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PII: S0002-9459(24)10480-9
DOI: https://doi.org/10.1016/j.ajpe.2024.100761
Reference: AJPE100761

To appear in: American Journal of Pharmaceutical Education

Received date: 15 February 2024
Revised date: 24 June 2024
Accepted date: 14 July 2024

Please cite this article as: Jahnavi Yalamanchili, Andrew L Concors, Deepti Vyas, Gail Swarm, Jenny Patton, Leyla Saechao, Jenifer Pham and Natalie Chen, Developing Disability Advocates Through Deliberate Inter-Professional Conversations Regarding Quality of Life After Stroke, American Journal of Pharmaceutical Education, (2024) doi:https://doi.org/10.1016/j.ajpe.2024.100761

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Developing Disability Advocates Through Deliberate Inter-Professional Conversations Regarding Quality of Life After Stroke

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Abstract

Objective: Stroke can result in significant mental and physical impairment. Training healthcare professionals on effective strategies for mitigating stroke-related quality-of-life issues is crucial in facilitating comprehensive stroke management. This study aims to evaluate the impact of an interprofessional education (IPE) experience on students' attitudes regarding post-stroke disability.

Methods: In this pre-post interventional study, pharmacy and medical students received an electronic patient chart and a store-and-forward video depicting physical and cognitive
impairment in a stroke patient. Students were instructed to discuss the acute management and post-discharge needs of the patient from an advocacy perspective. After the IPE experience, students completed the student perceptions of interprofessional clinical education-revised instrument (SPICE-R2) and an unvalidated disability attitudes survey. The surveys were analyzed using a paired t-test. Additionally, students reflected on the prompt, "What are some things you had NOT considered prior to this IPE?".

**Results:** Seven hundred and eight students completed the surveys. Post-IPE, there was a significant improvement in all domains of the SPICE-R2. On the disability survey, there was significant improvement on all statements, including rate your comfort with: 1.) discussing the expected disabilities associated with new-onset stroke and 2.) discussing strategies for improving the quality of life of a patient who has long term disabilities. On the self-reflections, 31.7% (N=211) had not considered the need for post-stroke care services prior to this IPE.

**Conclusion:** This IPE experience was instrumental in improving student perspectives regarding post-stroke disability.

**Keywords:** Telehealth; Interprofessional education; Disability; Patient advocacy, quality of life

1. **INTRODUCTION**

In the United States, one person has a stroke every 40 seconds, and nearly 795,000 new or recurrent stroke cases are diagnosed yearly, emphasizing the need to establish a continuum of care that encompasses acute management, secondary prevention, and comprehensive multidisciplinary post-stroke care.\(^1,2\) Likelihood of suffering from long-term disability increases with stroke.\(^1\) More than fifty percent of elderly stroke survivors experience mobility issues.\(^1\) Additionally, stroke can result in impaired motor, cognitive and sensory function, and speech and swallowing deficits.\(^3,4,5\) Other indirect effects include depression, anxiety, an increased risk of falls, the potential for aspiration pneumonia, urinary incontinence, chronic pain, pressure ulcers, and more.\(^3,6,7,8,9,10,11\) Due to the plethora of likely stroke deficits, stroke survivors may require individualized treatment for an extended period of time.\(^12,13\) Therefore,
it is imperative that healthcare professionals collaborate to advocate for patient’s post-stroke needs for a smoother transition back to home or a skilled nursing facility. An interprofessional approach ensures that strategies to help with the patient’s post-stroke needs will be multifaceted. As part of a multidisciplinary team, pharmacists play an active role in post-stroke advocacy, such as reducing polypharmacy, identifying suitable medication containers, choosing appropriate medication formulations for dysphagia, monitoring outpatient medications, implementing evidence-based secondary stroke prevention strategies, choosing cost-effective medication and providing patient education.

Training students in an interprofessional education (IPE) setting is key in encouraging future interprofessional collaboration and patient advocacy to mitigate stroke-related quality of life issues. Several studies in the literature have reported positive impact of IPE regarding stroke-related topics on students. Hamilton and colleagues observed that a simulation on stroke topic enhanced students’ comfort in working with interprofessional teams. Similarly, MacKenzie and colleagues reported significant improvement on the student’s Interprofessional Collaborative Competency Assessment Scale (ICCAS) scores after an IPE event involving stroke care. Pinto observed insightful observations regarding students’ comprehension of shared leadership and overlapping team members’ roles in patient care. Wallace reported that a multistep IPE stroke workshop effectively promoted interprofessional teamwork.

Majority of the studies in the IPE literature have measured interprofessional attitudes and knowledge improvement related to understanding the various roles and responsibilities of healthcare professionals in stroke management. However, there is a paucity of studies focusing on techniques for improving student perceptions of quality-of-life considerations in post-stroke patients. Consideration of quality of life is imperative in the overall advocacy of a patient and should be incorporated into the IPE curricula. This manuscript outlines a deliberate IPE experience developed for encouraging conversation regarding patient experience and quality of life considerations to promote patient advocacy. The purpose of this study was to measure the impact of this IPE experience on students’
perception of interprofessional collaboration and attitudes regarding post-stroke related disability, as measured by pre-post surveys and self-reflection exercises.

2. METHODS

This pre-post intervention study included second-year pharmacy students (PharmD) from the University of the Pacific and fourth-year medical students (DO) from the West Virginia School of Osteopathic Medicine. Pharmacy students were in their final year of didactics in the three-year accelerated program while DO students were on clinical rotations. Students from both programs were required to participate in this IPE experience. The IPE experience occurred in the Spring semesters of 2021 and 2022. The objectives of this IPE experience were aligned to the interprofessional education collaborative (IPEC) core competencies: (1) “Use the knowledge of one’s own role and those of other professions to appropriately assess and address the health care needs of patients and to promote and advance the health of populations. (Roles/Responsibilities)” and (2) “Communicate with patients, families, communities, and professionals in health and other fields in a responsive and responsible manner that supports a team approach to the promotion and maintenance of health and the prevention and treatment of disease. (Interprofessional Communication)”

Course instructors created groups consisting of 2-3 students with at least one pharmacy and one medical student. Each student received an acute stroke case in an educational electronic medical record (EMR). In addition, a store-and-forward video was provided portraying a history and physical exam conducted by a triage nurse. A store-and-forward video is a helpful aid in telehealth. In this process, the patient or another healthcare provider gathers all clinical information and sends it to the physician for asynchronous clinical decision-making. In IPE, students can make comprehensive decisions at their convenience with a store-and-forward video, especially in resource-limited settings or satellite campuses where live patients or faculty may be unavailable for these events.

In this study, the video depicted a patient experiencing left hemiplegia, aphasia, and cognitive impairment due to a stroke. Groups were instructed to meet at least once via teleconferencing technology at a convenient time for students on the group and record their interactions. Two
weeks prior to the due date, the students received the case, video, and instructions, allowing them to work on the case and schedule a videoconference at their convenience. The number of times the students met was left for their decision, from the instructor point-of-view it was work-based. The group uploaded the recording to the pharmacy school’s learning management system (LMS).

Groups were instructed to discuss four components related to stroke management: 1.) the scope of practice of the two professions and roles/responsibilities in stroke management; 2.) acute stroke management and discharge considerations for secondary stroke prevention; 3.) the anticipated mental/physical limitations that the patient may face and; 4.) at least three strategies designed to improve the patient’s quality of life post-stroke. Based on this discussion, each group drafted a patient chart note outlining the acute care, post-discharge medications, referrals, and other tools to mitigate the effects of stroke-related disabilities. The groups then uploaded the patient chart notes into the school of pharmacy’s LMS while the DO students documented the notes in their program’s EMR.

Before and after the IPE experience, students completed the Student Perceptions of Interprofessional Clinical Education-Revised, version-2 (SPICE-R2) survey. This survey measures students’ perceptions regarding interprofessional collaboration. A five-point Likert scale is used to assess the students’ level of agreement or disagreement with ten statements pertaining to teamwork, interprofessional roles and responsibilities, and patient outcomes (Table 1). Additionally, the students completed a six-item unvalidated disability survey created by the authors measuring student attitudes regarding post-stroke disability and quality of life considerations (Table 2). These surveys were administered via Google Forms, version 1.9 (Alphabet, Inc.). The students were given 10 days before and after the event to complete the pre and post surveys.

Data was analyzed using IBM SPSS version 28.0.0.0 (190). Paired t-test was used to analyze the survey results. Statistical significance was set at two sided p value <0.05. At the culmination of the IPE, students wrote a reflection on the prompt, "What are some things that you had not considered prior to this IPE." A qualitative assessment was done for the reflection
exercise. All the responses were transferred to Microsoft Excel (Microsoft, Redmond, WA). Three coders reviewed the responses to identify the main themes. Five main themes were identified and finalized. The themes were types of disability faced by stroke, quality of life, after stroke care services, clinical management using drugs and interprofessional collaboration. Finally, the three principal authors (JY, AC, and DV) coded the reflections by the identified themes, with one of them as tiebreaker. Descriptive statistics were used to report the self-reflection responses. The institutional review board of both programs reviewed and approved the study as exempt research (IRB2021-30).

3. RESULTS
A total of 739 students (374 DO and 365 PharmD) participated in this IPE experience across both the years. In 2021, 371 students (180 DO and 191 PharmD) and in 2022, 368 students (194 DO and 174 PharmD) participated in the mandatory event. In total, 342 groups (172 groups in 2021 and 170 groups in 2022) were formed across both years. Among them, seven hundred and eight students (comprising 51.3% DO and 48.7% PharmD) completed the required surveys during the study period, with 95.8% response rate. Post-IPE, there was statistically significant improvement (p-value <0.001) for all students in three domains of the SPICE-R2 survey, namely 1.) interprofessional teamwork, 2.) roles and responsibilities for collaborative practice, and 3.) patient outcomes (Table 1). On a DO-specific analysis, there was no statistical improvement on the statements “Health professional students from different disciplines should be educated to establish collaborative relationships with one another”, “Working with students from different disciplines enhances my education” and “Patient/client satisfaction is improved when care is delivered by an interprofessional team”. On the disability survey, there was statistically significant improvement on all statements, including rate your comfort with; 1.) discussing the expected disabilities associated with new-onset stroke, 2.) discussing strategies for improving the quality of life of a patient who has long term disabilities and 3.) recognizing the different types of disabilities associated with stroke. However, on a professional-specific analysis, the pharmacy student pre-post data did not show significant
improvement on the items related to the likelihood of considering: 1.) disability and functional issues associated with the disease, 2.) quality of life issues associated with the disease, and 3.) the patient’s perspectives on their quality of life after a diagnosis like acute ischemic stroke. Results are summarized in Table 2.

On the reflection exercise, 31.7% (N=211) had not considered need for after-stroke care services before the IPE, and 26.6% (N=177) of students mentioned that they had not considered the disabilities associated with stroke, and 26.7% (N=178) had not considered the impact of a stroke on the patient and/or family’s quality of life before this IPE. Few of the sample reflections from the students are included in Table 3.

4. DISCUSSION

Stroke can be debilitating and health professionals must consider a patient’s post-stroke needs to ensure a less traumatic transition of care for patients and their families. In this study, disability attitudes improved significantly, which indicates that the IPE experience was successful in raising student awareness regarding post-discharge considerations and quality-of-life issues related to stroke. Reflections indicated that 31.7% of students had not considered the post-stroke disability needs of a patient prior to this IPE experience. This number highlights the necessity for initiatives that delve into transitions of care and advocacy for stroke patients. The new COEPA educational outcomes specifically mention that whole person care and patient advocacy are core to the development of strong pharmacists. This study adds to the literature by highlighting a strategy for raising students’ awareness towards patient advocacy in the management of stroke patients. Utilizing a similar experience may benefit other health profession programs looking to advance their curriculum to raise students’ knowledge about patient advocacy, especially within IPE. Although having limited faculty and resources, this student-driven virtual experience successfully improved student attitudes. This may be useful to programs with limited human resources or in different geographical regions/time zones.

Significant improvement on most items of the SPICE-R2 demonstrates that this experience was successful in improving interprofessional attitudes. Comparisons between the two professions revealed differences, which are worth exploring. The lack of significant
improvement in DO responses on the item “Patient/client satisfaction is improved when care is delivered by an interprofessional team” may partially be explained by the overall positive attitudes that the DO students had on the pre-surveys. Profession-specific differences on the item “How comfortable are you with recognizing the different types of disabilities associated with stroke” may be due the fact that the DO students were already on clinical rotations at the time of this IPE experience, while the PharmD students were still in didactics and had limited clinical experience. Regardless, lower scores on the pharmacy-specific analysis demonstrate a need for further coursework in this area. Future plans include the addition of occupational and physical therapy students to this IPE experience, for a more nuanced discussion.

This study has several limitations. It only measured the impact of a one-time IPE experience instead of a longer, more immersive longitudinal IPE. Additionally, this study did not evaluate the long term impact of IPE on students’ attitudes toward stroke patients, as only pre-post assessments were done. Another limitation is that the students were given a video of an assessment and did not interact with a live patient, which limited their ability to collect additional pertinent data typically gathered from an in-person experience. Interaction with a simulated or actual patient might have resulted in a more powerful experience and truly highlighted the impact of stroke on a patient. Therefore, the results of this study may be generalizable to asynchronous telehealth interactions but not to an in-person clinical encounter. Additionally, the study did not review the chart notes due to resource constraints. Lastly, the study used an unvalidated disability survey due to unavailability of appropriate measures, which limits its utility. This survey will be validated in the future to ensure a more robust assessment of disability attitudes by revisiting the survey questions with an expert panel and analyzing its reliability. Additionally, future plans include a focus on developing longitudinal IPE activities that target specific aspects of post-stroke care. This approach will encourage education regarding disability and stroke treatment in a more comprehensive interprofessional setting.
5. CONCLUSION

Stroke can lead to lifelong complications and disabilities that health professionals should address in order to mitigate its effects on quality of life. Encouraging interprofessional communication and discussion through this IPE experience was effective in improving student attitudes regarding post-stroke disability, quality of life, and after-stroke care.

Funding

This research received no external funding

Institutional Review Board Statement:

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board of the University of the Pacific (protocol code IRB 2021-30 and date of approval 02/22/2021).

Informed Consent Statement:

Consent was waived as this was a retrospective analysis of pre-existing data which was obtained as a normal part of the curriculum.

References


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CRediT author statement:

D. Vyas, J. Patton, and G. Swarm were responsible for the conception and design of the study and acquisition of data. L. Saechao, J Pham, and N Chen served as coders. D. Vyas, J. Yalamanchili and A. Concors were responsible for analyzing the data and drafting of the initial manuscript. All authors edited the final manuscript.

Financial disclosures and/or conflicts of interest: None
<table>
<thead>
<tr>
<th>Domain</th>
<th>Individual SPICE-R2 statements</th>
<th>All students N= 708 Mean (SD)</th>
<th>Medical students N= 363 Mean (SD)</th>
<th>Pharmacy students N=345 Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interprofessional Teamwork</td>
<td>Working with students from different disciplines enhances my education.</td>
<td>16.15 (2.7)</td>
<td>15.57 (2.9)</td>
<td>16.76 (2.4)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>16.66 (3.0) *</td>
<td>16.01 (3.4)</td>
<td>17.34 (2.3) *</td>
</tr>
<tr>
<td></td>
<td>Participating in educational experiences with students from different disciplines enhances my ability to work on an interprofessional team.</td>
<td>3.96 (0.9)</td>
<td>3.75 (1.0)</td>
<td>4.18 (0.7)</td>
</tr>
<tr>
<td></td>
<td>Health professional students from different disciplines should be educated to establish collaborative relationships with one another.</td>
<td>4.13 (0.7)</td>
<td>4.04 (0.8)</td>
<td>4.22 (0.6)</td>
</tr>
<tr>
<td></td>
<td>During their education, health professional students should be involved in teamwork with students from different disciplines in order to understand their respective roles.</td>
<td>4.02 (0.8)</td>
<td>3.83 (0.9)</td>
<td>4.21 (0.7)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.15 (0.8)</td>
<td>3.97 (0.9)</td>
<td>4.34 (0.6)</td>
</tr>
<tr>
<td>Roles and Responsibilities</td>
<td>My role within an interprofessional team is clearly defined.</td>
<td>11.39 (1.9)</td>
<td>11.41 (1.9)</td>
<td>11.37 (1.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12.29 (1.8) *</td>
<td>12.09 (1.9)</td>
<td>12.51 (1.6)</td>
</tr>
<tr>
<td></td>
<td>I have an understanding of the courses taken by, and training requirements of, other health professionals.</td>
<td>3.99 (0.7)</td>
<td>3.98 (0.7)</td>
<td>3.99 (0.6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.2 (0.6)</td>
<td>4.15 (0.7)</td>
<td>4.25 (0.6)</td>
</tr>
<tr>
<td></td>
<td>I understand the roles of other health professionals within an interprofessional team.</td>
<td>3.54 (0.9)</td>
<td>3.52 (0.9)</td>
<td>3.57 (0.9)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.94 (0.8)</td>
<td>3.83 (0.8)</td>
<td>4.07 (0.7)</td>
</tr>
<tr>
<td>Patient Outcomes</td>
<td>Patient/client satisfaction is improved when care is delivered by an interprofessional team.</td>
<td>3.86 (0.7)</td>
<td>3.91 (0.7)</td>
<td>3.81 (0.6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.15 (0.6)</td>
<td>4.11 (0.7)</td>
<td>4.19 (0.6)</td>
</tr>
<tr>
<td></td>
<td>Healthcare costs are reduced when patients/clients are treated by an interprofessional team.</td>
<td>12.31 (1.8)</td>
<td>12.31 (1.9)</td>
<td>12.32 (1.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12.68 (1.9) *</td>
<td>12.52 (2.1)</td>
<td>12.84 (1.7)</td>
</tr>
<tr>
<td></td>
<td>Patient/client-centeredness increases when care is delivered by an interprofessional team.</td>
<td>4.34 (0.7)</td>
<td>4.36 (0.7)</td>
<td>4.33 (0.6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.36 (0.7)</td>
<td>4.33 (0.7)</td>
<td>4.4 (0.6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3.8 (0.9)</td>
<td>3.83 (0.8)</td>
<td>3.78 (0.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.03 (0.8)</td>
<td>3.97 (0.8)</td>
<td>4.1 (0.8)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.17 (0.7)</td>
<td>4.23 (0.7)</td>
<td>4.21 (0.6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.28 (0.7)</td>
<td>4.34 (0.7)</td>
<td>4.34 (0.6)</td>
</tr>
</tbody>
</table>

Using the Likert scale of 1=Strongly disagree and 5=Strongly agree
A paired t-test was used to compare between pre and post surveys
*defined as $P < .05$ between pre- and post-activity results
SD: Standard deviation rounded to nearest integer
Table 2. Medical and Pharmacy Students’ Scores on the Disability Attitudes Survey.

<table>
<thead>
<tr>
<th>Survey statement: When looking at a patient case...</th>
<th>All students c Mean (SD)</th>
<th>Medical students c Mean (SD)</th>
<th>Pharmacy students c Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>How likely are you to consider the..... a</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The disability and functional issues associated with the disease</td>
<td>4.03 (1.0)</td>
<td>4.18 (0.9) *</td>
<td>3.86 (1.0)</td>
</tr>
<tr>
<td>The quality of life issues associated with the disease</td>
<td>4.12 (0.9) *</td>
<td>4.25 (0.8) *</td>
<td>3.98 (1.0)</td>
</tr>
<tr>
<td>The patient's perspective on their quality of life after a diagnosis like acute ischemic stroke</td>
<td>4.1 (1.0) *</td>
<td>4.27 (0.9)</td>
<td>3.92 (1.0)</td>
</tr>
<tr>
<td>How comfortable are you with..... b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discussing the expected disabilities associated with new onset stroke</td>
<td>3.73 (0.9)</td>
<td>3.96 (0.8) *</td>
<td>3.49 (0.8)</td>
</tr>
<tr>
<td>Discussing strategies for improving the quality of life of a patient who has long term disabilities</td>
<td>3.8 (0.9)</td>
<td>3.95 (0.8) *</td>
<td>3.65 (0.8)</td>
</tr>
<tr>
<td>Recognizing the different types of disabilities associated with stroke</td>
<td>3.8 (0.9)</td>
<td>4.04 (0.8) *</td>
<td>3.55 (0.8)</td>
</tr>
</tbody>
</table>

a Using the Likert scale of 5=very likely and 1=not likely
b Using the Likert scale of 5=very comfortable and 1= not comfortable
c The data may contain missing student scores if the student did not complete a question in either pre or post survey

A paired t-test was used to compare between pre and post surveys
SD=Standard deviation rounded to nearest integer
*defined as P < .05 between pre- and post-activity results

Table 3. Thematic Analysis of Student Reflections (N = 666). a.

<table>
<thead>
<tr>
<th>Theme</th>
<th>n (%)</th>
<th>Example Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of Disability faced by stroke</td>
<td>177 (26.6)</td>
<td>“As a 4th year medical student, we focus a lot on history taking, physical exam, assessment and plan acutely. I have not yet focused too much on the effects/disabilities after a stroke, so this was a great learning experience for me in that regard. Now I will make sure to think more about post-stroke care and managing those patients.”</td>
</tr>
</tbody>
</table>
| Quality of life                     | 178 (26.7) | “Before this IPE, I was more concerned with the pharmacological plan, medications, non-pharm rec's, and diagnosis itself. Obviously, all of these are essential to evaluating a case and making the proper recommendations, but this event reminded me that it is also important to consider the life of the patient long-term. I did not consider all of the potential disabilities and far-reaching effects that having a stroke may come with after treatment has been done and the plan has been executed. Student XX was able to teach me a lot about why it's important to consider the patient's mental and physical health after treatment, as well as that of the patient's friends and family.”
“...”                                                                                                                                                                                                                                                                                                                                 |
|                                    |       | “We mainly focused on the treatment of a patient presented with an ischemic stroke, what medications to place them on both short and long-term, but after the IPE I learned about the additional obstacles that a...”                                                                                                                                                                                                                                                                 |


patient who as suffered from a stroke must endure. Some obstacles that a patient who as experienced an ischemic stroke must face include problems with their mental health, difficulty regaining normal function of their body and improved speech. Overall, the IPE event has opened my eyes to the other side of stroke and not just focus on the medications that are best for the patient, but other recommendations we can make for them.”

“The amount of therapy a patient needs afterward. It all depends on the amount of tissue damage, but some patients will need to spend three hours a day in therapy. Some patients may not be able to go home because they can't walk up the stairs safely to their house or their bedroom is upstairs while everything else is downstairs. Some patients don't have family or friends that would be able to cook or do laundry, and it might be necessary to see if the patient is eligible for in-home personnel. Some patients will need to learn how to live life not being able to move one of their arms. There is so much that can change for a patient after having a stroke, so it's important to do my best to ensure that patients under my care are on the optimal drug regimens that will best protect them from a stroke.”

“I did not consider the day by day approach to treating the patient, as some medications were initiated immediately and some were initiated 24-48 hours after. I also did not consider the expected disabilities the patient may experience post ischemic stroke, upon recovery, such as losing brain function, becoming partly paralyzed, or unable to speak. I did not consider that the patient may have difficulty eating or swallowing, or difficulty interacting with others upon recovery. Additionally, I did not consider strategies or tools that I could offer the patient and her family to help with these expected disabilities, such as offering physical therapy, a speech and language therapist, or a psychiatrist for depression management.”

“I had not really considered dosing and timing of tpa as well as dvt prophylaxis in setting of ischemic stroke. Reading about heparin therapy in setting of acute ischemic stroke was interesting to refresh on”

“Prior to this IPE, I have not had much involvement with Pharmacy students and Pharmacists. Working together as a team was very helpful and allowed for multiple perspectives when tackling the case. I was not thinking about the contraindications for using alteplase and the specific treatment dosing. Both of these points were
brought up by the Pharmacy student. I will definitely work with Pharmacists in the future after having this positive encounter, thank you!

“Student XX was very helpful at pointing out and explaining drug interactions. She brought up several concerns that I would not have necessarily considered and we were better able to formulate an appropriate plan as a result. I did not know that tPA had a systolic BP cutoff for administration. My original thought was to discontinue all oral hypertensive drugs and allow for the stroke patient to have permissive hypertension for the next 24-48 hrs. If Student XX had not pointed this out, we would have put our patient at a higher risk for adverse bleeding events.”

Students reflected on the prompt: What are some things that you had not considered prior to this IPE? N is number of students that provided an answer to the reflection question other than N/A n is number of students’ reflection that had the analyzed theme

Declaration of Competing Interest statement.docx

None of the authors have any competing interest to declare.