Innovative, Problem-Based, Pharmaceutical Care Courses for Self-Medication

Debra Sibbald
Faculty of Pharmacy, University of Toronto, 19 Russell Street, Toronto, Ontario, M5S2A2, Canada

Two nonprescription medication courses were developed for large classes of 120 to 130 students at the Faculty of Pharmacy, University of Toronto, which prepare students with the knowledge and skills to practice pharmaceutical care using problem-based, student-directed learning. This manuscript describes the first three years of implementation and evolution, including course design, teaching methodology, reinforcing and enabling strategies, case preparation, assessment tools, evaluations and examinations. Experiences in managing issues, using peer teaching, while fostering an interactive, motivating environment, are presented.

INTRODUCTION

Over the last eight years, the self-medication courses at the Faculty of Pharmacy, University of Toronto have undergone a series of three revisions designed to implement the theories of active life-long learning and patient-centred care.(Figure 1) Prior to 1989, two elective courses in the third and fourth year were offered using a traditional didactic approach. Twenty drug product classes per course were presented by a guest pharmacist with expertise in the area. In 1989, the format changed to problem-based learning. Groups of seven to eight students role-played the patient-pharmacist encounter in a series of ten minute, impromptu scenarios. In 1991, the third year course become compulsory and the format introduced a systematic approach to cases. Students were required to prepare a 10 minute class presentation which included role-playing. The following year, the courses incorporated the pharmaceutical care model, and the nine-step process developed by Hepler and Strand.(3,4,5) (Table I) This process had been adapted in the fourth year therapeutics course in a more detailed form, the previous year, with positive feedback from the students(6).

In September 1994, the Faculty accepted its first year of students in a new, second year entry level curriculum. Sixteen months later, these students began a series of two, four-

Table I. Nine-step pharmaceutical care process[a]

1. Develop a convenantal relationship with the patient.
2. Collect the relevant patient, drug and disease information.
3. Interpret this relevant information.
4. Identify all of the patient's drug-related problems.
5. Set the drug-related problems in priority and identify those for which the pharmacist will assume responsibility.
6. Determine the desired clinical and pharmacotherapeutic outcomes for each drug-related problem.
7. Develop a therapeutic plan to solve/prevent each drug-related problem.
8. Design a monitoring plan for each drug-related problem in order to assess whether the predetermined outcomes are being attained.
9. Implement and follow-up the therapeutic and monitoring plans.

[a]See references 7,8,9.

	Old Curriculum Before 1989	1989-90	1991-1994	New Curriculum 1995-
Course Focus	OTC Product Classes	·····	·····	Self-Limiting/Mild Conditions
Teaching Philosophy	Didactic Teaching	Problem-Based Learning	·····	·····
Practice Philosophy	Self-Medication	·····	·····	Pharmaceutical Care
Course Activities	Lectures	Impromptu Role-Play	Student prepared 10 minute. cases using Systematic Approach	Nine-Step PC Process year 1: Student prepared 40 minute cases year 2: 40% Student prepared 60% Facilitator Class Interaction
Course Enrollment	Elective 3rd/4th years	Elective 3rd /4th years	Compulsory 3rd year/ Elective 4th year	Compulsory 2nd / 3rd years
Student Assessment	Instructor Written Exam	Instructor Written Exam	Instructor Peer Assessment Written Exam	Instructor & Guest Self and Peer Assessment Written Exam Oral Clinical Skills Exam

Fig. 1. Major structural and process changes.

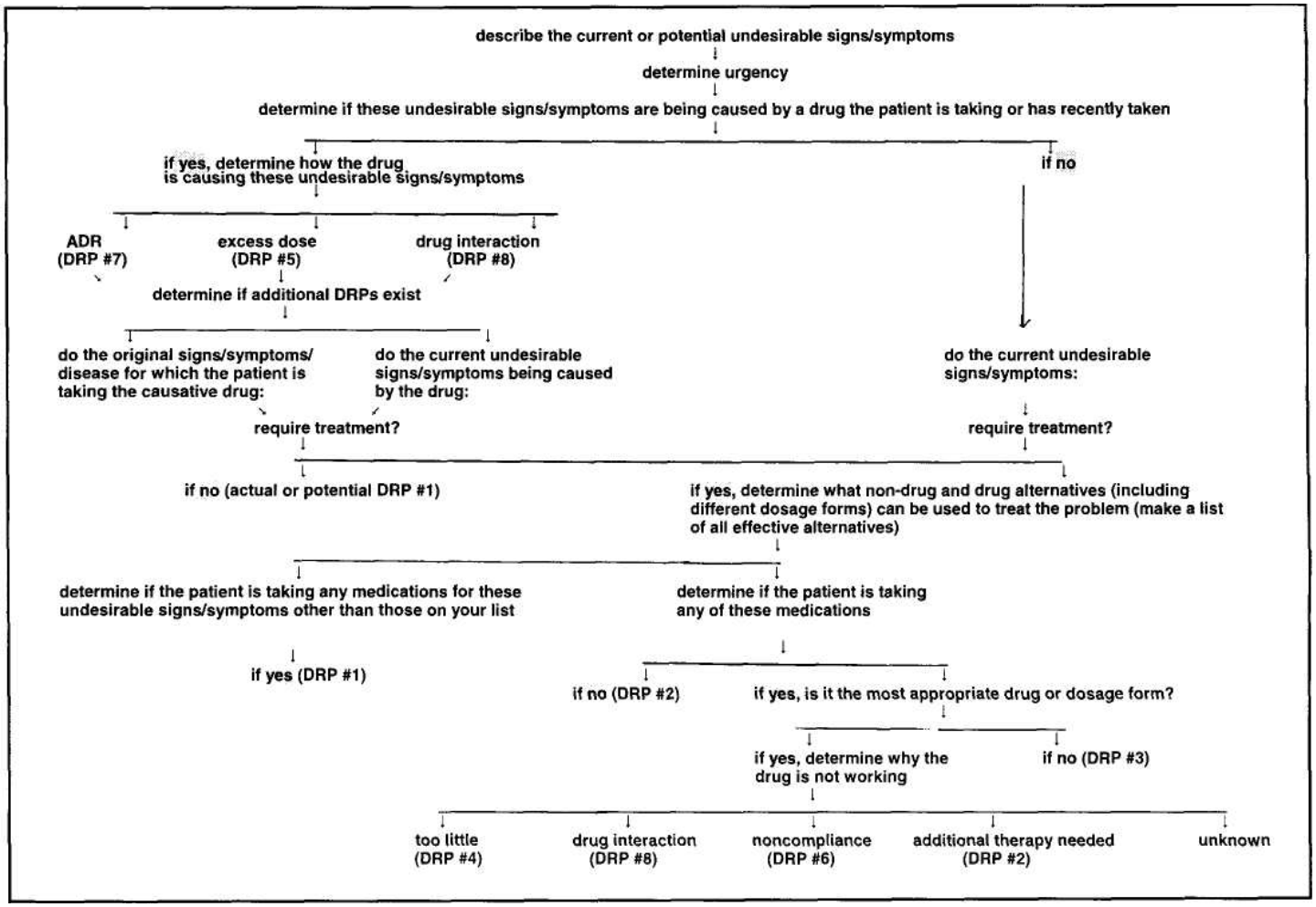

Fig. 2. Therapeutic thought process algorithm. Developed by N. Winslade and J. Bajcar (revised 1995)

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month compulsory self-medication courses, entitled Pharmaceutical Care 1A and 1B(1). These courses were modelled on principles developed in former self-medication courses, but the format was altered in order to support changes inherent in the new curriculum, and evolved into an approach which combines motivational interaction with self-directed learning using student teams.

1995-96: THE NEW CURRICULUM-PHARMACEUTICAL CARE 1A AND IB

As part of the mission statement for pharmaceutical education in the new curriculum, courses are structured with activities involving clinical judgement, decision making, and problem solving to enable students to learn knowledge, skills and values necessary to meet drug-related needs of patients in society(1). Students enrolled in the new program at the Faculty of Pharmacy entered after at least one year of university education with prerequisites including general arts and science courses. Self-Medication courses were moved into second and third year and became part of a continuum of four Therapeutics courses, renamed Pharmaceutical Care. These courses would focus on the application of the pharmaceutical care process, beginning with mild or self-limiting conditions in the two self-medication courses, followed by progressively more complex diseases, in the latter two courses. Both self-medication courses became compulsory: the first, PCI A, taught in the second semester of the second year, and the second, PC IB, taught in the fall semester of third year. They would use a problem-based, student-centred approach to meet educational outcomes: the problem would involve a paper patient, and the assessment would evaluate students on knowledge, process and integration skills.

The same process for solving cases would be used in all PC courses, and be introduced in the initial course. The Therapeutics Integration Flowsheet, developed formerly by a group of faculty members, would be incorporated into the nine-step process used in the self-medication courses. This flowsheet is a secondary problem-solving process, used to help students standardize an approach to identifying all drug-related problems(7) (Figure 2). A series of patient, drug and disease questions are addressed in sequence allowing for collection and synthesis. The coordinator designed the course and modified it over the next three years in response to student needs, to incorporate innovative reinforcing and enabling strategies for learning.

YEAR ONE OF THE NEW CURRICULUM (1995-96): TEACHING METHODOLOGY

The educational outcomes in the new curriculum are presented in Table II. The topics presented in each course are summarized in Table III.

Syllabus

A course syllabus was prepared and distributed to students at registration which included course outline, schedules, group assignments, forms and cases with recommended

Table II. Educational outcomes in new curriculum

Upon successful completion of this course, each student will:

1. Be able to identify, prevent and solve drug-related problems related to self-care and non-prescription drugs.
2. Be able to utilize and adapt the pharmaceutical care process as a systematic approach to self-care counselling.
3. Using problem-based learning techniques as applied to simulated case studies involving role-playing, be able to:
   - establish a relationship with the patient
   - collect pertinent data regarding the patient, his family history, his condition and prior treatments
   - synthesize and assess the data
   - identify drug related problems

   decide to:
   - refer patient to medical professional
   - re-assure patient that further treatment is unnecessary and/or that appropriate steps are being taken
   - establish a pharmacy care plan in consultation with the patient in which they:
   - determine desired clinical and pharmacotherapeutic outcomes
   - establish measurable endpoints
   - consider all non-pharmacological and pharmacological alternatives
   - individualize therapy
   - counsel the consumer on the use of the product
   - develop a monitoring plan
   - resolve or prevent further drug related problems
   - follow-up the patient's progress appropriately
   - document the care plan
4. Be able to apply special techniques and appropriate communication skills with patients who may have special needs:
   - geriatric, pediatric
   - hard of hearing, blind
   - illiterate
   - embarrassed, shy, talkative, angry
   - different language speaker
   - culturally diverse
5. Be aware of moral, ethical and legal responsibilities of the practising pharmacist in the area of self-medication in addition to social issues associated with self-medication.
   - This includes developing a sensitivity to and appreciation of diverse cultural attitudes and behaviours.
6. Be knowledgeable of basic pharmacology and therapeutics, using problem-based learning techniques as applied to simulated case studies.
   - Be able to apply this knowledge to non-prescription products, understanding:
   - common-products - similarities and differences
   - active ingredients
   - non-medicinal ingredients
7. Be aware of self-medication hazards:
   - incompatibilities/interactions
   - contra-indications
   - adverse reactions
   - intentional and unintentional inappropriate/dangerous use
8. Be aware of and able to assess issues in self-medication related to:
   - advertising
   - consumer perceptions
   - packaging
   - in-store promotions
   - coupons
   - availability of self-medication products
   - the role of the pharmacist/the role of organizations
   - the role of the manufacturer

Table III. Content of cases for pharmaceutical care courses

PC1A	PC1B
dry skin	lice
contact dermatitis	scabies
atopic dermatitis	pinworms
seborrhea	eye irritation
burns	acne
insect bites	vaginitis
smoking cessation	hyperacidity
athlete's foot	cough and cold
warts	psoriasis
colic	constipation
diaper dermatitis	hemorrhoids
vitamins	pain management (internal analgesia)
motion sickness	external analgesia
herbals - ginseng	Swimmer's ear
poisoning	contraception
photosensitivity	traveller's diarrhea

supplemental readings and product lists.

Groups

The initial class of 132 students was divided into 15 groups, according to academic standing the previous year. For example, the first group consisted of students with the highest standing, the lowest standing, the sixteenth highest standing, the sixteenth lowest standing, etc. Each group had a cross section of academic abilities to facilitate mentoring between stronger and weaker students. This standardized membership: no group would have any perceived academic, or cultural advantages or disadvantages over others. The results from term assignments supported this contention: each group received similar overall averages, with very little variances in performance. Students were not advised as to the process for group assignment.

Case Presentations

Preparation of Cases. The course instructor facilitated 20 of 31 cases: those relating to her area of specialization (dermatology) in addition to several others. Seven additional instructors who had areas of expertise, and a practice site providing pharmaceutical care, moderated eleven cases, and two instructors presented interactive classes on herbal medications, ostomy, incontinence and home health care.

A half-day training program was undertaken for guest lecturers, reviewing the principles of problem-based learning, course format and a list of requirements for case preparation. This included design which would meet course objectives, suggested readings, a list of ten to twenty topic-specific self-medication products and examination questions.

Organization. Each group was required to collaboratively prepare and present one case to the class. In addition, each group member was required to individually prepare a written analysis of a second case being presented by another group, and serve as assessors for that group's presentation. Initially, each assignment was worth 10 percent of the course mark.

Format. Each presenting group was given 40 minutes to 'teach' their case using the pharmaceutical care process.

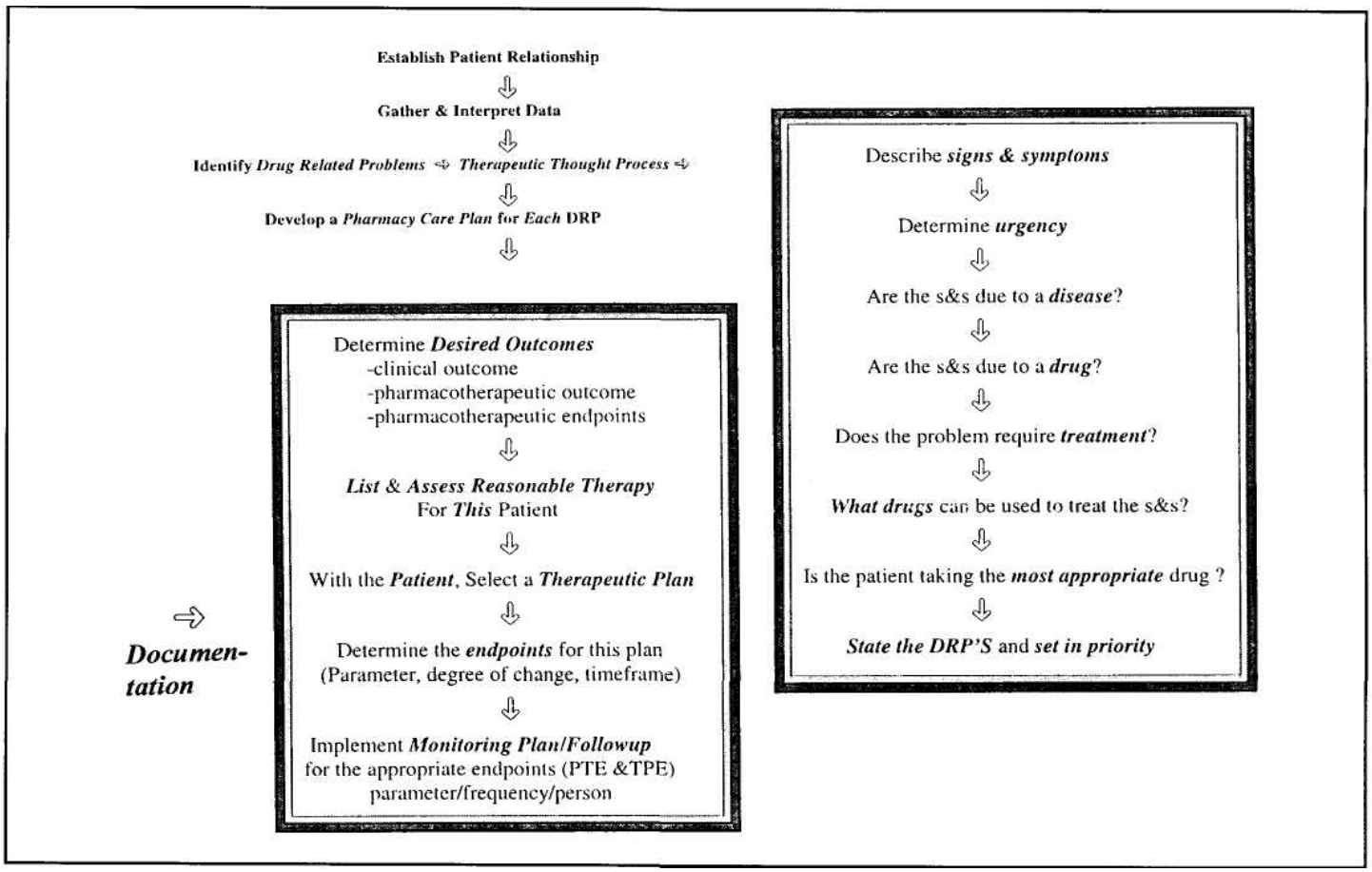

Fig. 3. Pharmaceutical care process: PHM 220H/320F

This included role-playing the initial history taking with the patient, and use of the therapeutic thought process to identify any drug-related problems. This reviewed differential diagnosis, pathophysiology, risk factors, and assessment of disease or drug- related contributions to signs and symptoms. Non-pharmacologic and therapeutic alternatives, including preparations from required product lists, were assessed and ranked according to efficacy, onset and duration of action, toxicity, interactions, convenience and cost. Options included physician referral, or use of only non-pharmacological therapy. A care plan for the most urgent drug-related problem was developed. It outlined outcomes, alternatives, counselling, endpoints, monitoring plan, and documentation, including pharmacy profile forms or letters to the attending physician. (Figure 3) The session ended with a role-play of the discussion of the care plan with the patient, including hands-on demonstration of products. These were available from the professional practice-laboratory and were signed out by the group prior to their presentation. A complete written version was due one week before the presentation. A corrected copy was prepared as a class handout. In the final 10 minutes of class, the presenting group would field questions, serving as 'experts.' Those they were unable to answer would be addressed by the assessing group experts, and finally, comments were given by the guest facilitator or course instructor.

Assessment of Group Work

Two separate forms evaluate group work. The first assesses all components of the presentation with respect to both process and content in three sections (Appendix A). Section A addresses integration of the pharmaceutical care process via a step-wise checklist positioned vertically. Horizontally, space is provided to write relevant commentary and to choose a score from one to ten, indicated by six descriptors: zero to three, inadequate; four, marginally adequate; five, adequate; six to seven, competent; eight, superior; nine to ten, excellent. Assessors are directed to score using the written descriptors: the level meeting expectations is competency. Section B assesses knowledge integration and application in three areas: quality of information, application of knowledge to the patient situation, including problem solving and critical think abilities, and preparation of handout. Section C assesses the class presentation. An additional section provides space for summative comments, strengths, and areas for improvement.

The form was used by all four assessors: presenting group (self-assessment), assessing student group (peer assessment), guest facilitator and course coordinator. The presenting group used it as a guide in preparing their work: it was due immediately after the presentation. Each member of the assessing group also completed the form, due one week later. The final mark, 10 percent of the course grade, was based upon a 65 percent equal weighting from the instructors, and a 17.5 percent equal weighting from presenters and their peers. Completed forms were photocopied, peer names removed, and returned to the group within two weeks.

The first year, this form was not used to grade individual written cases from the assessors. Rather, their assessment

evaluated three areas: strengths, areas for improvement, and insights, and was returned within one week. Students had an option of redoing the assignment, and their overall mark averaged initial and improved scores.

Each presenting student filled out a second form, which evaluated self and group member performance. (Appendix B) These were due one week after the presentation. The first page assessed each student individually in terms of time spent, role in group, responsibility in preparation of case, and group interaction dynamics rated as poor, fair, good, very good or excellent. The second page solicited written subjective feedback about group dynamics, learning experiences, communication skills, strengths and areas for improvement. All forms were kept confidential to encourage honest feedback. Students who achieved a rating of good or better received the group mark. Students who received a fair or poor rating, supported with examples, by two or more group members, received an appropriately lower mark, which was zero for a nonparticipant. Students rated superior and deserving a higher mark received a bonus mark.

Pre- and Post-Tests

At the beginning of the introductory lecture, students were given a pre-course test which consisted of pharmaceutical care definitions, multiple choice case-based questions, and ten clinical slides for identification. The average class score was 28 percent. During the last five minutes of the last class, the test was repeated, and the average class score was 70 percent.

Before or after class, at weekly or biweekly intervals, students not presenting or assessing, wrote a one or two question quiz on key content scheduled that day, or the week before, to assess recall, attendance and preparation for class. Results were graded and made available, but not included in their averages. They served as the basis for bonus marks awarded to students who consistently attended class and scored well. At the beginning or end of class, students were also sometimes asked to write a 'one-minute paper' describing the most important and the most confusing concepts of the preceding session. Those identified as confusing were reviewed the next class.

Examinations

Students wrote case-based, noncumulative midterm and final examinations. Format included multiple choice, short answers, essays, and completion of one case using the pharmaceutical care process. Cases were either new patients with similar conditions or follow-up complications of patients encountered in class. Testing of course objectives included recognition of self-medication products from product lists. Bonus questions were included.

A final oral clinical skills examination was held two months after completion of the second course, based on cumulative material from both courses. A description of the preparation and implementation of this oral examination has been prepared for publication.

Workshops

Workshops were held two or three times a semester in which pharmaceutical manufacturers were invited to set up displays of products and information, allowing the students to have hands-on exposure and opportunity for discussion.

Formative and Summative Evaluations

Students could complete two formative evaluations. An interactive session evaluation welcomed reflections about the coordinator, guest lecturers, case studies, workshops, group work, course content and pharmaceutical care process, using categories of strengths, areas for improvement, and insights. Two copies were in the syllabus, and students were encouraged to. submit them ad hoc so concerns could be addressed continuously.

The second evaluation was a session evaluation carried out in class midsemester. These were tabulated within a week and an optional tutorial held to address all issues. Two-thirds of the class attended. Suggestions for resolution were proposed, and students used coloured voting strips to register their support of each plan. Some issues were immediately resolved while one requiring submission to the curriculum committee was implemented the following year.

Students also completed summative course evaluations, standardized and administered by the Faculty. Results of summative evaluations indicated the students' support of the course, teaching methodology, and formative changes.

Solutions to Student Concerns

Issues raised during formative evaluations produced the following solutions acceptable to both students and the instructor.

Workload. Students felt that case preparation prior to assessing another group compelled each student to learn content, and provided individual assessment. However, to do this individually in addition to their group presentation was time intensive. The instructor also felt it was challenging to mark all of the assignments within a one to two week turnaround with a class of 132.

It was decided that the next semester, the assessing case would also be a group assignment. Students accepted the ramifications in terms of weighting: curriculum stated no greater than 10 percent of any course mark should come from group work, and so these two term assignment would be 10 percent and not 20 percent of their mark. As compensation, the instructor dropped the lower mark of the two assignments.

Syllabus Clarification. Students appreciated the syllabus: organization of relevant materials in one package allowed them to work ahead, facilitating focus and time management, primary issues in large classes with problem-based learning. They wished to make it more 'user friendly' accessing certain sections. Although individual sections were numbered, the entire syllabus did not have a cohesive numbering system, due to technical difficulties with the incorporation of individual files, forms and photocopied references. Use of coloured sections, and hand numbered pages was implemented the following semester.

Number of Group Activities Required by Each Course. Students were involved in up to nine different groups for faculty courses, which made scheduling meeting times very difficult. Most group work is done outside class hours. It was decided that group membership be coordinated between courses whenever possible so that meetings could be more productive. The following semester other courses used groups created in this course, since selection used an ability-based

process. Permission was given to keep groups intact the subsequent year if students wished: three of the fifteen groups requested this.

Lack of Time Spent on Learning Process. The pharmaceutical care process had been presented in the first ten hours over five weeks, after which cases were presented. Students felt this time frame too compressed to assimilate the process before using it to present cases. As the second year course began in the spring, it was decided to lengthen the second year course over two semesters, teaching process in the fall, and beginning cases in January.

Low Course Weighting, Lack of Time for Input from the 'Expert' Facilitator, and Relevance of Initial Role Playing vs. Input from Facilitator. One solution was found for the last three issues. Course weighting is based on the didactic teaching format, where weighting relates to class contact time, not preparation time, yet all of the group preparation for this course was done outside of class. This was an issue for time management with other courses, since student perception of course 'value' is sometimes linked to course weight. A second concern was the lack of time for the instructors to provide more than superficial feedback in class because of time required to work through the process. There was no time to discuss other issues, controversies, related examples, answer questions etc, since the two groups working up the case were asked to field questions before the facilitator addressed them. Students appreciated the expertise of the guests and wished to have more interaction. Finally, while the initial role-playing was considered instructive, the final role-playing was considered more important, although, 'staged'. Students preferred not to have the initial section if it meant less time for interaction with the instructor, and also objected to the lack of a 'real life' situation in the final role-play. Nevertheless, they wanted to retain the problem-based, student-centered approach and avoid a more traditional didactic instructor-centred format.

Students selected the proposal which addressed all three concerns. An additional seven hours would be added to each course in the form of a 15 minute 'required tutorial' for each class. This time would be integrated into the class and the format would be changed. The presenting group would take twenty minutes to present the therapeutic thought process. The guest facilitator would then moderate the next 20-25 minutes: first, addressing issues and fielding questions relating to content presented, then, directing development of a care plan using overheads. Key steps would be suggested by interacting with presenting and assessing expert groups, and with class members. Coloured voting strips would be used to decide solutions. In the final 5-10 minutes, the class care plan would be role-played, by a 'pharmacist' from the presenting group and a 'patient' from the assessing group, allowing for an unscripted decision from the patient in response to the pharmacist's suggestions. The pharmacist would counsel using the products or nonpharmacological measures selected by the patient.

This proposal was enthusiastically endorsed by the students since the addition of time increased the course weighting, and the other issues were also resolved. This proposal was implemented in both courses in the Fall of 1996. It was decided to leave the initial role-playing in place for the second year course in order to accustom students to the first and second steps of the process.

Motivational Interaction

During preparation of cases, the facilitator offered clarification or direction to students who were having difficulty in interpreting process or content. This input was very well received by students who felt more confident in submitting a final copy and in making a presentation in front of the class. The instructor decided to formalize this approach for all students the following semester.

YEAR TWO OF THE NEW CURRICULUM (1996-1997): MODIFICATIONS

In the second year of the first course, the interactive process lectures were held in the fall, one hour a week for 11 weeks. The more leisurely pace for learning these new concepts also permitted early preparation for case presentations, which began in January and were scheduled as one rather than two per week when possible. The color-coded, hand-numbered syllabus contained a revised chart of course objectives, outlining corresponding teaching and learning activities with methods of assessment. (Table IV)

In encouraging students to enjoy problem-based learning and regard the classroom as a safe environment, an interactive system with facilitators was formally established. Facilitators were appraised of changes in format and expectations. Students in both presenting and assessing groups met with either the course instructor or the guest facilitator after their planning session, and could hand in a rough draft at least one week before the due date. The assessment form was used to preview the draft and constructive suggestions were offered, within one or two days. This was handled in a variety of ways: either meeting with appointed group representatives, or the entire group; or returning comments, in writing, or by fax or E-mail. One week before the presentation, the final copy was submitted and marked. When a guest facilitator was involved, they reviewed both drafts, while the course instructor also reviewed final drafts to provide consistency. Any gross misconceptions about process or content which still existed were identified to the group for correction before class. This avoided a negative or critical classroom atmosphere, while still allowing opportunities for challenge and discussion. This greatly increased the confidence level of both groups involved in case preparation, during the class presentation. This system also facilitated rapport between individual students and instructor more quickly, despite large size classes.

The new 65-minute format, featuring both student and facilitator-directed sections, was overwhelmingly accepted by the students. Facilitators had more time to field questions and discuss issues, and comparisons could be raised with other kinds of patients or situations. The development of the care plan involved the entire class, and there was a great deal of interactive deliberation about decisions. The use of voting cards reinforced the concepts of the acceptability of various solutions to the case. The impromptu role-play of the patient by a member of the assessing group emphasized the patient-centred approach: the therapeutic plan always involved a patient-directed outcome, and patients were counselled in monitoring endpoints.

The presenting group's written work was subdivided into two sections. The latter was not distributed to the class: they received only the first section, and made notes as the care plan was developed in class.

The previous case assessment form was retained, but colour coded and modified into two versions: one grading

Table IV. Year Two objectives, activity and assessment

Course objectives	Teaching/Learning activity	Assessment
1. Be able to identify, prevent and solve drug related problems related to self-care and nonprescription drugs.	• Team workup of assigned case and presentation to the class • Written case workup of case to be assessed	• Team and self-assessment (form) • Peer team assessment (form) • Assessment by coordinator • Written and oral examinations • Oral interactive class case discussions
2. Be able to utilize and adapt the Pharmaceutical Care process as a systematic approach to self-care counselling	• Team workup of assigned case and presentation to the class • Written case workup of case to be assessed • Interactive class development of pharmacy care plans	• Team and self-assessment (form) • Peer team assessment (form) • Assessment by coordinator • Written and oral examinations • Oral interactive class case discussions
3. Use problem-based learning techniques as applied to simulated case studies	• Role-playing of assigned cases • Team workup of assigned case and presentation to the class • Written case workup of case to be assessed • Cumulative review interactive session	• Team and self-assessment (form) • Peer team assessment (form) • Assessment by coordinator • Written and oral examinations • Oral interactive class case discussions
4. Be able to apply special techniques and appropriate communication skills with patients Who may have special needs	• Role-playing of assigned cases • Cumulative review interactive session	• Team and self-assessment (form) • Peer team assessment (form) • Assessment by coordinator • Assessment by guest lecturer Written examinations Oral interactive class case discussions
5. Be aware of moral, ethical and legal responsibilities and social issues associated with self-medication	• Team workup of assigned case and presentation to the class • Written case workup of case to be assessed • Interactive oral class cases • Guest lectures	• Written and oral examinations • Oral interactive class case discussions
6. Be knowledgeable of basic pharmacology and therapeutics	• Problem-based learning of content through case study approach • Team workup of assigned case and presentation to the class • Written case workup of case to be assessed • Interactive oral class cases • Guest lectures	• Peer team assessment (form) • Assessment by coordinator • Assessment by guest lecturer • Written and oral examinations • Oral interactive class case discussions
7. Be aware of self-medication hazards	• Team workup of assigned case and presentation to the class • Written case workup of case to be assessed • Workshops • Guest lectures	• Team and self-assessment (form) • Peer team assessment (form) • Assessment by coordinator • Written and oral examinations • Oral interactive class case discussions
8. Be aware of and able to assess issues in self-medication related to advertising, consumer perceptions, packaging, in-store promotions, coupons, availability of products, the roles of the pharmacist, organizations, and the manufacturer	• Team workup of assigned case and presentation to the class • Written case workup of case to be assessed • Workshops • Guest lectures	• Assessment by coordinator • Written and oral examinations • Oral interactive class case discussions

the presenting group included the class presentation, and one grading the assessors, which did not have this section. Students now filled out peer and self-assessment forms for each of two collaborative assignments. The form designated first or second assignment, and students commented on differences noted between the two experiences.

Most of these changes were implemented for students returning to the third year course, with two exceptions. Due to scheduling restraints, it was not possible to lengthen their course from four months to eight months. The third course retained the initial role-play for the first few cases and then substituted a brief synopsis of relevant history taking or communication issues.

The formative and summative evaluations reflected enthusiastic comments from students regarding these modifications. New students appreciated the time dedicated to process learning, and the slower schedule of case presentations, while returning students felt able to cope with heavier workload in a condensed time frame because of interaction with the facilitators and class format changes. Students

appreciated instructor input, both in the small group interactions before class, and during class. Some felt that the final role-playing could be omitted in favour of more interactive discussion. The results of the pre-course test for the second year students, were similar to the preceding class: 26 percent. However, the results of the post-course test were much higher: 91 percent. This may reflect an improvement in recall and understanding with format change. The results from the third year course were 26 percent pre and 76 percent post. Overall, informal feedback from third year students who had completed the two courses was very positive. The course instructor was awarded the Undergraduate Professor of the Year Award, reinforcing their support of the format, process and content.

YEAR THREE OF THE NEW CURRICULUM (1997-98): IMPLEMENTED CHANGES

A number of refinements were made to both courses:

- The name 'group' was changed to 'team', and more emphasis was placed on teaching team roles. The first page of the peer and self-assessment form was modified to reflect these changes, allowing for a more diagnostic approach to assessing team dynamics, and replacing the rating scale with a numerical one from one to five. (Appendix C) With the previous forms, individual behaviours were emphasized, and students tended to divide work up independently, often submitting a collection of individual efforts. This approach reflected negatively at times in the assessments. The use of a 'poor to excellent' rating scale reflected some very subjective ratings. The new form encouraged students to work together to ensure their assignment was cohesive. The expected behaviours for task and maintenance roles, as well as types of nonfunctional behaviour, were clearly delineated, and served as a reminder to students to work and assess within these roles. Students were more objective using the numerical system of assessing, in which the consistency with which they exhibited behaviours was quantified from 'never' to 'exceeds expected level'.
- A quality assurance (QA) representative was selected by each team. This representative met individually with the instructor on an ad hoc basis, to review draft submissions or discuss important issues, as well as in scheduled meetings with all the QA representatives and the instructor to elicit class feedback.
- To foster one-on-one instructor-student relationships, which is often difficult in large classes, students had an option of submitting a confidential and brief 'bio' to the course instructor . A considerable number of students did so, and expressed appreciation of both the opportunity and the instructor's interest. The instructor came to know students much more quickly this way, and it also facilitated the writing of references, which students often request for job or scholarship applications.
- A Myers-Briggs inventory was carried out on a voluntary basis as a pilot project with incoming second year students, as part of their orientation session. This opportunity for self-reflection was undertaken to allow students to explore their learning and problem-solving styles to heighten their awareness in adjusting to team dynamics. Students response was enthusiastic and positive.
- The difficulty of learning product contents for examination purposes had been an concern for some students. The instructor felt that an emphasis should be placed on verifying ingredients without memorization due to line extension issues. Product lists were retained for case assignments but the examination format was altered to include a list of ingredients for relevant products.
- Students were given input on examination design before the midterm. They voted to determine types of questions format, length of examinations, and respective weighting of written and oral examinations, since group assignments were set at a 10 percent ceiling. Students indicated approval of the opportunity to be involved in this way, and an increase in comfort level preparing for examinations.
- The workshops were expanded to include complementary health care: representatives were invited from the following alternative medicine practices: acupuncture; aromatherapy; homeopathy; naturopathy; herbals; Chinese medicine; shiatsu; massage therapy; and reflexology.
- Two course-specific websites were developed to provide computer-assisted interactive learning tools, and to provide ongoing daily internet communication from their instructor about course developments. This was a modification to the course design that the instructor felt would enable understanding and communication, give students the benefit of new technology, as well as encourage them to develop skills in this area.. There is a home page for each course, limiting access to students through the use of individual passwords. On each page, students can visit the following headings: *What's New?*, *Supplemental Readings*, *Clinical Clips*, *Exam Review*, *Marks*, and *Interactive Cases*. At the bottom of each page, students can send an E-mail message to the instructor with comments, questions or suggestions. These pages are continually evolving. The *What's New?* hyperlink keeps students abreast of announcements, scheduling changes, tutorials, workshops, test results, legislative changes in nonprescription drug status, etc. *Supplemental Readings* features extra references students may find useful, charts or tables presented in class, as well as interactive computer slide presentations on various topics presented in class by the instructor. *Clinical Clips* contains clinical pictures from the instructor's personal slide collection which supplement the case studies. *Exam Review* lists material required for upcoming examination, auxiliary questions and answers of the type expected, and the approximate number and weighting of questions. *Marks* posts the results of midterm examinations and term assignments. *Interactive Cases* is a 'work in progress' in which additional cases for application of process and content not covered in class presentations or covered by didactic lectures are being developed and programmed. The first of such cases, Allergic Rhinitis, was ready for the third year class for their fall semester. Information on the website is posted for students who lack computer access. Students were overwhelmingly enthusiastic about the introduction of this technology to their learning, and the ability to speedily access and print important material as necessary. The website will expand to include sections of the syllabus such as course outline and cases.

COMMENTARY

Although implementation of these courses was challenging,

the response of students indicated that they had a high level of motivation, energy and enthusiasm for the courses; many commenting that these were two of the most meaningful or enjoyable in the curriculum. Atmosphere in the classroom was positive and upbeat, and students appreciated and respected their peers and mentors in this non-threatening environment.

The greatest area of difficulty was time management. Students spent large blocks of time outside class in preparation. The course instructor devoted considerable time reviewing all assignments and marking major portions of written examinations, in addition to facilitating many cases. The dedication of guest faculty to the principles of pharmaceutical care and to problem-based learning, however, was significant. Most instructors, who have active practice sites, appreciated the benefits to the students of directing active learning principles, and most had embraced this philosophy of learning for several years.

As a result of positive evaluations, the courses continue to be taught in this format, permitting ongoing suggestions and formative assessments from students to introduce modifications and innovations as time progresses. Each year, students in these large classes will bring their own creativity and revisions to the framework of these problem-based, pharmaceutical care based self-medication course.

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APPENDIX A. 220H: PHARMACEUTICAL CARE 1A: FULL ASSESSMENT OF PRESENTATION[a]

TEAM BEING ASSESSED_____

TOPIC_____

DATE_____

Scoring: Inadequate = 0-3; Marginally adequate = 4; Adequate = 5; Competent = 6-7; Superior = 8; Excellent = 9-10.

SECTION A: INTEGRATION OF PHARMACEUTICAL CARE PROCESS

1. ESTABLISH PATIENT RELATIONSHIP
   PHARMACIST
   - positive approach
   - non-judgmental/creates confidence
   - competent/-assertive
   - good communication skills:
     - articulates well/moderate rate of speech
     - appropriate language level/pronunciation
     - attentive listening/empathetic
     - positive body language/eye contact
   - identifies self, reason for dialogue, goals
   - repeats back advice/patient questions as needed

   PATIENT ROLE
   - well represented

2. COLLECT, SYNTHESIZE & INTERPRET RELEVANT INFORMATION
   HISTORY TAKING
   - demographics
   - medication history :
     - current Rx medications
     - current non-Rx medications
     - past Rx and non-Rx medications
     - nontraditional therapies
   - disease conditions/ pregnancy/ other
   - allergies/sensitivities
   - family history

THERAPEUTIC THOUGHT PROCESS

3. IDENTIFY EXISTING OR POTENTIAL DRUG RELATED PROBLEMS
   1. identify signs & symptoms
   2. determine urgency
   3. determine if s&s due to a disease:
      - differential diagnosis
      - pathophysiology (diagnosis)
      - aggravating/ risk factors
   4. determine if s&s due to a drug:
      - time frame/ drugs causing similar s&s
   5. overall conclusion of cause of s&s
   6. no treatment required/needs treatment
   7. assessment of alternatives:
      - non-pharmacological
      - pharmacological: non-Rx and Rx medications
      - relative efficacy
      - onset of effect /duration of action
      - contraindications
      - duration of treatment
      - common side effects/toxicity
      - drug/food/lab test/ interactions
      - convenience/cost
   8. all DRP's identified and set in priority

ESTABLISH PHARMACY CARE PLAN

4. ESTABLISH DESIRED OUTCOMES
   know what the patient wants from therapy
   clinical outcomes
   - cure disease
   - reduce/resolve symptoms
   - arrest/slow disease process
   - prevent disease or symptoms
   - normalize physiologic parameter

   pharmacotherapeutic outcomes
   link to specific endpoints

(parameter, degree of change, time frame)
5. DETERMINE and RE-ASSESS FEASIBLE ALTERNATIVES FOR THIS PATIENT
   no treatment required/self med/refer to MD
   non-pharmacological
   pharmacological: non-Rx and Rx medications
      relative efficacy
      onset/duration of action
      duration of treatment
      common side effects/toxicity
      drug interactions
      convenience/cost
6. THERAPEUTIC PLAN AND ENDPOINT
   consensus decision with patient
   review name of medication, dose, frequency
   directions for use & storage
   identify possible drug/food interactions
   common side effects (without alarming)
   review procedure if side effects occur
   determine patient's understanding
   allow for patient questions/feedback
7. IMPLEMENT MONITORING PLAN AND DOCUMENTATION
   decide whether patient is improving
      clinically and pharmacotherapeutically for each
   desired endpoint:
      who will monitor, when to begin and stop
   complete written documentation
8. FOLLOW-UP
   how it will occur
   have endpoints been met conclude dialogues
   politely & professionally

TOTALS

SECTION B: KNOWLEDGE INTEGRATION AND APPLICATION

1. QUALITY OF INFORMATION
      correct
      complete
      concise
2. APPLICATION OF KNOWLEDGE TO THE PATIENT SITUATION
      PROBLEM SOLVING ABILITIES
      content was correctly understood and interpreted
      general priniciples used to solve problem or draw conclusion
      CRITICAL THINKING ABILITIES
      appropriate content applied to case
      value of material for specific case effectively judged
      text material effectively interpreted
3. PREPARATION OF HANDOUT
      pharm. care process used effectively
      information content correct & complete
      content accurately interpreted content
      appropriately applied to case

TOTALS

Additional Comments:_____
Strengths: _____
Areas for Improvement:_____

SECTION C: CLASS PRESENTATION

ORGANIZATION
ENTHUSIASM
CLARITY
COOPERATION
AUDIBLE
MAINTAINED INTEREST
CREATIVITY
USE OF PRODUCTS
DEMONSTRATION OF PRODUCTS
USE OF PROPS AND COSTUMES
APPROPRIATE USE OF HUMOUR
APPROPRIATE USE OF LANGUAGE
FINISHED WITHIN TIME LIMIT
TEACHING AIDS (OVERHEADS, BLACKBOARD)
TOTALS
AVERAGES

OVERALL AVERAGE MARK = _____

SUBMITTED BY: _____
YOUR TEAM NUMBER _____
(Please print)

[a]This appendix was edited to conserve space. Readers may obtain the original forms by writing the author.

APPENDIX B. PHM 220H - PHARMACEUTICAL CARE 1B: GROUP AND SELF ASSESSMENT FORM[a]

GROUP # _____ CASE# _____ DATE: _____
SUBMITTED BY: _____
TOPIC:_____
INDICATE FIRST OR SECOND ASSIGNMENT _____

DESCRIBE THE ROLE EACH STUDENT IN YOUR GROUP FULFILLED IN THE PREPARATION AND PRESENTATION OF THIS ASSIGNMENT. INCLUDE ORGANIZATION, PREPARATION, RESEARCH, WRITING, HANDOUT, PROPS, PRODUCTS. ETC .
BE SURE TO INCLUDE YOURSELF

E = EXCELLENT VG = VERY GOOD G = GOOD
F = FAIR P = POOR

STUDENT NAME _____

TIME SPENT
ROLE IN GROUP
RESPONSIBILITY IN PREPARATION OF CASE
SPECIFIC TO GROUP INTERACTION
   respects rights/opinions of others
   does not interrupt others
   does not monopolize discussion
   interested in discussion/others' opinions
   positive verbal/nonverbal communication
   validates or reinforces others' opinions
   constructively challenges information
   facilitates discussion
   mediates
   keeps group on track

OVERALLASSESSMENT
*E,VG,G,F,P

How did your group determine its approach to this assignment? Was a leader assigned?

Describe the dynamics of your group. Was it difficult or easy to reach consensus? Did each member contribute equally, or was the division of work not balanced? What were the positive and negative interactions between members of your group? Comment on the degree of cooperation.

What communication skills did you need in order to work effectively with one another? Comment on parallels that could be

drawn in counselling patients, or in working in a multidisciplinary situation.

Describe the beneficial learning experiences you derived from working through this assignment.

What aspects of your group assignment could have been improved, in your opinion?

Additional comments:

[a]This appendix was edited to conserve space. Readers may obtain the original forms by writing the author.

APPENDIX C. PHARMACEUTICAL CARE 1: TEAM AND SELF ASSESSMENT FORM[a]

TEAM #_____ CASE#_____ DATE: _____
SUBMITTED BY: _____
TOPIC:_____
FIRST OR SECOND ASSIGNMENT_____

DESCRIBE THE ROLE EACH STUDENT IN YOUR TEAM FULFILLED IN THE PREPARATION AND PRESENTATION OF THIS ASSIGNMENT. INCLUDE ORGANIZATION, PREPARATION, RESEARCH, WRITING, HANDOUT, PROPS, PRODUCTS, ETC . BE SURE TO INCLUDE YOURSELF

STUDENT NAME _____

TIME SPENT

ROLE IN TEAM

RESPONSIBILITY IN CASE PREPARATION

SPECIFIC TO TEAM INTERACTION: [Rating: 0-never; 1-rarely; 2-infrequently; 3-usually(not always); 4-consistently; 5-exceeds expected level]

TASK ROLES
- Initiating information or Opinion-Seeking
- Information or Opinion-Giving (constructively challenging)
- Elaborating
- Coordinating (facilitating discussion)
- Summarizing

MAINTENANCE ROLES
- Encouraging (respects rights/opinions, validates, reinforces)
- Gate Keeping (keeping team on track)
- Setting Standards (+ve verbals, nonverbals)
- Following
- Expressing Team Feelings

BOTH TASK & MAINTENANCE ROLES
- Evaluating
- Diagnosing
- Testing for Consensus
- Mediating
- Relieving Tension

TYPES OF NONFUNCTIONAL BEHAVIOR
- Being Aggressive
- Blocking
- Self-confessing
- Competing (monopolizing, interrupting)
- Seeking Sympathy
- Horsing Around
- Seeking Recognition

OVERALL ASSESSMENT (0-5)

[a]This appendix was edited to conserve space. Readers may obtain the original forms by writing the author.