



An inter-professional approach to train and evaluate communication accuracy and completeness during the delivery of nurse-physician student handoffs



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ABSTRACT

Importance: The I-PASS training bundle has been shown to improve communication errors during medical student and resident handoffs but has not been explored in the context of interprofessional care.

Objective: We examined the impact of an interprofessional I-PASS training on communication accuracy and completeness during the delivery of nurse-physician student handoffs.

Design, participants, and setting: A pre-post comparative design was used to evaluate the differential impact of training on sixty-three first year nursing students and sixty-nine first year medical students, as part of an interprofessional curricular intervention, at an integrated university campus.

Intervention: The interprofessional I-PASS training was adapted from the existing I-PASS: Medical Student Workshop by a team of interprofessional faculty and presented to nursing and medical students.

Main measures: Simulated patient handoffs were used to assess communication performance prior to and following training. Evaluation involved the transcription and scoring of all verbal units delivered during the nurse-physician student handoffs based on four levels of information accuracy: correct, missing, erred, and omitted. Proportional changes in verbal units produced during pre and post-training encounters were compared at the combine total and individual domain levels based on training, student type, gender, previous handoff experience, and their interactions.

Results: Significant improvements in the proportions of correct, erred, and omitted verbal units at the combined total levels were observed across students, all $p < .001$. Accounting for the greatest proportion of this change, was the variation in correct, erred, and omitted verbal units produced within the Patient Summary domain, all $p < .001$. Several training interactions were also observed involving gender, student type, and previous handoff experience.

Discussion: I-PASS training can improve communication accuracy and completeness during nurse-physician student handoffs. An event-based tool and coding procedure allowed for the identification of differential training impact based on individual handoff domains and provider demographics.

1. Introduction

Communication errors among healthcare teams account for nearly two-thirds of sentinel events in clinical settings^{1–3} with more than 50%

of cases involving handoffs.^{4–6} Suggested strategies to reduce errors during handoffs include the completion of formalized communication trainings,^{7–10} use of mnemonic devices to structure patient information,^{11–13} and a reduction of environmental distractors to minimize

Manuscript abbreviations: I-PASS Study, Inpatient Settings Accelerating Safe Signouts; SP, Standardized Patient; SPH, Simulation Patient Handoff; TeamSTEPPS, Team Strategies and Tools to Enhance Performance and Patient Safety; I-PASS Mnemonic, Illness Severity, Patient Summary, Action Plan, Situational Awareness and Contingency Planning, Synthesis by Receiver

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interruptions.^{6,11} The Inpatient Settings Accelerating Safe Signouts (I-PASS) training bundle^{14,15} incorporates each of these critical elements and has been shown to reduce medical errors and adverse events during handoffs involving medical students and residents.^{16,17} The extent to which this training impacts communication among interprofessionals (e.g., nurse-physician dyads), however, has yet to be explored.^{18–20}

Performance changes following the completion of communication training in healthcare has historically involved the use of either self-report or observation rating scales.^{21,22} The most common methods include global or behaviorally-anchored rating scales,^{23–25} which require the assignment of a single score to represent an entire performance category and episode.^{21,22} As a result, several key measurement aspects such as communication accuracy (e.g. erred versus correct information) and completeness (e.g. missing versus complete information) are often omitted from final analysis. These important methodologic restrictions prevent the ability to capture systemic variance in provider communication, which may occur *throughout* the delivery of a given handoff.

We introduced an interprofessional I-PASS training, as a part of a curricular intervention, involving both nursing and medical students, and used an event-based tool^{21,22} to evaluate provider communication during the pre- and post-training completion of simulated patient handoffs. A behavioral procedure, which involved the coding and scoring of provider communication,^{26–28} allowed for the ability to consider information accuracy and completeness throughout the delivery of each patient information exchange.

2. Methods

2.1. Design, participants and setting

A pre-post comparative design was used to evaluate the pre-to post-training impact of the interprofessional I-PASS training on the student's interprofessional communication performance. Sixty-three first year nursing and 69 first-year medical students participated as part of a curricular intervention. Grades were provided to all students based on completion, not performance (i.e., complete/not complete). Informed consents and video release forms were completed by all students prior to initiating participation. A lecture hall was used for instruction of the interprofessional I-PASS training. A standardized patient (SP) corridor containing 14 patient exam rooms, which were each equipped with audio and video recording, were used for the pre- and post-training simulated patient handoffs.

2.2. Interprofessional I-PASS training

2.2.1. Content

The interprofessional I-PASS training content was adapted from the empirically-validated, I-PASS: Medical Student Workshop, available via MedED Portal.¹⁵ Only minor modifications were made to the content such that all scenarios mentioned were relevant to both nursing and medical students, simultaneously. A team of nurse and physician-trained educators worked collaboratively to ensure validity of this refined content, which culminated in a 90-min lecture and subsequent 30-min guided handoff activity.

The lecture provided orientation to the role of communication in medical errors; introduced several elements of the Team Strategies and Tools to Enhance Performance and Patient Safety (TeamSTEPPS)^{8,29,30} framework; and offered instruction on the I-PASS handoff mnemonic (see Fig. 1).¹⁸ The first four components of the mnemonic, which include: Illness Severity, Patient Summary, Action List, and Situational Awareness and Contingency Planning, pertained to the role of the handoff “provider;” whereas, the final component, Synthesis by Receiver, served as a prompt for the handoff “receiver.” The guided handoff activity involved the formation of interprofessional student dyads, comprised of one medical and one nursing student, who took



I	Illness Severity	<ul style="list-style-type: none"> Stable, “watcher,” unstable
P	Patient Summary	<ul style="list-style-type: none"> Summary statement Events leading up to admission Hospital course Ongoing assessment Plan
A	Action List	<ul style="list-style-type: none"> To do list Time line and ownership
S	Situation Awareness and Contingency Planning	<ul style="list-style-type: none"> Know what's going on Plan for what might happen
S	Synthesis by Receiver	<ul style="list-style-type: none"> Receiver summarizes what was heard Asks questions Restates key action/to do items

Fig. 1. I-PASS mnemonic and elements comprising each domain.¹³

turns practicing the delivery of a patient handoff using the I-PASS protocol.

2.2.2. Process

Both the lecture and guided handoff activity were led by a physician executive within the community who had also been previously trained in nursing. Upon arrival to the interprofessional I-PASS training, all students were asked to sit at either a blue or green folder—depending on their profession (i.e., blue for medical students and green for nursing)—which were evenly distributed throughout the lecture hall. Within each folder, students were provided with 1) a copy of the PowerPoint slides to take notes during the lecture, 2) materials for the guided handoff activity, and 3) a laminated pocket card, which listed the I-PASS mnemonic (see Fig. 1) for future study and reference. Similar to the I-PASS Medical Student Workshop,¹⁵ the materials for the guided handoff activity included two separate packets, each labeled participant 1 and 2, respectively. Two scenarios were provided within each packet to guide the participation of each student as a handoff “provider” and a handoff “receiver” in each scripted situation.

2.3. Simulated patient handoffs

Exactly one week preceding and one week following the training, students completed a pre- and post-training simulated patient handoff (SPH) encounter, respectively. Fig. 2 presents an overview of each SPH encounter, which served as the primary method of performance assessment. Each SPH encounter began with a general orientation to the simulation process that was presented to all groups of 14 medical and 14 nursing students. Following orientation, the students were guided to two separate classrooms, based on their profession (e.g., room 220 for Medical Students and room 219 for Nursing Students), to review two patient cases. Cases A and B were provided to all nursing students and cases C and D were given to all medical students, as each contained information pertinent to their respective profession (Appendix A & B). After the allotted case review period was complete, both groups entered the SP room corridor using either the outer (i.e., medical students) or

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