

Using Scenario-based Learning for Education on Standard Operating Procedures

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Background

According to U.S. Pharmacopeia (USP) Chapter <797>, "Personal hygiene and garbing are essential to maintain microbial control of the environment...Individuals entering a compounding area must be properly garbed and must maintain proper personal hygiene to minimize the risk of contamination to the environment and/or compounded sterile preparations (CSPs).“¹ To ensure proper steps are taken by each employee, the Division of Pharmacy created a standard operating procedure (SOP): *Pharmacy IV Room SOP: IV-23 Handwashing and Garbing Standard Operating Procedure (SOP)*. This content is incorporated in education for sterile compounding personnel that consists of instructional online content with traditional active learning methodology including pre- and post-assessments. Despite passing scores on biannual education and annual validation, compliance with the handwashing and garbing SOP in the pharmacy sterile compounding areas remains inconsistent. Noncompliance can result in both regulatory and infection control issues along with product contamination, which ultimately will have a negative impact on patient care.

Objectives

The Pharmacy Continuing Education Program (PCEP) Team was tasked to develop a focused educational activity to reinforce the handwashing and garbing SOP. The goals of this educational initiative were to:

- Reinforce knowledge of the handwashing and garbing SOP.
- Identify steps that require additional clarification.

Methods

Behavior change and learner motivation were key elements emphasized in the planning and development of the activity. Therefore, the focused educational activity was developed using scenario-based learning (SBL), an educational tool that uses inductive learning. SBL influences emotions, which is essential in behavioral change. It also motivates learners based on Keller’s ARCS model: attention, relevance, confidence, and satisfaction.² In this environment, the learner is exposed to and acts on a series of experiences, reviews responses to those actions, and reflects on the consequences.³

Qualtrics was used to develop the SBL due to its ability to provide question-level reporting. The web-based scenario consisted of 11 questions and gave staff the ability to follow a regulatory surveyor and assist a staff member with the handwashing and garbing process. (See Figures 1 to 3.)

All pharmacists and pharmacy technicians whose responsibilities include preparing or overseeing compounded sterile preparations (i.e., ATC, HALs, Inpatient) were required to complete the educational activity from November 3, 2022, to December 1, 2022. Assessment scores and question-level reporting were analyzed to measure knowledge of the SOP and identify steps in need of further clarification.

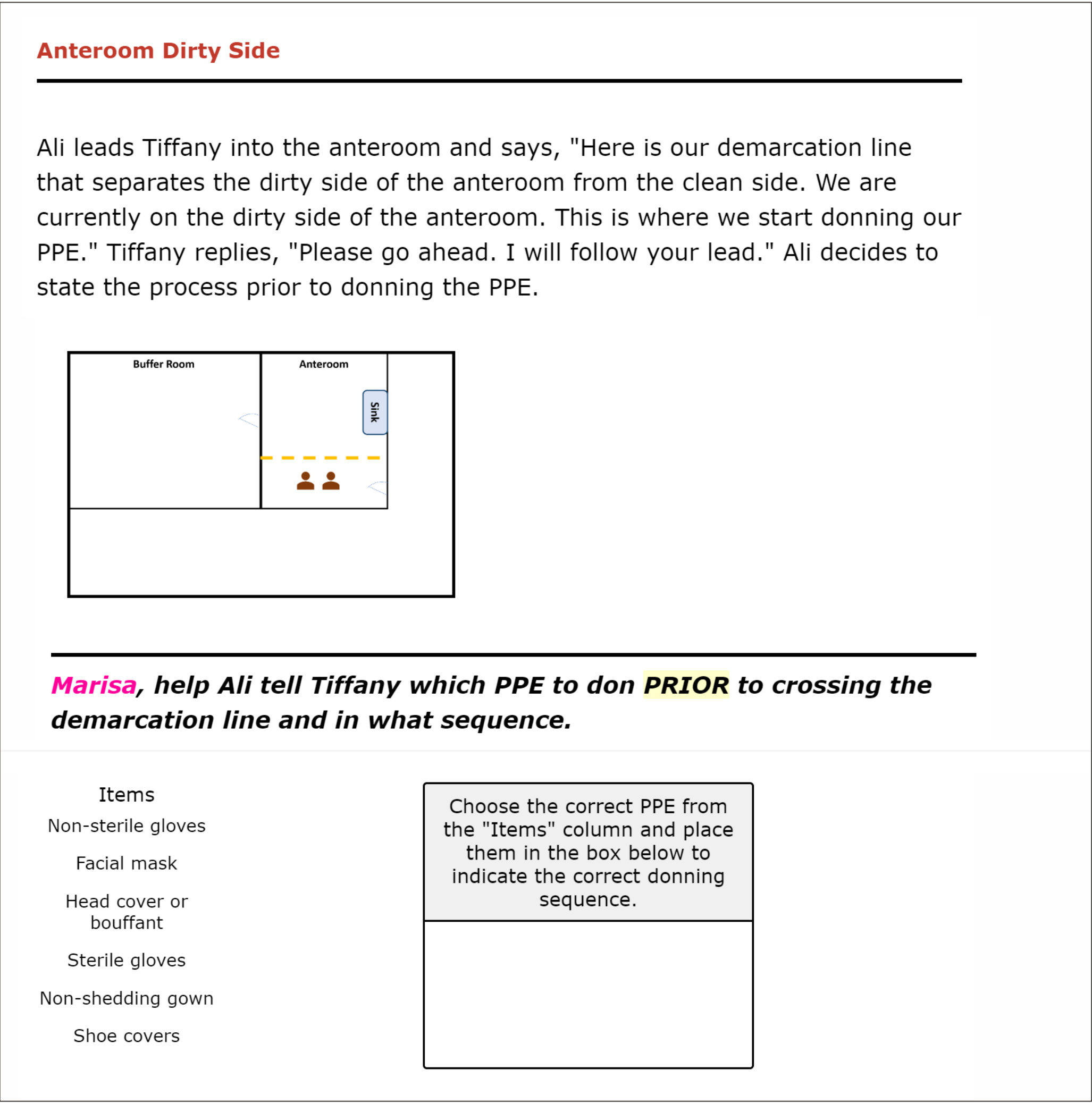


Figure 1. Drag and drop question.
Within the scenario, the pharmacy technician, Ali, is being observed by Tiffany, a Joint Commission surveyor. The learner (e.g., *Marisa*) is assisting Ali with his garbing technique in this question.

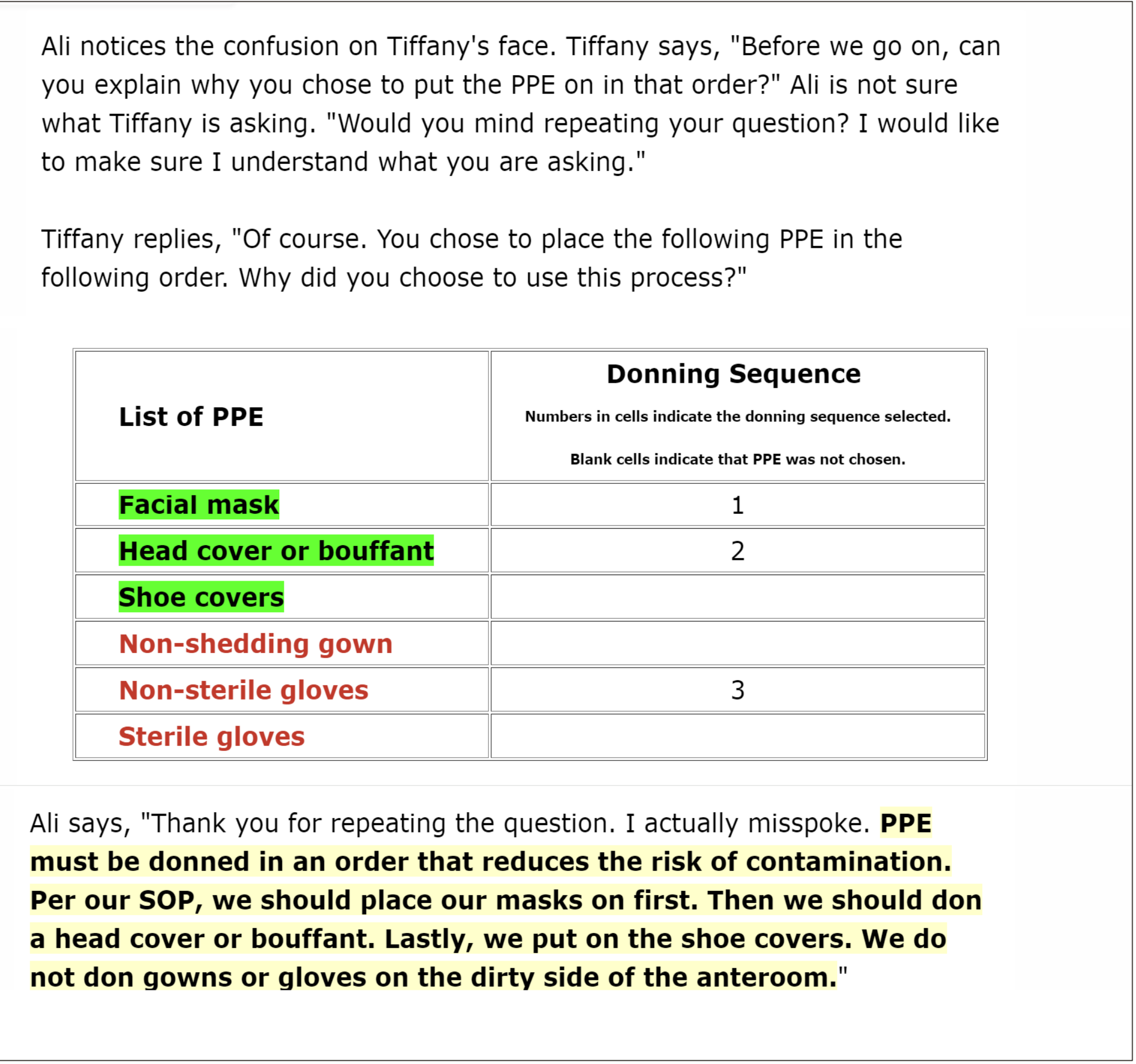


Figure 2. Drag and drop feedback.
Learners are given feedback based on the actions taken from the previous question. At the end of the scenario, the total compliant/noncompliant score is given to allow learners the time to reflect on consequences.

Question	Correct (%)	Incorrect (%)
Can learners identify what items are prohibited in the anteroom per SOP?	57	43
Can learners identify correct PPE and in what sequence?	51	49
Can learners identify proper garbing via video?	31 – 54	
Is video compliant or noncompliant? (Answer: Noncompliant)	54	46
What part of video is noncompliant? (Answer: Bouffant and shoe covers)	31	69
Can learners identify gowning is compliant?	46	54
Can learners identify handwashing is not compliant?	81 – 92	
Is video compliant or noncompliant? (Answer: Noncompliant)	92	8
What part of video is noncompliant? (Answer: Remove debris from fingernails, Wash hands and arms, Rinse hands and arms)	81	19

Table 1. Results (n = 311)
Percentage breakdown of learners per question.

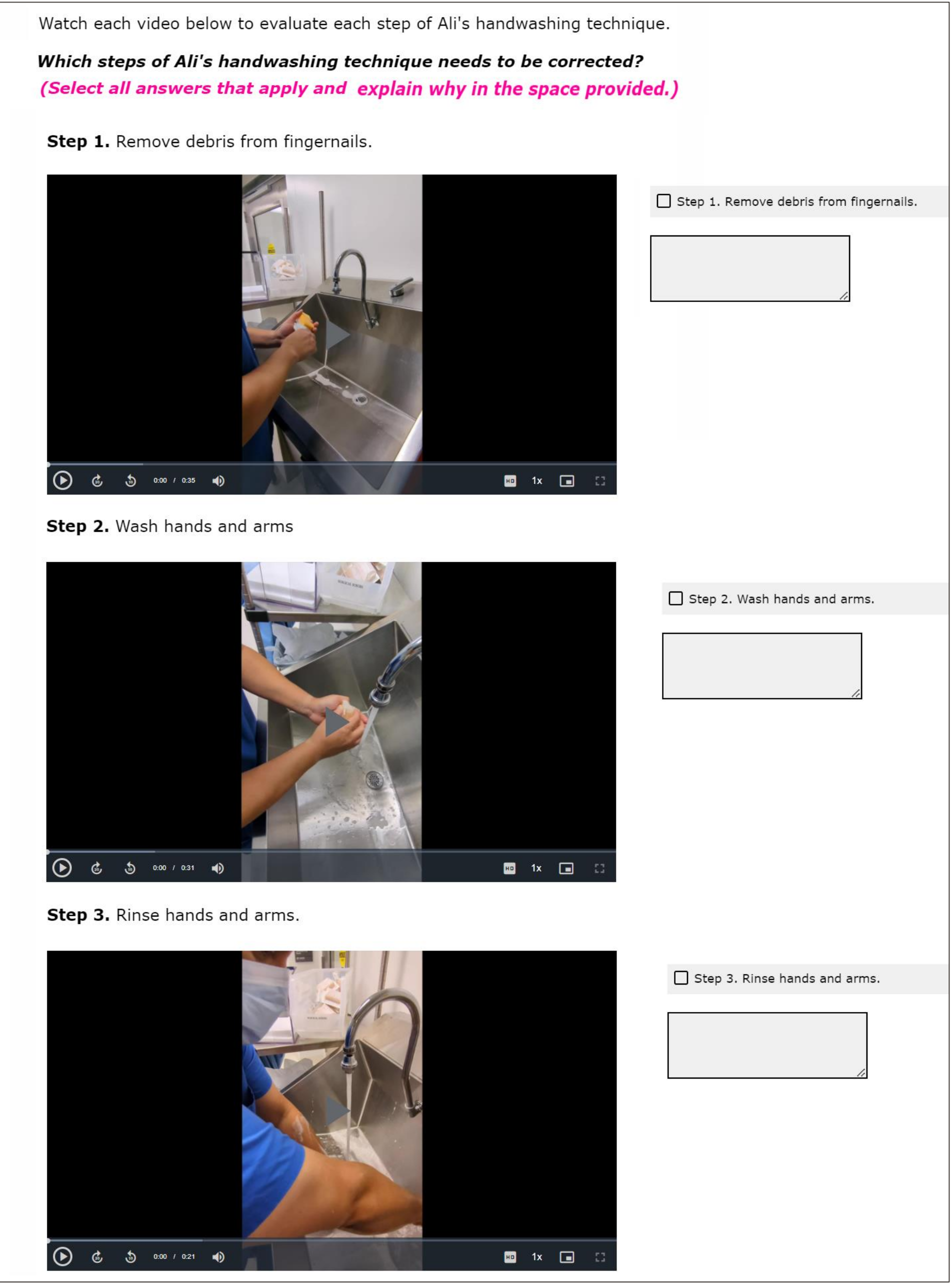


Figure 3. Multi-select and reflect question.
Learners are asked to observe and critique Ali's technique.

Results

Participation in the educational activity was mandatory for all pharmacists and pharmacy technicians whose responsibilities include preparing or overseeing compounded sterile preparations. By December 1, 2022, 311 learners completed the activity for a response rate of 85%. Scores ranged from 9% (1/11) to 100% (11/11) with an average score of 70% and a mode of 73% (8/11). When specific questions were analyzed, it was found that most learners could correctly identify noncompliant handwashing technique (81 – 92%). However, gaps were identified in the garbing process (31 – 54%). (See Table 1.)

Conclusions

Based on the detailed results, SBL is an effective method for educating staff on SOP. It allows learners to engage in a series of experiences in a low-risk setting and to review and reflect on the consequences of those actions. Lastly, when SBL is developed using a tool that provides question-level reporting, educators can analyze data to further identify gaps for future education.

References

- 1) USP general chapter <797> Pharmaceutical Compounding—Sterile Preparations. The United States Pharmacopeia; November 2022.
- 2) Czeropski S, et al. Performance improvement (International Society for Performance Improvement). 2015;54(3):16–24.
- 3) Clark RC. San Francisco, Calif: Pfeiffer; 2013.

Acknowledgements

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