wrap. (It is important to use this product because of its ability to make a completely sealed pouch of any size that does not leak.)
- Ice cube.
- Cloth tape.
- Scalpel.
- Gauze pads.
- Personal protective equipment (latex or plastic gloves, etc.).

Procedure

The materials for this simulation need to be assembled ahead of time.

1. Using a piece of the thermoplastic, make a mold of the area on the model for the simulation. In our example we are using the posterior aspect of the heel. Multiple molds will be needed for practice involving multiple students.
2. For each simulation cut two pieces of the Press'n Seal approximately 1 in. larger in diameter than a small ice cube.
3. Place the ice cube in the center of one of the pieces of plastic, cover it with the other piece and firmly press the edges together. Set this assembly aside until the ice cube melts.
4. After the ice cube melts you will have a fluid-filled pocket to use to simulate a blister (Figure 2). This "blister" can then be taped to the outside of the mold or a heel cup for practice.

The assembled molds and "blisters" can then be placed over the model's heel, and blister lancing or aspiration can be practiced without the risk of piercing the model's skin.

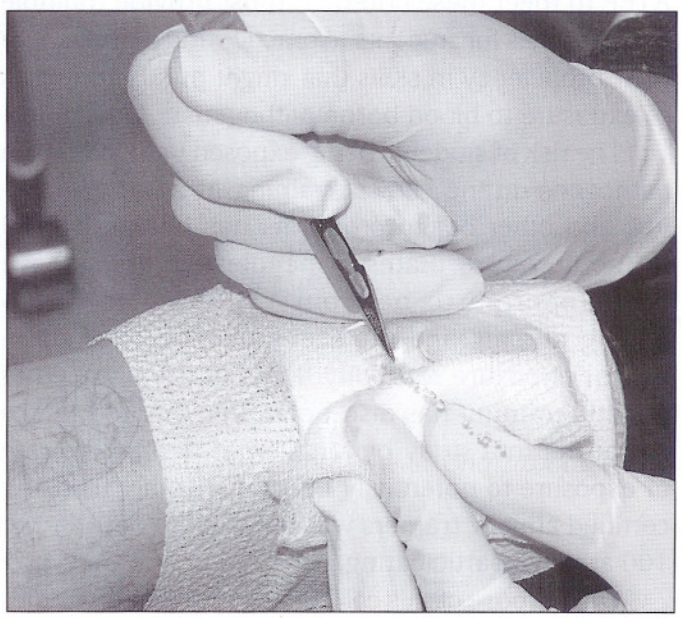

Figure 2 Blister draining.

Summary

It might not be possible to provide all athletic training students with actual injuries during their clinical education on which they can demonstrate a particular skill. If not, the athletic training educator should provide clinical simulations that minimize the risk of exposure to blood-borne pathogens for the student and the model. Structured training and practice have been shown to help reduce or prevent the occurrence of needlestick injury and other exposure to blood-borne pathogens.[3,8]

We present these simulations to help health-care educators and clinical instructors use readily available materials to provide clinical simulations that are safe for everyone involved. Having a variety of safe alternatives to simulate high-risk clinical skills and competencies helps educators assess learning over time in their students. ▮

References

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