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# Application and Student Perceptions of the PEEER© Model for Effective Healthcare Team Communications

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## Abstract

Few interprofessional education (IPE) models include patients and caregivers. To address this, we developed a novel model for teaching IP communication which included patients and caregivers as team members. We describe the model and our use of it in several health professions education curricula. We report preliminary data from learners regarding their experiences learning and utilizing the model as part of their IPE. Overall the model was positively viewed by students, although the perceived value of learning activities involving the model varied by discipline. Physical therapy, nursing, and pharmacy students valued the IPE model most, whereas medical students valued it the least.

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## Introduction

In their report *Crossing the Quality Chasm*, the Institute of Medicine (Institute of Medicine Committee on Quality Health Care in America, 2001) identified the development of effective patient-centered teams as one of the re-design imperatives to achieve safe, effective, efficient, personalized, timely, and equitable care. The Core Competencies for Interprofessional Collaborative Practice sponsored by the Interprofessional Educational Collaborative (Interprofessional Education Collaborative Expert Panel, 2011) has refocused healthcare education's attention on interprofessional education (IPE) and practice. As a result, many health professional training programs are developing curricula to improve the quantity and quality of interprofessional (IP) experiences (Aston et al., 2012; McNair, 2005), including training in IP communication and teamwork.

Healthcare teams are complex, with multiple shared responsibilities in the provision of patient care, including creating team structure, ensuring professionalism, practicing flexibility, achieving conflict management, promoting trust and respect, and ensuring inter- and intra-team communication (Firth-Cozens, 2001; Hobgood et al., 2010). IP healthcare teams, which include members of different healthcare professions, must have shared goals focused on patients' needs to provide effective health care. Accomplishing these goals may be particularly challenging when IP healthcare teams are composed of professionals with little prior experience working with team members from different disciplines (Barr, Hammick, Koppel & Reeves, 1999), as is often the case. Functioning effectively within an IP healthcare team may require individuals to develop skills beyond their traditional specialty training and education (Nembhard & Edmondson, 2006; Wanzer, Wojtaszczyk & Kelly, 2009). Effective communication among these IP team members is critical to the realization of team goals for safe, high-quality patient care.

Our early experiences with IPE activities involving IP teams of students interacting with standardized patients revealed that students' ability to form functional teams and communicate with each other was not intuitive. To address this and improve our educational process we identified existing models for communication among healthcare professionals (Apker, Propp, Zabava Ford, & Hofmeister, 2006; Boaro, Fancott, Baker, Velji & Andreoli, 2010; Ellingson, 2003; Wanzer et al., 2009), yet found little guidance for models of communication

among IP healthcare teams which included *patients* as team members. Given the increasing emphasis on patient-centered care in many aspects of health care delivery, we believe that IPE should specifically address the inclusion of patients as part of the IP team. We therefore developed a schematic for IP team communication that stressed purposefully working together with each other *as well as with the patient and their caregiver(s)*. In this context, "team" denotes the patient, caregiver, and all healthcare providers; caregiver is defined as anyone, family member or otherwise, who provides care and assistance, either personal or other care such as emotional or logistical support.

Through literature review and iterative discussion, we identified five key skills essential for effective communication: 1) use of Plain Language understood by all team participants; 2) Engagement of all team members; 3) Empathy to convey an awareness of the experience of all team members; 4) Empowerment of each team member to actively participate; and 5) Respect for the experiences contributed by each team member. We named this the PEEER© model to allow easy recall of each skill and identified exemplar behaviors which demonstrate each skill (Conigliaro et al., 2013). The schematic representation of the PEEER© model (Figure 1, following page) includes all healthcare providers, patients, and caregivers and intentionally places all members as equal participants in the healthcare team communication process. It is built upon the foundational concept that all team members bring essential knowledge and skills to successful patient outcomes, stressing that effective team communication is both expressive and receptive. Of critical importance in the schematic is the non-hierarchical approach to valuing the contributions of each member of the team. Of additional importance is the flexibility of the model to be utilized with various pedagogical approaches.

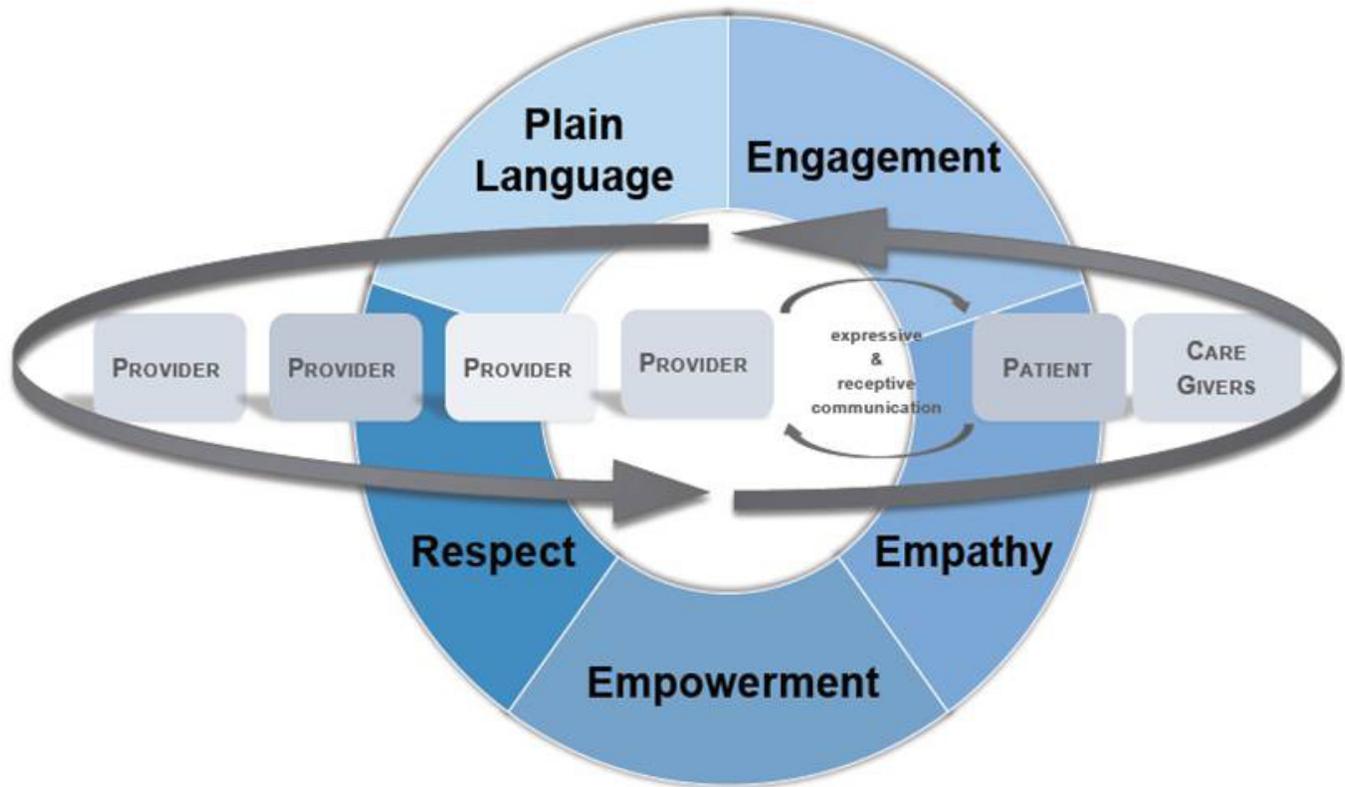
We present the PEEER© model's use in health professions education, and report our preliminary results describing students experiences utilizing it.

## Methods

### *PEEER© Development*

An IP group consisting of educators from the colleges of Medicine, Pharmacy, Nursing, Health Sciences, and Communication and Information worked collaboratively to develop the PEEER© model for use in

**Figure 1.** *The PEEER© Model. Providers may include physicians, pharmacists, nurses, physical therapists or other professionals who engage in patient care.*



our IP curricula. The specific communication skills of the PEEER© model—Plain Language, Engagement, Empathy, Empowerment, and Respect—were identified from the communication literature with particular attention to Social Cognitive Theory (Bandura, 1991; Rosenstock, Strecher & Becker, 1988; Staples & Webster, 2007). The PEEER© model, grounded in the healthcare communication literature, (Bylund, D’Agostino, Ho & Chewning, 2010; Davis, Schoenbaum, & Audet, 2010) is designed for practical use in both pre-clinical and clinical arenas. We also developed a facilitators guide with instructions for both educators and learners and a series of clinical video vignettes demonstrating ineffective and effective communication. The three video scenarios include: the team meeting prior to their clinical assessment of the patient, the team assessing the patient with his wife present, and members of the team meeting individually with the patient and wife in preparation for discharge. (Conigliaro et al, 2013).

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### *Student Orientation and Curricular Applications*

To offer instructors maximum flexibility, multiple curricular approaches were utilized. All students underwent an orientation to the model including a description of each of the five skills, discussion of the significance of the nonhierarchical nature of team communication, and emphasis on the importance of both expressive and receptive communication. Students were introduced to the PEEER© communication skills in uniprofessional (includes members of their own health profession only) and interprofessional sessions. Sessions occurred in synchronous and asynchronous groups, based on course schedules, via reading assignments or live or recorded presentations. Students also viewed and reflected on the video vignettes.

Practical applications of the PEEER© model included student reflection and discussion in either large or

small group settings, team participation in IP simulated patient encounters, and/or faculty-facilitated debriefing sessions on student's effectiveness with using the PEEER© skills after an IP simulated patient encounter.

One application of the PEEER© model included video reviews of team interactions within an existing Physical Therapy (PT) course in Administration and Management (uniprofessional). Another application incorporated the PEEER© model into an existing IP activity with students in the second year of the Doctor of Medicine (MD), third year of the Doctor of Pharmacy (Pharm D), and fourth year of the Bachelor of Science in Nursing (BSN) degree programs (interprofessional). This latter application involved IP teams of students participating in a standardized patient (SP) encounter, followed by a faculty-facilitated debriefing session in which the students and faculty discussed the IP team's performance based on the model. In the second iteration of this IP application, students also completed a Learner Post-Exercise Assessment, described further below. Table 1 (following page) summarizes these various applications of the PEEER© model.

### *Student Perceptions and Assessment*

We assessed student perceptions of the model to determine whether its use facilitated understanding of IP team communication and engagement following each IP application. Students completed an anonymous electronic survey on a secure educational portal within one to two weeks following each application of the PEEER© model.

Following the uniprofessional application, PT students were asked to respond to the following statements:

1. *"I have a greater understanding of team communication as a result of this workshop."*
2. *"Participation in the exercise introduced me to areas where I can improve my communication skills."*

Additional open-ended survey questions elicited comments on potential application of the model in clinical practice.

Following the IP applications, six survey items specifically gathered student feedback about the PEEER© skills using a Likert scale to rate the level of agreement or

disagreement with each statement. A seventh item gathered student feedback regarding content delivery. In addition, students from each school (Medicine, Pharmacy, and Nursing) completed a five-question case-based multiple choice post-exercise assessment, in which they were asked to identify PEEER© skills that were utilized in various situations (Appendix 1).

### *Statistical analysis*

All student data were de-identified. Basic descriptive statistics, including mean, median, and standard deviation were calculated. Comparisons between student groups for Likert-type questions were accomplished with Mann-Whitney U and Kruskal-Wallis tests, based upon the number of groups compared. Student groups were also compared with respect to their scores on the post-exercise assessment. For all statistical analyses, a probability less than 0.05 was considered significant. Statistical analyses were conducted using SPSS, version 20 (SPSS, Inc., Chicago, IL).

### **Results**

After the uniprofessional application by PT students, forty-one of 60 students responded (68%), with 100% agreeing or strongly agreeing with the survey statements. Open-ended questions identified that the PEEER© model *"...provided a tangible example of the communication principles..."* and was helpful in orienting healthcare providers toward better team and patient interactions. The students were able to articulate specific examples of how they would use the skills to improve their communication in upcoming clinical practice.

After the IP applications of the PEEER© model, completed surveys were received from 273 of 321 students in the 2012 cohort (response rates were 60% among nursing students, 95% among pharmacy students, and 91% among medical students) and from 334 of 341 students in the 2013 cohort (98% nursing, 97% pharmacy, and 98% medical student response rates). In general, more nursing and pharmacy students than medical students agreed or strongly agreed with each of the survey statements listed in Table 2 (page 6), indicating that these students believed the PEEER© model was effective at improving their team and patient communication skills. In contrast, medical students achieved higher scores than nursing and pharmacy

**Table 1.** Summary of orientation, curricular applications and evaluations of the PEEER© model

<b>Student Cohort</b>	<b>Student Type (number)</b>	<b>PEEER© Model Orientation</b>	<b>Curricular Application and IPE Activity</b>	<b>Evaluation Strategy</b>
2012 Physical Therapy Cohort	Physical Therapy (61)	<ul style="list-style-type: none"> <li>• Uniprofessional,</li> <li>• Large group format</li> <li>• Incorporated into existing team communication model</li> </ul>	<ul style="list-style-type: none"> <li>• Uniprofessional</li> <li>• Analysis and discussion in smaller groups</li> </ul>	Post-assessment survey
2012 Interprofessional Cohort	2 <sup>nd</sup> year Medicine (119) 3 <sup>rd</sup> year Pharmacy (124) 4 <sup>th</sup> year Nursing (78)	<ul style="list-style-type: none"> <li>• Uniprofessional orientation for existing IP activity</li> <li>• Pharmacy students: Large group live format with worksheet completion</li> <li>• Medicine and Nursing students: web-based activity format with worksheet completion</li> </ul>	<ul style="list-style-type: none"> <li>• Interprofessional</li> <li>• Small teams in standardized-patient (SP) scenario</li> <li>• Student reflection of team video</li> <li>• Debriefing of PEEER skills 1 week later</li> </ul>	Post-assessment survey
2013 Interprofessional Cohort	2 <sup>nd</sup> year Medicine (113) 3 <sup>rd</sup> year Pharmacy (129) 4 <sup>th</sup> year Nursing (99)	<ul style="list-style-type: none"> <li>• Interprofessional orientation for existing IP activity</li> <li>• Large group live format with IP teammates</li> </ul>	<ul style="list-style-type: none"> <li>• Interprofessional</li> <li>• Small teams in standardized-patient (SP) scenario</li> <li>• Debriefing of PEEER© skills immediately following activity by facilitator &amp; SP</li> <li>• Student reflection of team video</li> </ul>	Post-assessment survey  Learner Post-exercise assessment

**Table 2.** Percentage of Students that Strongly Agree or Agree with Post-activity Survey Statements for 2012 and 2013 Interprofessional Activities

Survey Statement	2012 IP Student Cohort % Agree/Strongly Agree			2013 IP Student Cohort % Agree/Strongly Agree		
	MD (108)	BSN (47)	PharmD (118)	MD (111)	BSN (97)	PharmD (126)
<b>I have a greater understanding of team communication as a result of the PEEER model videos and discussion</b>	62%	75%	73%	52%	72%*	91% <sup>¶</sup>
<b>Participation in the PEEER model videos and discussion introduced me to areas where I can improve my own communication</b>	57%	79%*	70% <sup>¶</sup>	51%	77%*	88% <sup>¶</sup>
<b>The PEEER discussion &amp; video examples helped to develop my Patient - Healthcare provider verbal communication skills</b>	46%	66%*	67% <sup>¶</sup>	38%	60%*	87% <sup>¶</sup>
<b>The PEEER discussion &amp; video examples helped to develop my Patient - Healthcare provider non-verbal communication skills</b>	44%	66%*	69% <sup>¶</sup>	38%	59%*	82% <sup>¶</sup>
<b>The PEEER discussion &amp; video examples helped to develop my communication skills with members of a healthcare team</b>	54%	72%	68% <sup>¶</sup>	42%	68%*	82% <sup>¶</sup>
<b>Overall, I believe this was a valuable education activity.</b>	58%	74%	77% <sup>¶</sup>	40%	64%*	89% <sup>¶</sup>
<b>(Nursing &amp; medical students only) A live discussion of the PEER model while watching the Communication videos would have been better than the recorded discussion.</b>	18%	44%*	n/a	n/a	n/a	n/a

\*= Medicine vs. Nursing  $p < 0.05$ ; <sup>¶</sup> = Medicine vs. Pharmacy  $p < 0.05$ ; <sup>¶¶</sup> = Nursing vs. Pharmacy  $p < 0.05$

students on the post-exercise assessment, with 86% of the medical students answering four or five of the five questions correctly compared to 66% of nursing and 64% of pharmacy students ( $p < 0.01$ ).

### *Discussion*

We describe a new communication model for interprofessional teams with healthcare professionals, patients, and caregivers as equal partners. We developed the PEEER© model to fit different curricula and pedagogy, teach discrete skills that could be applied broadly across health professions, have flexibility and adaptability for use in various educational settings, and involve the patient and caregivers as integral members of the team. We focused the PEEER© skills on the team generically, and placed emphasis on the communication skills to be taught, rather than on the specific application where the IP team might be performing.

Our specific inclusion of patients and caregivers as part of the team is a particularly innovative element of the PEEER© model. Though we used the “Seamless Care” model of IPE (Mann et al., 2009) as a starting point since it also is grounded in the Social Cognitive Theory of Learning and structurally puts the patient at the center of the process, this model was designed for use in chronic care, does not involve caregivers as part of the team, and does not provide guidance on teaching specific communication skills. Other models were designed to fulfill a specific IPE need; for example, surgical team collaboration and Comskill training for oncology-specific communication skills (Brown et al., 2010; Seymour et al., 2013) and thus were limited in their broader applicability. Boaro describes the use of an adaptation of the SBAR (Situation, Background, Assessment, Recommendation) tool for IP communication in a rehabilitation setting which included nursing, pharmacy, medical, and social work participants (Boaro et al., 2010) but did not involve the patient. One patient-centered model of communication during nursing shift report involves the patient by reporting at the bedside (Anderson & Mangino, 2006) yet does not involve health professionals other than nursing. Other IPE curricula use the TeamSTEPPS® model (Agency for Healthcare Research and Quality, 2013), and many educational programs use simulation-based training grounded in the aviation industry’s Crew Resource Management (Reeves, Kitto, & Masiello, 2013). These simulation-

focused curricula require significant resources related to the simulation delivery, the development of cases/scenarios, and the use of faculty trained in simulation and debriefing methods. Thus, the PEEER© model is a unique and innovative contribution.

In the IP applications of the PEEER© model, nursing and pharmacy students reported more favorable perceptions of its educational value than medical students and were more likely to describe using the model as worthwhile. The reasons for this are likely multifactorial. The nursing students were further along in their program, completing their last semester senior practicum while engaging in the IP learning activities, and had been exposed to IP rounding and collaboration as real-time events in their clinical settings. They therefore may have had a better understanding of the importance of teamwork, either from directly working in healthcare teams or from seeing teams and communication processes in action. Similarly, the pharmacy students had completed their introductory clinical experience, which provided them with a foundation in clinical work. Both of these colleges stress the significance of IPE throughout their curricula, and IPE is a component of their professional accreditation standards. In contrast, IPE and IP practice has only recently been a component of medical student training at this college. Perhaps the medical students, finding themselves in a clinical setting which was new to them, were less able to see the value in the activity of IP and team communication because they were focused on processing a complex clinical scenario. Although the climate in medical education is changing, the hierarchical structure of the physician as the leader of the team may still exist in the mindset of some medical students, resulting in resistance to adopting new paradigms of team communication.

One way to address this may be to more optimally choose the timing of IPE activities, placing clinically-based IPE activities after students have had clinical experiences. Specific educational activities directed toward professional literacy—a basic understanding of the various health professions and their roles and functions—before working on team activities may allow learners to be more accepting of team concepts. Educators do not agree on the optimal timing of IPE — pre-clinic or clinical — nor the best venue. One suggestion is that content should be taught unprofessionally while process and experiential activities are best

completed interprofessionally (Morison, Boohan, Jenkin, & Moutray, 2003). Students need to learn the roles of other healthcare team members while at the same time to develop their own professional role identity. Some educators (Seymour et al., 2013) have noted the tension between having trainees who have had little previous clinical experience to give them a concept of their role in a healthcare team and having trainees with considerable clinical experience, who may have already developed a rigid uniprofessional role identity; in the latter situation reeducating trainees presents a challenge. Since the optimal time to introduce the concept of IPE has not been determined, an additional value of the PEEER© model is that it can be taught and used at any educational level.

Our faculty successfully incorporated the PEEER© model into several existing courses among the health professions demonstrating that the PEEER© model can be implemented flexibly to fit varied curricula. Extensive training for each faculty member delivering its content was not necessary. Thus one advantage of the PEEER© model is its low resource utilization. Moreover, the PEEER© model can be used across the spectrum of healthcare provider practice and be expanded from the academic setting to various clinical environments for skill development among practicing providers.

Our learners found the PEEER© model to be a useful adjunct to their professional education, with more favorable views consistently from non-physician students. Medical students were less likely to view the model and the IPE activities favorably, yet scored higher on the post-survey learner assessment. This may be because these second year medical students had not had sufficient clinical experiences to enable them to appreciate the importance of IP communication skills. We plan to continue to use the PEEER© framework in these IPE activities, with some adjustment in timing relative to each college's clinical experiences, and continue to survey students regarding the utility of the model and its ability to affect their understanding of IP communication within the framework of IP teams.

Our results regarding student acceptance of the model and related curricula are limited in that they are from a single institution. Our surveys are subject to recall bias, although we required that these be completed within two weeks of the IPE activity. We did not utilize

a control group, nor did we administer the learner assessment in a pre/post fashion. We also do not know all the factors that may influence how students view the importance of teams in relation to the development of their professional identity, and to their life experiences prior to training as a professional. Finally, we do not have outcomes regarding how these learners fare in team engagement as they move further on in their training. This warrants further investigation.

## Conclusion

We developed a communication model designed for use by health professions students to facilitate interactions among team members, including patients and caregivers. This is, to our knowledge, the first such model that incorporates *patients and caregivers as part of the team*. The model was well-received by students of four health care colleges and facilitated their engagement in IP team activities. We believe that teaching team members specific communication skills using a paradigm that is more patient-centered may result in better outcomes and higher satisfaction for both providers and patients.

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## APPENDIX 1

### LEARNER POST-EXERCISE ASSESSMENT

#### THE PEEER© MODEL: EFFECTIVE HEALTHCARE TEAM-PATIENT COMMUNICATION

Select the **BEST** response for each of the following questions.

Mr. Angelo is a 70-year old man presenting to the clinic for his first outpatient appointment two weeks after hospitalization during which he underwent ORIF (open reduction internal fixation) to repair a right hip fracture. His wife and daughter are present.

1. After introductions, you ask him if it is okay with him for you to proceed with the examination with his family present. Based on the PEEER© Model, this is an example of:
  - A. Plain language: because you indicated family rather than caregiver
  - B. Engagement: because you spoke about the family
  - C. Empathy: because you recognized the presence of family
  - D. Empowerment: because you allowed the patient to make the decision about who will be involved in his assessment
  - E. Respect: because you allowed the patient to express his emotions
2. The new electronic medical record system is positioned on a desk that is facing the wall. Which of the following responses to the situation would be **MOST CONSISTENT** with the PEEER© Model?
  - A. You apologize for the setup of the room and proceed once the apology is acknowledged.
  - B. You ask the family to step out because you cannot look at all of them and chart at the same time.
  - C. You have Mr. Angelo sit in a chair beside the desk with his family nearby, so that you can look at the patient and family and glance at the screen as needed.
  - D. You remain standing so that you can easily turn to see everyone in the room and document.
  - E. You conduct the interview and exam in sections, documenting between each section while the family waits.
3. After the interview, you identify the need to involve two colleagues from other disciplines in the plan you are developing with Mr. Angelo and his family. Each of the following steps is consistent with the PEEER© Model **EXCEPT**:
  - A. You obtain permission from Mr. Angelo to bring colleagues.
  - B. You introduce the colleagues to the patient and family.
  - C. You begin the conversation by informing the colleagues that Mr. Angelo is status post ORIF.
  - D. The colleagues explain possible treatment options that they could offer.
  - E. The team acknowledges the temporary limitations Mr. Angelo is experiencing in functional activities.
4. During the encounter, it becomes apparent that Mr. Angelo is in need of short-term inpatient rehabilitation. The group steps out of the room to discuss this. Which of the following is **MOST CONSISTENT** with the PEEER© Model?
  - A. One member of the group informs the others that this is the only option and then presents this to the family.
  - B. The group discusses the pros and cons of rehabilitation and then conveys the information to the patient for a final decision.
  - C. The group discusses the pros and cons of rehabilitation and informs the patient of their decision.
  - D. You present this as the proposal of the group, although one colleague shows non-verbal signs of disagreement.

5. The Angelo family reluctantly agrees to a short-term inpatient stay, although their demeanor changes dramatically as you start to make plans. Which of the following is **MOST CONSISTENT** with the PEEER© Model?

- A. You acknowledge the change in demeanor and ask if there are concerns that the team should address.
- B. You acknowledge the change in demeanor and tell the family that they will be fine with this short-term inconvenience.
- C. You ask the wife to step out of the room and you encourage her to be supportive of the decision.
- D. You leave the room, recognizing that this was a surprise to the patient so a changed demeanor is natural and expected.

**Answers:**

1 - D; 2 - C; 3 - A; 4 - B; 5 - A

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