INTERPROFESSIONAL EDUCATION

A Roadmap to Using Simulation-Enhanced Interprofessional Education to Incorporate Interprofessional Activities in Athletic Training Educational Programs

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Context: Interprofessional education and collaborative practice (IPECP) is a priority in health care. Collaborative care that includes clinicians across disciplines has been shown across health care to ensure quality patient outcomes. In athletic training, a team approach to clinical practice has been promoted for nearly a decade and continues to gain attention. Interprofessional education (IPE) is a core curricular content standard that requires programs to teach students to practice in collaboration with other health care professionals. Interprofessional education and collaborative practice necessitates students have opportunities to practice before being expected to demonstrate skills clinically.

Background: To effectively demonstrate IPECP, athletic trainers need exposure to and training in IPECP core competencies during education. Simulation-enhanced IPE (Sim-IPE) is one strategy to integrate these experiences. Between classroom learning and clinical practice, simulation provides an opportunity for students to apply knowledge in a realistic but low-stakes clinical environment.

Objective: This article will detail strategies to identify and develop Sim-IPE experiences that support achieving educational standards and prepare students for effective IPECP.

Description: Healthcare Simulation Standards of Best Practice™ and the Association of Standardized Patient Educators best practices were established to guide the design of quality Sim-IPE. This manuscript will provide a roadmap for these best practices, including conducting a needs assessment, coordinating event logistics, designing prebrief sessions, and selecting debrief models.

Clinical Advantage(s): Students can gain valuable experience during Sim-IPE. Participation in Sim-IPE improves student understanding of the roles and responsibilities, communication techniques, and teamwork. These factors combine to achieve improved patient outcomes.

Conclusion(s): Athletic training programs implementing Sim-IPE should use simulation best practices to provide quality IPECP opportunities.

Key Words: Active learning strategies, collaborative practice, health care simulation standards of best practice, simulation design

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KEY POINTS

- Simulation is a strategy used to address curricular content standards related to interprofessional education and collaborative practice that requires intentional planning, coordination, and needs assessment of resources.
- Individuals implementing simulation-enhanced interprofessional education should be familiar with published guidelines related to best practices to design, facilitate, and debrief events.
- Most of the effort required to run simulation-enhanced interprofessional education events will occur in the planning and design phases.

INTRODUCTION

Effective interprofessional collaborative practice can help reduce medical errors and improve patient and clinician outcomes.[1–3] To identify shared goals across professions, the Interprofessional Education Collaborative (IPEC) created 4 core competencies to guide future clinicians preparing to practice on interprofessional teams: (1) values and ethics for interprofessional practice, (2) roles and responsibilities, (3) interprofessional communication, and (4) teams and teamwork.[1] These competencies are designed to demonstrate the shared and overlapping characteristics of health care professionals and to foster mutual respect among different groups.

It has been suggested that health care education should lead the charge to improve interprofessional education and collaborative practice (IPECP) by thoughtfully integrating interprofessional education (IPE) into curricula.[2] As such, accreditation agencies for health professions education, including the Commission on Accreditation of Athletic Training Education, require IPE to be instructed and assessed within programs.[1,2,4] Despite growth, athletic training education still lacks impactful representation in IPE literature and educational events.[5,6] In a 2018 survey, only about 50% of athletic training programs reported participating in IPE.[7] Professional programs that successfully implement IPE initiatives have described activities such as patient case discussions,[8] applied case scenarios, cross-listed courses, and IPE-shared curriculum.[6]

Simulation is an increasingly popular teaching modality that allows a safe learning environment for students to assess clinical skills, particularly low-frequency and high-risk events like critical incident management.[9–13] Additionally, high-frequency events, such as communicating with stakeholders (eg, patients, coaches, other health care professionals), can be simulated to allow skill development in high-stress scenarios.[11,12,14] Simulation-enhanced IPE (Sim-IPE) is a strategy to expose learners to and guide development of effective IPECP.[15] Sim-IPE lends itself naturally to these contexts,[15] and many athletic training faculty report using simulation to achieve IPE objectives.[8–10,12,16,17] Common examples of simulation modalities may include simulators, standardized patients or simulated participants (SPs), task trainers (eg, suture arms, rectal models), and virtual reality.[18] The Healthcare Simulation Standards of Best Practice™ (HSSOBP) were established by the International Nursing Association for Clinical Simulation and Learning to guide quality simulation experiences, including criteria for planning, designing, implementing, and evaluating events.[18] The Association of Standardized Patient Educators (ASPE)[19] standards of best practice address critical values when using SPs, such as maintaining safety, professionalism, quality, collaboration, and accountability.[19]

Although Sim-IPE is one strategy to address IPE in athletic training education, several challenges exist for faculty and program administrators. Available resources, such as other education programs with whom to collaborate, time to plan and coordinate activities, logistics, and access to funding and administrative support have been presented in the literature.[6,12,20,21] This article aims to create a resource for athletic training educators interested in developing or improving Sim-IPE. The authors will detail recommendations put forth by HSSOBP and ASPE, strategies for overcoming common challenges based on our experiences, and use 2 case examples of Sim-IPE events to demonstrate best practices. These 2 cases were constructed using our combined simulation expertise; we present practical approaches, strategies to avoid pitfalls, and opportunities for growth of Sim-IPE events in athletic training programs.

DESCRIPTION OF TECHNIQUE

In this section, we explain essential steps for planning and designing Sim-IPE.[18,19] Key tasks from each phase are summarized in a checklist format (Tables 1 through 3). To outline critical elements of HSSOBP and ASPE standards of best practice, examples from 2 athletic training Sim-IPE encounters are used. Both cases share some common learning objectives for interprofessional communication and teamwork (Table 4); however, the contexts, specific learning objectives, and necessary resources for the cases are different (Tables 4 and 5). The cases are briefly summarized here:

Case 1: Equipment-laden patient sustains a suspected cervical spine injury (CSI),

Case 2: Patient sustains concussion during an event requiring a conversation about removal from play with 1 or more stakeholders (ie, patient, coach, parent, physician).

In this manuscript, Sim-IPE planning and design is organized into 3 phases: (1) needs assessment and development of learning objectives, (2) considerations for design, and (3) using quality assurance to plan for the next event.

Table 1. Phase 1: Needs Assessment and Development of Learning Objectives Checklist

Tasks to be completed in order

1. Identify program needs
2. Identify partnerships
3. Identify needed and available resources (program, institutional)
4. Develop simulation learning objectives
5. Identify educational framework for the simulation

Phase 1: Needs Assessment and Development of Learning Objectives (Table 1)

Identify Program Needs. A needs assessment should be conducted to articulate the intended goals of the Sim-IPE, and the results of the needs assessment should inform whether Sim-IPE is appropriate and feasible.[15,18] The primary goal of Sim-IPE may be to achieve IPECP-specific accreditation standards, especially if students' authentic exposures to IPECP during clinical experiences are insufficient.[4,12,22] Simulation-enhanced IPE is one strategy to increase the frequency of IPECP opportunities that do not reliably occur at a clinical site or to give students a chance to initiate and direct interprofessional conversations and teamwork.[9,21,23]

Importantly, standards alone should not justify a simulation. Programs should look broadly at the curriculum for potential gaps in learning outcomes. Programs can begin by identifying if students are engaging in or with:

(1) Health conditions (eg, sudden death, catastrophic injury or illness) to practice decision making and deliver safe and effective critical incident management,

(2) Events or conversations (eg, emergency action plan activation or medical timeouts, referrals) to practice interprofessional communication and teamwork for effective patient handoffs or transitions,

(3) Essential stakeholders (eg, patients, coaches, parents) to practice interpersonal skills and communication techniques (eg, health literacy skills), and

(4) Patient populations with diverse backgrounds or accessibility needs that allow students to coordinate interprofessional teamwork and consider accommodations for patient care (eg, communication, physical, social determinants of health).

Needs assessments can take multiple formats. They can be formal, such as surveys, literature reviews, and professional

Table 2. Phase 2: Considerations for Design Checklist

Tasks to be completed in order

1. Establish design team
2. Plan event logistics
3. Case development
4. Recruit and train simulated participants
5. Develop prebrief session: Create learner preparatory work
6. Develop prebrief session: Structure orientation and event preparation
7. Select and train a debrief model
8. Create outcome assessments and feedback metrics and strategies

Table 3. Phase 3: Using Quality Assurance to Plan for the Next Simulation-Enhanced Interprofessional Education Event Checklist

Tasks to be completed in order

1. Coordinate date and time for planning and design team debriefing session
2. Select debrief model for session
3. Select quality improvement or feedback metrics if using
4. Delegate roles and responsibilities for debrief session
5. Determine plan for data analysis and dissemination

development, as well as formal program evaluation and outcomes data.[18] Informal assessment can also occur through discussion among faculty or IPE groups, observations and reflection on teaching, or student and stakeholder (eg, preceptors, employers, alumni) feedback.

Identify Partnerships. Identifying potential IPECP partnerships is essential to successful Sim-IPE events. Educational standards requiring IPECP exist across health care fields.[2,7] Partnerships within the institution or community, such as physicians, emergency medical services (EMS), nursing, and physical and occupational therapy programs are a good place to start.[9,10,12,17] We also recommend exploring partnerships with social work, dentistry, optometry, nutrition studies or dietetics, and public health programs. In instances where a partner program uses participation from practitioners (rather than students), consider compelling benefits that may be offered for participation. For example, in Case 1, continuing education hours can be offered to EMS personnel who engage in a Sim-IPE event.

To serve diverse populations, such as patients who require a medical interpreter or patients who need assistance from caregivers with decision making, athletic training programs may reach out to linguistics or speech-language pathology programs.[4,24] Other ways athletic training faculty can discover which professions have mutual educational, accreditation, or both Sim-IPE benefits include attending IPECP-focused groups on campus, reaching out to professional organizations related to IPECP (eg, National Academies of Practice) and simulation (eg, IPE affinity groups through Society for Simulation in Healthcare), or engaging simulation staff or colleagues across programs and departments about IPECP-related standards. Identifying programs that should or may be interested in collaborating on Sim-IPE is the next step in planning and design.[6,15,18]

Identify Resources. A needs assessment should consider what resources are available and what resources a program may be able to source from within a department or institution.[18] Resource sharing is an advantage to designing Sim-IPE. Within a needs assessment, resources may be addressed as broad categories, such as materials, physical spaces, funding or financial support, people, and one of the most essential simulation resources, time. Lacking any resources required to make a quality simulation event should be reason to seriously consider whether simulation is feasible or achievable.

In addition to the resources required for any event, institutional support for IPE and Sim-IPE are critical to ensure initiatives will be successful and sustainable. The HSSOBP recommends

Table 4. Simulation-Enhanced Interprofessional Education (Sim-IPE) Student Learning Objectives Examples

Sim-IPE Design Element	Case 1 Example	Case 2 Example
Program or curriculum need	Due to the rare nature of spine injuries in athletics, students are unlikely to get exposure to this in clinical practice. Further, this type of injury represents a high risk for morbidity or mortality, and exceptional proficiency in the clinical skills associated with patient care is needed.	While students are likely to see concussions in clinical experiences, this SBL provides an opportunity for students to practice as the sole communicator of a return-to-play decision with a patient, parent, coach, external health care provider (HCP), or all of the above.
Health condition	Suspected CSI	Suspected concussion
Suggested foundational content needed	Emergency care for patients with suspected CSI	Acute or sideline concussion assessment and management
Potential IPECP partners	Health professions such as EMS, respiratory therapy, nursing; theater (SPs) Roles: • Patient • HCP with knowledge of SMR • HCP without knowledge of SMR	Health professions such as medicine, osteopathy, nursing, physician assistants, linguistics; theater (SPs) Roles: • Patient • Coach • Family member • External HCP
Sample IPEC learning objectives[1]	(VE4) Respect the unique cultures, values, roles or responsibilities, and expertise of other health professions. (RR1) Communicate one's roles and responsibilities clearly to patients, families, and other professionals. (RR4) Explain the roles and responsibilities of other care providers and how the team works together to provide care. (RR5) Use the full scope of knowledge, skills, and abilities of available health professionals and health care workers to provide care that is safe, timely, efficient, effective, and equitable. (CC1) Choose effective communication tools and techniques, including information systems and communication technologies, to facilitate discussions and interactions that enhance team function. (TT8) Reflect on individual and team performance for individual as well as team performance improvement.	(VE5) Work in cooperation with those who receive care, those who provide care, and others who contribute to or support the delivery of prevention and health services. (RR6) Communicate with team members to clarify each member's responsibility in executing components of a treatment plan or public health intervention. (CC2) Organize and communicate information with patients, families, and health care team members in a form that is understandable, avoiding discipline-specific terminology when possible. (CC6) Use respectful language appropriate for a given difficult situation, crucial conversation, or interprofessional conflict. (TT6) Engage self and others to constructively manage disagreements about values, roles, goals, and actions that arise among health care professionals and with patients and families.
Sample ATE course or content learning objectives	Demonstrate effective SMR techniques including applying c-collar and positioning patient. Demonstrate competent equipment removal. Communicate effectively with corescuers as well as patient. Activate the EAP, including effective patient handoff to EMS.	Interpret concussion assessment findings to make appropriate concussion management decision. Communicate concussion management decision to stakeholders, including patient, coaches, parents, physician, or all of the above. Provide home and follow-up care plan(s) using health literacy techniques.

Table 4. Continued

Sim-IPE Design Element	Case 1 Example	Case 2 Example
Recommended educational framework outcomes and explanation	Summative, if students have had the opportunity to practice these skills in a low-stakes environment, it would be reasonable to assess ability to complete these tasks during a simulated event. This case's learning objectives involve discrete tasks to demonstrate competent clinical care (eg, SMR, activating an EAP, handing off to EMS).	Formative, if students have not had opportunities to rehearse these skills in a low-stakes environment, it would be reasonable for this simulation to center on an opportunity to practice and receive feedback. The learning objectives involve nuanced communication with a patient and various members of a care team.

Abbreviations: ATE, athletic training education; CC, interprofessional communication competencies; CSI, cervical spine injury; EAP, emergency action plan; EMS, emergency medical services; HCP, health care provider; IPEC, Interprofessional Education Collaborative; IPECP, interprofessional education and collaborative practice; RR, roles and responsibilities; SBL, simulation-based learning; SMR, spinal motion restriction; SP, standardized patient or simulated participant; TT, teams and teamwork; VE, values and ethics.

administrators support simulation by allocating funds for professional development of facilitators or acknowledging faculty effort through workload reduction or compensation.[2,15] Athletic training programs should have equitable access to simulation spaces, equipment, and simulation staff as well as sustainable funding. Programs and institutions should seek champions who will advocate for resources and advancement of Sim-IPE.[15] Champions can be any stakeholders who are enthusiastic and engaged in program outcomes, Sim-IPE, or both with power to support adoption and implementation.[15] We would argue that having a dedicated faculty or staff for IPE would be best practice.[7,15] Athletic training program administrators or faculty may consider this role as a service opportunity useful for tenure, promotion, or both or compensation strategies such as reduced load to help offset the administrative requirements. Institutions may also look to accreditation standards and HSSOBP to justify this need.[1,4,7,15]

Develop Learning Objectives. Learning objectives should follow naturally from program needs, curricular framework, partnerships, and resources. Based on what is intended and available, these objectives should clearly articulate what learners can expect from a Sim-IPE event.[15,18,25] While learning theory might typically suggest higher-level Bloom's taxonomy verbs (ie, apply, analyze, evaluate) are used for practical application events, not every Sim-IPE event needs to ensure students perform a skill.[26] These events can also be used to facilitate understanding. For example, in Sim-IPE, developing collaborative learning objectives based on early levels of cognitive learning (ie, define, recognize, identify, explain) related to IPEC competencies may be appropriate.[1,26] Table 4 provides examples of IPEC competencies related to the 2 case examples. Specifically, the domains that focus on roles and responsibilities and values and ethics can be learning objectives for Sim-IPE events that foster novice experiences.[1,25]

Using Educational Frameworks to Develop Simulation Outcomes. Once learning objectives have been identified, the final step of planning is to select an educational framework for the simulation. This framework should include whether the simulation will be formative (ie, to inform learning) or summative (ie, to assess learning) in nature.[25,27] These decisions should flow directly from learning objectives. If the primary goal of the simulation is for students to define roles and responsibilities of various health care professions, it is somewhat illogical to assess students on their ability to arrive at the correct diagnosis. Likewise, if the primary goal of the simulation is for students from varying professions to demonstrate collaboration over a patient case, it would follow that students would be assessed on the quality of their communication with each other.[15]

Table 4 provides examples of relevant athletic training education and IPEC learning objectives that could be used to guide the simulation design.[1,4] Programs should consider the level of the learners, timing in the curriculum, or both to determine the number of goals to be achieved, the appropriate complexity of the simulation tasks, and the best alignment of curriculum among involved programs if a Sim-IPE.[26,27]

Phase 2: Considerations for Design (Table 2)

Establish Design Team. With our experience during needs assessment, we learned that event design requires identification and delegation of team members to streamline and follow up on tasks. Any individuals with event responsibilities should be identified and their roles articulated and agreed upon. The following sections are examples of tasks that should be collaborated upon, delegated among design team members, or both.

Plan Event Logistics. Logistical design includes coordinating event dates and times, securing space and staff support, recruiting and training SPs and facilitators, and determining the event schedule (ie, prebriefing, case runtime, debriefing sessions).[18] In our experiences, faculty on the planning and design team must also decide logistical details of the event, such as:

- Capacity: How many learners can or will participate? How many learners from each program are on an IPE team? How many spaces are needed or available? How many cases will be created? Will cases be run simultaneously?
- Learner recruitment: Is the simulation event required or optional for learners?

Table 5. Case Design Element Examples

Sim-IPE Design Element	Case 1	Case 2
Health condition	Suspected CSI	Suspected concussion
Participants	Athletic training students, EMS (eg, on-duty crew, volunteers, students), facilitator(s) or simulation educator(s), simulation or support staff, SP(s): patient, teammate or coach.	Athletic training students, HCP (eg, fellows, residents; nursing, physician assistant), facilitator(s) or simulation educator(s), simulation or support staff, SP(s): patient, coach or parent.
Simulation space	Athletic field or venue	Athletic field or venue, athletic training facility
Simulation modality	SP	SP
Physical fidelity	SP costume: helmet and shoulder pads. Sideline setup: EAP (venue specific), stocked medical kit, facemask removal tools, c-collar (EMS or ATE provided), spineboard or scoop stretcher (EMS or ATE provided), cell phone programmed with dispatch number, ambulance (optional).	SP costume: athletic uniform. Sideline setup: stocked medical kit, sideline concussion assessment tool (s), cell phone programmed with number to HCP or parent (optional if confederate or SP not onsite).
Conceptual fidelity	SP trained to respond with bilateral neurological symptoms, pain with c-spine palpation	SP trained to respond to concussion assessment test items (balance errors, memory and concentration errors)
Psychological fidelity	Dispatch (confederate) (EMS or ATE provided), SP trained to respond with emotional distress, ambulance sirens or lights (optional)	Game noise: basketball, buzzers, crowd. SP (patient) trained to respond with emotion (eg, sadness, irritability). SP (coach or parent) trained to respond with pressure, conflict.
Case background and set the scene	You are covering preseason football practice. Athletes are in uppers and helmets working on tackling drills.	You are providing care at a college basketball game when you see a player fall and strike her head against the floor.
Anticipated questions or procedures prepared responses	For patient: "Do you have any neck pain?" • Patient should identify neck pain verbally. With palpation, patient should confirm neck pain present over C7 spinous process. "Can you feel me touching your foot?" • With combined palpation and question "Do you feel me touching your foot (as clinician is providing sensory stimulation to foot)," patient should identify lack of sensation in left foot only.	For coach: If student explanation goes long: • Coach should interrupt with "What's the bottom line? Is he or she good to go?" If student explanation involves follow-up care, seeing physician, other tests, etc.: • Coach should interrupt with "Why does he or she need to leave the game for those now?"
Timeline (total time for case)	No. minutes assessment to determine need for spinal motion precaution. No. minutes procedure to remove equipment and situate patient for transport. No. minutes handoff between AT and EMS.	No. minutes sideline assessment to determine player is stable but may not return to participation. No. minutes sideline conversation with coach to update about player status.
Cues	If learner does not: • Activate EAP (within No. minutes of care): SP (patient or bystander) should ask, "Do I or they need to go to the hospital?" or ATE facilitator should present cue.	If learner does not: • Identify that he or she will update coach and then do so, SP (patient) should ask, "Are you going to talk to coach or should I?" or ATE facilitator should present cue.

Table 5.   Continued

Sim-IPE Design Element	Case 1	Case 2
	• Remove facemask: SP (bystander) should suggest, "should you take the facemask off? I think I saw on the NFL once they took the facemask off the helmet," or ATE facilitator should present cue. • Handoff to EMS or handoff errors: EMS facilitator should present cues.	

Abbreviations: AT, athletic trainer; ATE, athletic training education; CSI, cervical spine injury; EAP, emergency action plan; EMS, emergency medical services; HCP, health care provider; Sim-IPE, simulation-enhanced interprofessional education; SMR, spinal motion restriction; SP, standardized patient or simulated participant.

- Facilitator participation: How many trained facilitators are needed or available for the event?
- Learner participation: What are the roles of each learner or profession during the case (eg, simultaneous teamwork patient care versus handoff)? Will nonactive participants observe other cases; if so, how (eg, remote or streaming or in breakout rooms, if telesimulation)?
- Policies and procedures: Are participants aware of expectations (eg, safety, professionalism, quality assurance)? Have all participants been provided with informed consent for image and video release (if applicable)?

These factors may influence each other to determine logistics. For example, if physical space is limited, fewer cases may be possible, which may limit the number of learners that participate overall, or it may increase the size of an IPE learning team simultaneously participating. As the size of the IPE team increases, the choreography of the learning objectives and learning experience for each learner becomes more complex. With increased physical space, more cases and learner participation will be possible. However, more cases require additional resources to recruit or hire SPs and facilitators to supervise each case for safety and accuracy as well as the resources needed to develop and implement multiple cases with appropriate realism.

Coordinating a mutually convenient time and date across health care programs can serve as one of the greatest challenges for implementing Sim-IPE.[14,20] We recommend planning logistics as far in advance as possible. If the Sim-IPE is integrated into an IPE curriculum, faculty should meet each semester to create the course syllabi. If the Sim-IPE is being implemented into an athletic training course and partner programs invited, faculty should allow several weeks to coordinate, ensuring commitment, communication, and troubleshooting any changes to logistics (eg, scheduling, learner or facilitator availability).

All participants need to be oriented to their role, event logistics, and simulation expectations.[19,28,29] We recommend providing written expectations based on HSSOBP and ASPE to clarify expectations (eg, professionalism, safety, quality). If cases are being recorded or photos are being taken, all participants should be reminded of Family Educational Rights and Privacy Act guidelines and provided informed consent. Selecting and training facilitators should occur well ahead of the Sim-IPE. Assigning interprofessional facilitators to each case may increase learning outcomes by addressing cases from multiple perspectives. A qualified faculty member or simulation educator, such as a person with training or credential in HSSOBP,[10,11] should train or mentor all facilitators.[30]

Case Development. In a Sim-IPE, the simulation should be designed collaboratively to ensure all professions are equitably and accurately represented as the learning objectives are achieved. Cases and scripts should be created by content experts to ensure smooth IPECP integration, fidelity, and appropriate levels of standardization depending on the learning objectives. In general, a case or scenario should include a realistic background and situation to set the scene for learners.

Many ways exist to achieve the necessary realism or fidelity of the simulation. Decisions about supplies, equipment, space(s), and other elements of fidelity should be planned and documented during this phase. Choices should align with the learning objectives[18] and ensure the necessary level of fidelity for students to buy into the scenario.[14,31] Several types of fidelity include physical, conceptual, and psychological.

Physical fidelity describes how closely the simulation emulates the actual physical environment or condition.[18] Physical fidelity is also created through the space being used and the equipment or supplies provided. Examples include choice of simulation modality to portray the patient most, such as a manikin or simulator, task trainers (eg, suture or intravenous arm, rectal model), and SPs or confederates (ie, actors to portray bystanders, other nonpatient stakeholders).

Conceptual fidelity refers to how realistically the elements of the situation mimic conditions, such as accuracy of patient responses and physiological changes from evaluation or care.[18,31] The simulation modality may allow learners to measure physiological changes in real time on a simulator. In other instances, measures may be completed on an SP with contrived data provided through documentation, cued verbally, or on a vital signs monitor. Moulage can also be used to create realistic wounds, skin discoloration, or other conditions to increase conceptual fidelity.

Psychological fidelity provides elements that immerse the learner in the simulation through realistic smells, sounds, lighting, contextual distractions or nuances, and patient characteristics (eg, voice, movement, or behavioral and emotional responses).[18] Thoughtfully including reactions into SP scripts will help increase psychological fidelity; however, it is also important to remember the level of the learner and learning

Table 6. Examples of Places to Recruit Participants

	With Health Care Training	Without Health Care Training
Within academic program	AT students in the same cohort, AT students in a different cohort, pre-AT students	Program managers or coordinators, graduate assistants, support or administrative staff
Within school or college	Students or faculty in academic programs that may have overlapping skillsets (eg, PT, OT, PA, nursing)	Students or faculty in academic programs that may not have overlapping skillset (eg, theater, PhD programs, prehealth programs, genetic counseling)
Within institution	AT clinicians, student health services, EMS, lifeguards, mental health counselors, social workers, sports psychologists	Student job boards, graduate assistant positions, theater programs
External to institution	Community partners in EMS, medical schools, regional institutions	Spouses, friends, or family of program personnel, SP training facilities, medical schools, local theater groups

Abbreviations: AT, athletic trainer; EMS, emergency medical services; OT, occupational therapy; PA, physician's assistant; PT, physical therapy.

objectives. Creating a noncompliant or reactive patient may prevent the simulation from moving forward. For learning objectives that emphasize IPECP teamwork and communication, it is worthwhile to develop a patient who will be compliant to deemphasize patient communication during the simulation. Adding background noise (eg, crowds, fans, sirens) may be relevant to ensure that learners are communicating and hearing the messages effectively in a realistic environment.

Psychological, physical, and conceptual fidelity can be considered together to maximize learners' suspension of disbelief and engagement in the simulation; however, not all aspects of fidelity can or need to be integrated.[18,31] Too much fidelity could serve as a distraction to the learner effectively applying a skill or progressing toward the intended learning objective(s). Noncritical elements of fidelity may also have resource implications, making it important to ensure enhancements are useful, thoughtful, and intentional. Faculty should prioritize patient, case, and space fidelity that will lead to learners making the decisions needed to achieve learning objectives.[18,25] For example, if the learning objective emphasizes communication with another health care provider, a low-fidelity manikin or an untrained person (eg, preceptor, student) could play the patient role to save costs associated with hiring and training an SP. An example from Case 1 includes using a simulation staff member to portray EMS dispatch by reading a scripted list of questions. In this case, calling a real person adds to the communication objectives for learners, but the staff member does not need to be formally trained.

Scripts should include standardized cues, which are planned to embed pieces of information that will help progress or refocus participants toward learning objectives. Some common examples of cues may include phone calls, documentation (eg, a patient case note or lab report being brought to the room), or leading questions from an SP to move the simulation forward.[32] Cues in Sim-IPE ensure that IPECP learning objectives, such as handoffs or referrals, occur and learners can achieve objectives in the given time. Timelines for the potential cues should be included in scripts to support clinical progression. Suggestions for ways to activate cues for SPs may include a headset or wireless earbud, a bystander SP, a visual cue (eg, a hand signal if onsite), or the faculty or facilitator pausing the simulation to

provide feedback and move the event forward. Table 5 further describes how the 2 case example scripts integrate elements of fidelity and cues into case design.

Recruit and Train SPs. Errichetti[33] suggested that interested SPs provide a resume and go through an interview process before participation. Gathering other information regarding availability, interest or concerns about certain types of contexts or scenarios (ie, conditions, injuries), interest in being an SP, demographics or characters they identify as, roles of interest, and clothing sizes may be helpful upfront. Also important to consider is the available compensation for SPs; this should be compared with expectations of local SPs as well as state and program guidelines for paying participants.

Simulated participant recruitment may influence fidelity choices while designing the case; ultimately, these decisions should be based on learning objectives. For example, in Case 1, it may be beneficial to identify SPs who are unfamiliar with cervical spine immobilization. An unfamiliar SP can enhance fidelity for the student because that patient is unlikely to have worn a neck collar or been lifted from supine before. Alternatively, students may need to rely on untrained individuals to retrieve supplies, move a patient, or activate the emergency action plan. Learners may disengage from simulation due to decreased realism (eg, recognizing SPs), which may lead to an incomplete evaluation, care, or patient or bystander education.[31,34,35] When possible, recruiting SPs who are unfamiliar to learners supports buy-in and immersion to the event. Programs may partner with institutional or local theater programs to recruit students, faculty, or community members to portray SP roles. Theater faculty or staff may also be willing to assist during the SP training process, such as consistent role portrayal[19] or character development. Table 6 details ideas about places to recruit simulation participants internal and external to institutions as well as with and without health care backgrounds.

Despite the benefits of recruiting unfamiliar SPs for certain simulations, recruiting poses a challenge to resources.[14] Using SPs known to the learners can still be effective.[19,34] When using this strategy, wigs, face coverings, and moulage can enhance fidelity. Facilitators should emphasize the potential of caring for consistent and familiar patients and remind

learners about their agreement to buy-in to the simulation event. Thoughtfully use classmates and other program stakeholders (eg, have prior knowledge from past participation, coursework, professional experience), and cautiously recruit those who may participate in future events. One example from Case 2 when using a program faculty or preceptor as a coach or parent outweighs fidelity concerns because they can draw on professional experience to provide realistic responses while still progressing the case toward learning objectives. Having the learner call the SP coach or parent over the phone can mask the identity of the SP, mitigating fidelity concerns and improving student buy-in.

Regardless of SP background, training participants is one of the most critical tasks to ensure success of a Sim-IPE event. Various strategies to train SPs exist depending on the resources available and the context for the Sim-IPE.[19] For example, some simulation centers may already have robust SP pools established in which SPs have been trained by other professional programs within the same university (eg, nursing), independent agencies (eg, simulation vendors), or larger institutions that train and maintain SP programs (eg, teaching hospitals). In these cases, SPs may need less overall training and would benefit from focused sessions to learn or rehearse the script. If collaborating with an institutional theater department, faculty may be willing to assist with training sessions or allow recruitment and training from within courses or programs. If developing an athletic training program SP pool, holding training sessions a few times a semester may establish reliable characters and portrayals.[33,36,37] Planning ahead with SPs to pilot cases 2 to 3 weeks before the simulation is another strategy to train SPs and troubleshoot logistics for an event.[18] Piloting cases may include a training session to practice accuracy and consistency of portrayal, seeking feedback from SPs and IPE faculty on case or character development as well as clarification on expectations and questions for the SP during and after the event.[19]

Develop Prebrief Session. Part of the prebriefing phase is to establish a psychologically safe learning environment for participants and explain dynamics that may impact the event,[28,35] especially during Sim-IPE when new learners and facilitators are present. Situations that might detract from learning include a learner feeling their identity is exposed, feeling uncomfortable discussing performance, or issues with the simulation fidelity or learner buy-in.[35] Setting goals, expectations, reading a fiction contract, and orienting to the environment helps to decrease issues.

In a fiction contract, the facilitator provides information about what can make the situation as real as possible but, at the same time, acknowledges limitations in making the simulation real life.[31,35] For instance, Case 2 is purported to take place at an athletic event. In this instance, the fiction contract discussed during prebriefing would acknowledge that, while an event is not actually occurring, efforts have been made to simulate the event, and the learner should behave as though an event is really occurring. By establishing this at the beginning of the simulation, facilitators are acknowledging the limitations, yet learners are still being asked to immerse into the event for deeper learning.[28]

Create Learner Preparatory Work. Although it may seem counterintuitive to provide students with information ahead of an assessment, this element of simulation is strongly

recommended. Providing students with preparatory materials increases their chances of achieving learning objectives. Any preparatory assignments should reinforce relevant and critical case information.[28] In general, more novice students should be given more preparatory work.

Simulation-enhanced IPE preparatory work should be used to facilitate integration of IPEC competencies.[15,17] Examples include a shared chart review using a simulated EMR system and readings or assignments to introduce or practice a standardized strategy for patient handoffs. Minimally, each profession represented in the simulation should provide background information regarding their profession, such as education and credentialing requirements, scopes of practice, and typical patient populations and employment settings. This information can be developed and distributed by faculty, or a faculty exchange could be coordinated to guest speak in each program's classes before the Sim-IPE. Conversely, students should be asked to create an elevator pitch about their own professions to share with other IPE learners.

Techniques for interprofessional communication and teamwork could be introduced to students (and facilitators) so students can meet IPECP learning objectives, IPEC competencies, or both (Table 1).[15] For example, Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS) is an evidence-based program developed by the Agency for Healthcare Research and Quality and the Department of Defense to improve teamwork through key principles of communication, leadership, situational monitoring and mutual support.[38] Some of the TeamSTEPPS techniques that athletic training faculty may integrate into Sim-IPE objectives include handoffs and briefs and debriefs.[38] Interprofessional education and collaborative practice communication tools should be selected and agreed upon collaboratively by the faculty designing the Sim-IPE as well as during didactic instruction of IPECP concepts. Any assessment, diagnosis, or treatment tools used by 1 profession should be shared with participants across professions to expose and familiarize others with different approaches to care (eg, sideline concussion assessment tools, lab or imaging orders and results, patient-reported outcome measures).

Preparatory work is critical to create psychological safety. When students are aware of the roles and tasks they are expected to complete, they experience less anxiety in simulation.[28] Preparatory work may allow students to demonstrate improved confidence, stronger athletic training skills, and better contributions to the debrief session. Simulation policies, procedures, and expectations should be shared ahead of the event to provide time for review of the information. We recommend collecting an acknowledgment that the simulation expectations have been read and agreed upon before the simulation event. These expectations should be clear and consistent across all programs participating in the Sim-IPE, particularly any agreements on how to maintain safety (eg, how to stop a simulation).[19,29]

Implementing Prebriefing and Event Orientation. The prebrief session occurs directly before the simulation to orient participants to the event (eg, schedule, transitions, spaces) to provide reminders about assessment strategies (eg, assignments, feedback surveys), learning objectives, and any housekeeping (eg, informed consent documents). The prebrief session should include simulation expectations (eg, professionalism, safety, and

the fiction contract).[28] During a Sim-IPE event, faculty should include IPE learner team meetings into the prebrief[17] to serve several purposes. First, students can introduce themselves and begin to establish relationships. Second, students can present the elevator pitch created during preparatory work or describe their own profession's scope of practice to others. Third, students can determine and practice the communication and teamwork to be used during the case. For example, during the prebrief in Case 1, athletic training students and EMS learners discussed approaches to spinal motion restriction and equipment removal for the equipment-laden patient described in the preparatory work.

The prebriefing session should orient learners to available supplies, equipment, and available spaces (eg, where to sit or stand, where to seat the patient). Orientation to the physical environment may support success during Sim-IPE.[31] An example of the benefits of Sim-IPE environmental orientation from Case 1 are athletic training students introducing facemask removal tools to EMS, who had less experience with the process, and conversely, EMS personnel demonstrating spinal motion restriction equipment and techniques to athletic training students.

Select and Train a Debrief Model. Debriefing sessions are collaborative and reflective where all participants share experiences to deepen learning.[30] Debriefing allows participants to learn from the perspectives of others, which also mimics important learning opportunities created during Sim-IPE events.[39] Although many models of debriefing exist, the process is essentially a guided conversation between participants. However, unlike providing feedback where information is given to the learner to address performance, debriefing should be a reflective process for learners to think about the simulation event, explore emotions, and engage in a discussion with other participants, including instructors.[40] These sessions are considered a time with significant learning opportunities and are key to the simulation process.[39,41] In simulation, debriefing is considered the most important part; therefore, to ensure an inclusive, balanced, and positive learning environment, the debriefing session should be led by a trained facilitator.[30,35,39] Additionally, if the SP will participate in the debriefing session, it is recommended to screen and train them on the learning objectives and provide them with an informational checklist for the relevant skills or content knowledge to ensure feedback is accurate and informs learning.[19]

A debriefing model and schedule or structure should be selected during the design phase to match learning objectives. Although no best debriefing model exists, the model chosen should support the Sim-IPE event's goals, comfort, and expertise of the facilitator(s). Depending on resources, debriefing sessions may be scheduled at the end of a Sim-IPE event. However, if the event is designed to include short debriefing sessions at the completion of each case in addition to a full participant debrief session, the same model should be used consistently across debriefing sessions.[30] For example, Case 1 schedules debriefing sessions after each case attempt because students work in small groups and may participate in the subsequent case in a different role. This strategy allows for enhanced IPECP with immediate improvements. Although no predetermined formula exists for how long a debriefing session must last or when the sessions should be scheduled, a debriefing session should be long enough to explore the learning objectives and the performance of the learner(s) in consideration of the size of the group engaged in

the debriefing session.[30] Some researchers have suggested that debriefing sessions should be scheduled for approximately 20 to 30 minutes or longer after a simulation session[13,17,39] and that debriefing sessions lasting 10 minutes or less are not adequate for learning.[39]

We elected to discuss 2 debriefing models that are relatively easy to implement and provide similar benefits through different processes. The models are Plus/Delta and Debriefing with Good Judgment. Numerous other methods for debriefing exist and could be explored.[30]

In the Plus/Delta model, participants reflect on what went well in the simulation and what they would like to change in the future.[42] Using the Plus/Delta approach, participants analyze and reflect on the entire simulation event and evaluate their performance along with the performance of their team.[42] This model is simple to implement as well as to participate in. For example, the facilitator or simulation educator leads the debriefing session by asking participants the following questions[42]:

(1) What did you do well?

(2) What would you do differently or improve upon the next time you are in this situation?

The Debriefing with Good Judgment model provides the opportunity to understand the learner's frames or the reasons for their actions during the simulation while also valuing their perspectives.[43] This method of debriefing aims to discuss the thinking and background of decisions made by learners during simulation without judgment but rather curiosity to guide the learner toward deeper understanding. The facilitator uses an advocacy-inquiry approach to a learner to help draw out their frame related to critical learning objectives or moments during the simulation.[43] The following is a potential example that a facilitator may use in Case 1: "I noticed you chose to remove the facemask using a cutting tool. There are other facemask removal tools (ie, advocacy). I'm curious why you chose the cutting the tool (ie, inquiry)."[43]

This approach is nonjudgmental, as it does not indicate whether the choice of using a cutting tool to remove the facemask was correct or incorrect but is an observation on the performance and simply a result from the simulation that should draw out the learner's critical thinking process. It can also be an opportunity for other learners to think about what they did or would have done in the situation or make connections to relevant content, clinical application, or situational monitoring choices. It is then followed by an advocacy-inquiry statement or opening conversation up to other ideas and viewpoints and genuine curiosity about the decision-making process of the learner at the time.[43] The facilitator should continue this method or conversation until the case objective or learner cognitive frame is fully explored.

Create Outcomes Assessments and Feedback Metrics or Strategies. Faculty from each program participating in the Sim-IPE may independently decide whether learners will be graded.[27] It may be helpful to use similar approaches so that all students fully engage in the Sim-IPE.

Any evaluation tool used for Sim-IPE events should be selected or developed collaboratively and should be used by

all participants.[15,17,23] Evaluation planning should include event feedback from all participants for quality assurance and improvement purposes.[19] These metrics are beneficial for quality improvement purposes (Phase 3) as well as supporting potential interprofessional scholarly projects for involved faculty. Producing scholarship based on Sim-IPE in which athletic training students are primary participants is encouraged to advance both the research in the simulation field and athletic training education.[15,44]

Phase 3: Using Quality Assurance to Plan for the Next Sim-IPE Event (Table 3)

The last phase of Sim-IPE planning and design is to schedule a debriefing session for the planning team and facilitators at the conclusion of the event. In addition to reflecting upon the learning outcomes, gathering perceptions about what went well (ie, Plus) and what to do differently (ie, Delta) provides rich data to enhance the next Sim-IPE event.[15,19] This debrief session should be scheduled during initial planning since interdisciplinary schedules are difficult to coordinate. The debrief session can be collected during informal discussion or written feedback (eg, email or notes) or collected through a more formal survey tool.[45] The planning team should document the strengths and areas for improvement to be prioritized and solutions to be explored for the next event. We recommend that the faculty debriefing session occur relatively close to the event when reactions and ideas are fresh as well as giving the planning and design team time to synthesize all quality assurance data. Completing these steps quickly may provide the planning and design team time to develop proposals and recommendations to bring to administration or Sim-IPE champions to gather additional support and resources to apply to future initiatives. Examples of the challenges, potential solutions, and lessons learned or clinical advantages gathered by the authors from quality assurance phases are presented in the next section.

OVERCOMING CHALLENGES AND IDENTIFYING CLINICAL ADVANTAGES

Overall, our experiences implementing Sim-IPE in an athletic training curriculum are exceptionally rewarding and outweigh the strain these events can place on personnel and resources. Over several years spent developing an athletic training simulation program, many lessons have been learned and achievements made. We share those ideas we feel are most essential.

(1) Participate in simulation professional development.[19,46] Simulation and Sim-IPE have a natural fit in athletic training, but like every element of teaching and health care, best-practice recommendations exist and are ever evolving. Identifying opportunities to learn, fine-tune, and stay current on simulation skills will ensure that the effort that goes into planning, designing, and implementing these events is well spent.

(2) Be your own Sim-IPE champion. Simulation-enhanced IPE is another level of commitment to simulation with unique challenges and setbacks (eg, silos, resistance from students, constant last minute logistical adjustments). Enthusiasm can be contagious. Be your own cheerleader for a Sim-IPE event or program by sharing successes with colleagues in your program, institution, and with alumni.

(3) Prioritize building connections and relationships. If your university has an IPE group, join it, or ask to attend a meeting to introduce yourself and gauge interest among other programs. If your institution does not have an IPE group, what support may exist to start one? We recommend reaching out to other health care education programs that may have interest in sharing resources and expertise to develop events. Also, look to your local community to build relationships. What clinicians or health care facilities are in your local area? An opportunity may exist to develop continuing education credit for some professions.

(4) Use a charm offensive to break down silos. A lot of reasons for resistance to IPECP exist. While it can be a lack of resources, other times carryovers from longstanding organization cultures exist. Develop a brief proposal for a Sim-IPE that outlines a patient case and the role that athletic training can play in contributing overlap and filling a void relative to the other professions that you would like to collaborate with. Find a faculty member with aligning course objectives and present your proposal with excitement and positive emphasis on the role of both professions. Highlighting the benefits, such as attaching the event to scholarship or enhancing program visibility may entice faculty with promotion goals.

(5) Start small, but meaningfully. Simulation or Sim-IPE does not always need to be complicated. Simulation-enhanced IPE is possible on a shoestring if you follow HSSOBP. Once you have success stories to share (and have done most of the legwork), others will ask to join or accept invitations to participate. "If you build it, they will come."

(6) Always add in extra time. It is better to have it and not need it than need it and not have it. Have a plan B for how you can use extra time; for example, snack, water, and restroom breaks are always appreciated (especially for the team running the simulation). Always add in time to reset the space and for participants to transition between spaces.

(7) Have a growth mindset. Even though Sim-IPE events are developed to meet specific learning objectives, inevitably, some aspects could be more realistic or accurate. Faculty can learn alongside students to gain new information about other professions (eg, scopes of practice, approaches to care, techniques) from other faculty and students. Simulation-enhanced IPE debriefing sessions are wonderful opportunities to identify how best to continuously improve a recurring Sim-IPE event as well as to further build your own IPECP network and create new future opportunities.

(8) Organize and pilot. Seemingly insignificant things decrease the stress and chaos of running a Sim-IPE event. Gather all supplies and equipment well before the event. Check that all batteries are charged and all parts and replacement parts are present (eg, pack extra helmet clips if the student cuts instead of unscrews, extra screws if they are dropped in the grass field). Test the simulator's vital signs, sound effects, and moulage (eg, how many reps can a prosthetic wound withstand? Did or can you match the SP's skin tone?). Piloting the case is essential for accuracy and fidelity, but it also helps to discover all the ways the space needs to be reset and how long it takes before the next case repetition.[18]

CONCLUSIONS

Interprofessional education and collaborative practice is an essential part of athletic training practice to ensure optimal patient outcomes.[5,7] As education often drives practice, it is suggested that professional programs integrate IPE into the curriculum to prepare students to be effective future clinicians.[2,4] Although IPE standards are required in athletic training education, opportunities to grow effective adoption into the curriculum still exist.[5–7] Therefore, it is important for athletic training educators to find innovative pedagogy and follow best practices for quality outcomes.

Athletic training students find that simulation-based learning is an engaging experience that has also shown promising translation into professional practice.[11,13,14,16,34,47] Furthermore, using Sim-IPE provides a more meaningful opportunity for students to intentionally apply IPECP skills and techniques with authentic feedback from other health care professionals.[12,17,23] However, several challenges to implementing Sim-IPE in athletic training exist that may inhibit its implementation.[5,6,15] While limitations to resources are significant and valid challenges, strategies that faculty can look to as described in HSSOBP literature exist as well as the creative solutions and lessons learned recommended by the authors through their experiences piloting, refining, and integrating Sim-IPE in athletic training.

To implement a successful Sim-IPE event, athletic training faculty should invest time in planning and design. Always start with a needs assessment, looking at resources that you may have on campus but have not yet accessed, including people and partnerships that are easy to coordinate logistically. Next, start with a small and manageable project based on essential learning objectives; it will grow, and you will likely gain additional partners and collaborators as they see the successes and student outcomes. Plan ahead to champion your program and enhance visibility for future advocacy by inviting your campus media or public relations group to events. The press is a great way to build excitement about your events and advocate for your work. Remember, you may encounter silos on campus; taking the initiative to invite others to join athletic training developed Sim-IPE can foster collaboration. Finally, the Sim-IPE planning and design team should be familiar with and follow HSSOBP and ASPE standards of best practice throughout all phases of simulation, including case development processes, prebrief session elements, debrief model selection, and facilitator training as well as quality assurance and improvement.

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