Visualizing the Clinical Thinking Process to Prepare Students for Effective Patient Counseling

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ABSTRACT. Students in the health professions need guidance in learning the process of clinical communications with patients. An assignment in a pharmacy communications course is described that uses visual learning to engage students in planning for patient counseling. Participation in the communications planning assignment demonstrates a mental process experienced practitioners use to prepare for patient counseling. The ability to visualize the clinical thinking process is one of the first steps in formation of the cognitive skills necessary for professional practice. The assignment concept map template has sections that prompt students to consider (1) different tools for patient communications, (2) a patient's needs for information, (3) his/her ability to comprehend and act on information, and (4) barriers to communicating with the patient. Based on a patient case, students answer four questions: (1) What does the patient already know about their medication(s)?, (2) What does the pharmacist need to tell the patient?, (3) What strategies are needed for overcoming communications barriers?, and (4) What is the students' plan for patient counseling? Facilitating the visualization and fostering the development of critical thinking skills are an important part of professional education. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <http://www.HaworthPress.com>*

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INTRODUCTION

Students new to the health professions need guidance in learning the process of clinical communications with patients. This article describes an assignment in a pharmacy communications course that uses visual learning to engage students in the clinical thinking process involved in planning for patient counseling. Participation in the *Communications Planning Assignment* demonstrates a mental process experienced practitioners use to prepare for patient counseling. They are capable of assessing patient needs through a practiced, rapid mental process, while beginning students need to learn to visualize the steps of the process with mentored practice to perform them successfully. If imagination prepares and precedes perception, students' capabilities can be increased by the "provision of a metaphorical or imagistic language that informs perception" (1). Facilitating this visualization and fostering the development of critical thinking skills are an important part of professional education.

Critical thinking in clinical pharmacy occurs during analysis of drug literature, prevention of adverse drug events, analyzing how patients respond to medication(s), and communicating drug information to patients and other health professionals. Critical thinking involves carefully examining problems through multiple lenses and perspectives, imagining the impact of various solutions prior to implementation, allocating scarce resources, not accepting things at face value, and questioning assumptions. Successful critical thinking in professional practice requires the ability to visualize the clinical problem-solving process and the development of metacognitive skills, meaning the ability to monitor one's own thought processes and change learning strategies based on an assessment of how well one is doing (2). Teaching that consciously aims to communicate thinking strategies provides guided practice that involves principles and techniques (3).

THE ASSIGNMENT

A concept map was designed that illustrates the clinical reasoning process to facilitate student learning. Concept maps visually express ideas, or concepts, and their interrelationships. Concept maps can incorporate

meaningful text or images to diagram a flow or hierarchy of ideas. They use written, visual, and spatial information as this combination is more likely to be retrievable from memory than written information alone (4). There is some evidence that people more easily retain pictorial information than verbal or written information alone (5, 6). Concept maps can also be used to encourage meaningful learning that occurs when students visually express their understanding of a subject area or topic (7, 8, 9, 10).

Instructors are able to influence student choices of how to learn with their decisions regarding how material is presented in class, the creation of exercises that engage students with course material, and how student learning is assessed (11). As a graphic knowledge representation tool, concept mapping involves students in meaningful learning using an active learning process. The process engages complex cognitive structures within the brain and learning tends to be long lasting because the new knowledge is related to and integrated within a person's existing knowledge structure (12). Cognitive learning theory indicates that the brain learns most effectively by relating new experiences and knowledge to prior knowledge, and that meaningful learning requires deliberate effort to link new knowledge with higher-order, more inclusive concepts in a person's cognitive structure (7, 10, 13).

This assignment is part of a two-credit *Communications in Pharmacy Practice* course in the first semester of our four-year Doctor of Pharmacy curriculum that is preceded by two years of prerequisite courses. Learning about pharmacy communications requires students to engage with abstract notions of the social, psychological and behavioral aspects of pharmacy care. Course content (1) addresses communication skills employed in pharmacy practice with an emphasis on patient counseling and education, (2) explores communicating with diverse populations including geriatric, mentally ill, and patients with disabilities, and (3) provides instruction about low health literacy and cultural competence. Students are introduced to pharmacy practitioners working in a variety of practice settings, and practice their developing skills in small conference groups with a group leader who is a faculty member currently engaged in clinical practice. One hundred and eight students were enrolled in the course in Fall 2004. All students completed the Communications Planning Assignment and other course requirements successfully, and passed the course.

A *Communications Planning Assignment* template was created in *Inspiration*™ software that facilitates presenting information in a pictorial way (see Figure 1). This template concept map illustrates the clinical thinking process for effective patient communications, including the use of patient interviewing, patient counseling, and patient education. Stu-

dents are required to identify relevant information within a patient case that will help them complete four parts of the template that are identified by numbered boxes containing questions students must answer:

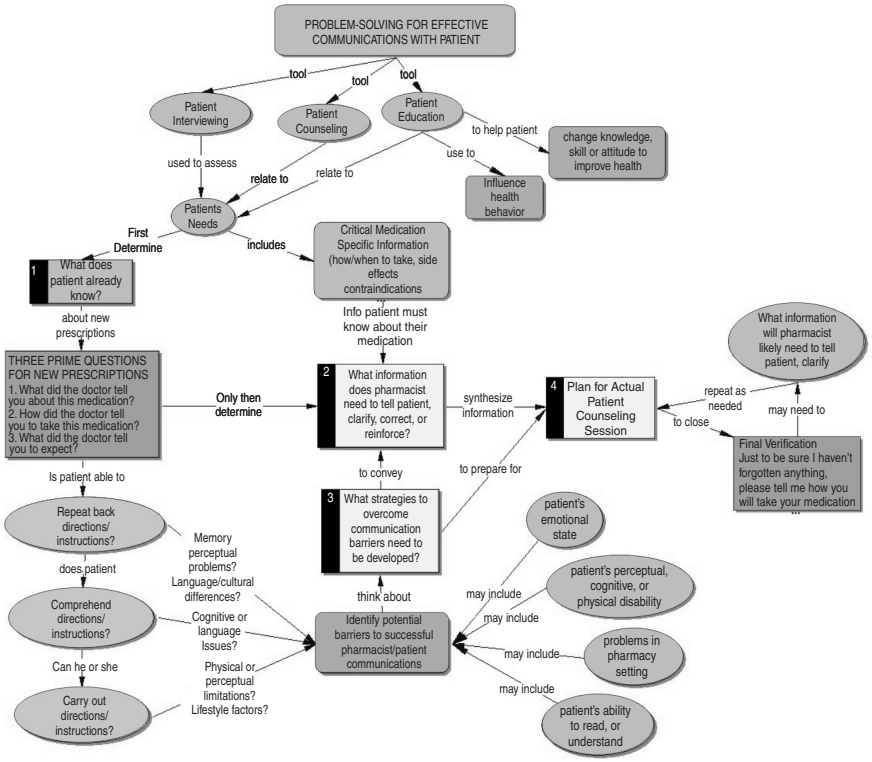
1. What does the patient already know about their medication? This is meant to demonstrate the value of listening to and respecting patient knowledge prior to beginning the counseling process.
2. What does the pharmacist need to tell the patient, or correct, clarify and/or reinforce in the patient's current knowledge? Students identify this by comparing medication-specific information with the patient's current knowledge of the medication.
3. What strategies for overcoming barriers to effective communication need to be developed?
4. What is the students' plan for the patient counseling session?

A larger version of the template had sections for patient characteristics, present complaint, and patient monitoring but the smaller version (Figure 1) was more comprehensible for first-year students. However, some clinical faculty found the larger version useful for teaching fourth-year students in experiential rotations.

At this early stage of their studies, it is important for students to learn that patient communications can be a planned, intentional process and to establish the habit of consulting credible medical and drug information databases. Students were directed to bring their laptop computers to the small group conference sessions, and directed to MEDLINEplus (*www.medline.gov*) because it contains links to MedMaster™ and USP DI Advice for Patients® information for specific drugs. This consumer-oriented website was selected because students in the course have not yet studied pharmacotherapy. To support the development of information retrieval and interpretation skills, students are required to have laptop computers equipped to access the wireless network provided by the school of pharmacy. Students are able to access MEDLINEplus via the university library and the Internet.

Students are assigned one of two patient cases for this assignment, related to migraine headaches or hypertension. Each case has two levels. Level One involves patient counseling for new prescriptions. Level Two introduces barriers to communications that must be solved for effective patient counseling to occur. See Appendix 1 for the Level Two case for migraine. This assignment takes place in small conference groups, and each group has 10-11 students. Students work in groups of 5-6 for this assignment and need to rely on their small group leaders to guide them in

FIGURE 1. Communications Planning Assignment template



identifying and synthesizing the information they access to answer the required questions and with developing effective strategies for overcoming communication barriers. Detailed instructions, the patient cases, and the *Communications Planning Assignment* template are available to students and conference leaders via the Blackboard course website. There are 10 small conference groups working simultaneously and they each use the same two cases because the groups do not interact with each other during the exercise. Inspiration™ software is available to students in the computer lab so that they can download the template and modify it. Students use the template form to help them think through the patient counseling process and to record their answers to the four questions posed to them. They are able to enter the relevant information in the numbered boxes and manipulate the template to create space for the information they are enter-

ing to answer the questions. Inspiration™ is not an interactive program in which details of the patient case would change in response to their entries, but it does allow students to add and delete text. They then print their completed document and submit it to their conference leader for grading.

Conference leaders grade each students' work based on his/her ability to (1) identify what the patient already knows from the patient case, (2) distinguish critical medication-specific information from what the patient already knows, (3) plan strategies for overcoming communication barriers, and (4) synthesize this information to plan for patient counseling. Conference leaders are provided with a grading form that they complete and submit to the course coordinator (Figure 2). See Appendix 2 for a good example of a students' work on the Level Two Migraine case. A poor example would not take account of what the patient already knows about the medication, leave out critical medication-specific information, and/or fail to account for communication barriers in the plan for patient counseling. With conference leader support, beginning students were successful in completing the Communications Planning assignment. This assignment forms the foundation and provides a contextual framework for the clinical experiential education that follows in the curriculum.

CONCLUSION

An assignment of this nature forms the beginning of an experiential education process that can be later built upon with clinical experience. Successful experiential learning about clinical reasoning begins with the learner being shown a view of how s/he is expected to perform, then learning is broken down into smaller achievable steps, and the learning progresses from conceptually simple to more complex steps. Students are guided by an expert teacher and are able to discuss the skills s/he is learning. Along with the opportunity to question, students receive constructive feedback from the teacher. Reflection on experience and action is a critical component that occurs both during and after the experience (14). Repeated experiences are needed, scaffolding early experience with later, more complex experiences (15). This introductory assignment occurs in the students' first semester and will be followed by four semesters of pharmacotherapy, a drug literature course, and a final year of advanced pharmacy practice experiences before graduation. Although students will not see the Communications Planning Assignment template again, the knowledge learned in these courses and students' experiences work-

FIGURE 2. Communications Planning Assignment Rating Form

Student Name	Conference Leader

Rating Scale		
0.0	Poor	Inaccurate or missing critical information; Inadequate plans.
0.5	Fair	Most information recorded accurately; Adequate plans.
1.0	Good	Complete information recorded; Effective plans.

Questions in left column refer to the numbered boxes in the Communications Planning Assignment Template.			
	Patient Case Level One		
	Questions	**Points**	
		Possible	Awarded
1	Accurately identifies what the patient already knows from patient's answers to questions appropriate for a new prescription	**1**	
2	Accurately identifies most critical medication-specific information	**1**	
3	Effectively plans strategies for overcoming communication barriers *No communication barrier exists in Level One	**1**	**1***
4	Effectively plans for content of actual patient counseling session by comparing what the patient knows with critical medication-specific information • what does the pharmacist need to tell the patient, correct, clarify or reinforce?	**2**	
Total	**Maximum Possible Points**	**5**	
Comments			
	Patient Case Level Two		
	Questions	**Points**	
		Possible	Awarded
1	Accurately identifies what the patient already knows from patient's answers to questions appropriate for a new prescription	**1**	
2	Accurately identifies most critical medication-specific information	**1**	
3	Effectively plans strategies for overcoming communication barriers	**1**	
4	Effectively plans for content of actual patient counseling session by comparing what the patient knows with critical medication-specific information • what does the pharmacist need to tell the patient, correct, clarify or reinforce?	**2**	
Total	**Maximum Possible Points**	**5**	
Comments			
			Student Score
	Maximum Possible Points	**10**	

ing with patients will reinforce the planning process they learned for effective patient counseling, taking account of a patient's knowledge, communications barriers, and medication specific information. Students will have formed their own mental models by the end of the third year, refine them during the experiential program, and be assessed on their ability to synthesize information to provide counseling to living patients.

Many of the skills future health professionals must learn, such as how to problem-solve and communicate with patients, are often developed informally by modeling mentors and result in tacit knowledge that is hard to verbalize. Novices learn a "holistic set of actions and explanations from experienced professionals" (3). Developing professional expertise involves acquiring skills that depend on experience accrued in rich, relevant contexts (3). The process of acquiring clinical expertise involves knowledge accumulation and restructuring that occurs during guided exposure to practice (1, 16). An effective clinical reasoning model provides explicit, structured education of clinical judgment (1). The clinical thinking process has been articulated for students in this assignment, but with experience they will form their own mental models. Clinical reasoning steps are illustrated visually and can be integrated into students' mental models as they accumulate practice experiences.

The ability to visualize the clinical thinking process is one of the first steps in formation of the cognitive skills necessary to metacognition. Metacognition requires the learner to form a detailed mental model of the intended problem-solving situation. The better the individual can imagine, or model, "the situation in which they must use their knowledge, the easier it is [for them] to assess their level of preparation" (17). Professionals with metacognitive skills are able to modify their mental representation of a problem as well as regulate their learning (14, 18). As students graduate to become practitioners, their ability to maintain effective professional performance and develop professional expertise is essential to the success of the individual. Professional education that does not teach students the metacognitive and critical skills used in addressing clinical problems has failed to equip them with an important skill.

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APPENDIX 1. Patient Case One, Level Two

Patient History

CG is a 26 y.o. WF who has suffered from severe headaches since age 11. Her typical symptoms include intense pain usually on the left side of her forehead, light aversion, nausea, and vomiting. When experiencing a headache, she is unable to tolerate the smell of food or noise, and the slightest movement of her head causes severe, throbbing pain. She needs to lie down in a cool, quiet, dark room. She describes this as "lying in the dark waiting to either throw up or die, and sometimes you don't care which one happens first." She is not suicidal, but uses this strong analogy to describe the pain. She has difficulty concentrating during a headache because the pain is too severe, and usually cannot recall what people have told her. As CG has become older, the headaches can last several days. She can usually tell when a headache is coming on because she sees sparkling lights at the edges of her peripheral vision, and when it's going to a really bad one also sees intense flashes of light.

These headaches have been a problem in CG's life because they occur at least once a week, and sometimes more often. The headaches have caused her to be frequently absent from work, and have cost her promotions because her employers cannot count on her to be at work when needed. Taking aspirin, acetaminophen, or ibuprofen help a little, but once the intense pain and nausea begin they are totally ineffective and usually cause CG to vomit.

Over time, she has learned she should avoid red wine, processed meats that contain nitrates, cheese, and chocolate. Unfortunately, cheese and chocolates are favorites of hers, and she finds it hard to avoid them altogether. She has also learned to avoid petroleum-based smells especially tar, and passing a building that is being tarred is sufficient to trigger a bad headache by itself. CG has also learned that she feels much better if she eats frequently, and she will almost certainly experience a headache if she skips meals.

Pharmacy Visit

CG has just learned from her physician that her headaches are migraines, and presents you with a new prescription for oral Imitrex™ (sumatriptan [soo-ma-TRIP-tan]). She is happy to fill this prescription because she hopes it will provide her with some relief from these headaches and help her gain more control of her life.

Imitrex™ 25 mg. #20 Take as prescribed with water.

Patient Interviewing When a Communication Barrier is Present

The pharmacist asks her what she knows about the <u>newly prescribed</u> medication by using the Three Prime Questions:

Pharmacist **Did the doctor tell you what the medication is for?**
Patient I can't wait to get home and take one for this migraine I've got going. It will feel so good to beat it and not have to give in and lie down for days.
Pharmacist **How did the doctor tell you to take this medication?**
Patient I've taken it once in the doctor's office–I had to wait until I felt a headache starting and call her, and then I went there and they gave me the medicine and I went to bed there for a while. I hope it works as well this time.
Pharmacist **Are you experiencing a migraine now?**
Patient Yes, the aura was flashing on my way over here. I'll need to get home soon.
Pharmacist **They must be painful for you. How did the doctor tell you to take the medicine?**
Patient With the pills Dr. Moraill said I can take a pill once the first signs of headache begin. The doctor said I can even take a second pill if the pain doesn't go away, but I need to wait a little while. Can we hurry this up–I really need to get home because I can't concentrate to drive when the pain gets bad.
Pharmacist **We'll get you on your way quickly. What did the doctor tell you to expect?**
Patient That the headache should go away, but how long does that take? I can't remember what else the doctor said right now. I'll probably remember once I'm over this headache. I think I have another appointment to see how things are going, but I'm not sure now. I need to sit down now–it's really starting to hurt.

Questions from the Communications Planning Assignment for Students

What does the patient already know about the medication?
What does the pharmacist need to tell the patient, correct, clarify, or reinforce?
What strategies for overcoming communication barriers might need to be used?
What should the plan be for the actual patient counseling session?

Discussion Question

How will you solve the problem that CG needs to leave the pharmacy quickly because of her worsening migraine headache, yet still provide her with the information she needs to take the medication correctly?

APPENDIX 2. Student Example of Completed Assignment Migraine Case, Level Two

What does the patient already know about the medication?

CG knows that she should take a first dose of Imitrex™ when she feels a migraine about to begin, and she can take a second dose but must "wait a little while." She knows that the migraine should go away but does not recall how long that will take.

What does the pharmacist need to tell the patient, correct, clarify, or reinforce?

(Note: Information written here is from MedMaster drug information for Imitrex™)

The patient is correct that she should take a dose at the first sign of a migraine, and that it is good to lie down in a quiet room. CG needs to know she must wait at least 2 hours before taking a second dose, and that she should not take more than 200 mg of the tablets in any 24-hour period. She should take the pill with water or other fluids. It is important that CG should know that Imitrex may make you drowsy, and that she should not drive a car or operate heavy machinery until she is familiar with how the drug affects her. Alcohol can augment this drowsiness and should be avoided because it can make a migraine more severe. If Imitrex™ has not been studied in pregnant women, so CG should tell her doctor if she is pregnant or planning to become pregnant, or breastfeeding.

In addition to drowsiness, side effects that can occur include flushing, a tingling feeling, a feeling of warmth or heaviness, dizziness, upset stomach, diarrhea, vomiting, or muscle cramps. These should go away, but if they are severe CG should call her doctor. If she should experience pain or tightness in chest or throat, sudden or severe stomach pain, fast heartbeat, difficulty breathing, wheezing, redness, swelling, or itching of the eyelids, face, or lips, skin rash, lumps, hives, or changes in vision, CG should call her doctor immediately.

What strategies for overcoming communication barriers might need to be used?

The pharmacist could give the patient written information that contains the most important counseling points, if a suitable brochure is available. S/he can also quickly write down information the patient needs to know to ensure that the patient knows she must wait 2 hours before taking a second dose. It would be good to offer to make a later appointment with the patient when she is feeling better, to explain the relevant information in more depth.

What should the plan be for the actual patient counseling session?

The most important things that CG must know before leaving the pharmacy are that she should take the tablet form of Imitrex™ with plenty of water, and that she should not take a second dose for two hours. It would be also good to tell her that it

is helpful to lie down in a quiet room. I would ascertain that she will not take Imitrex™ until she is home so that she is not driving before becoming familiar with how Imitrex™ affects her. If I have an Imitrex™ brochure available, I would give it the patient. If not, I would quickly write down the points it is essential for her to know before she takes the first dose. I would wait to discuss side effects with CG, but I believe she should know that in the case of alarming side effects, such as difficulty breathing or wheezing, and chest pain, she should call her doctor or pharmacist immediately. I would also want to talk to her at another time when she is better able to communicate and remember what she learns about taking Imitrex™.