

Short Paper

Evaluation of a Model Clinical Therapeutics Curriculum for Physician Assistant and Nurse Practitioner Education in the United States

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In response to broadly increased prescription privileges of physician assistants (PAs) and nurse practitioners (NPs) in the United States and the need for training programmes to effectively teach and document the competencies of their students in clinical therapeutics, seven regional health science centers formed a consortium to construct a clinical therapeutics model curriculum. The consortium designed a problem-based curriculum with objectives matched to cases designed to reflect three levels of responsibilities commonly delegated to PAs and NPs: (1) initiating and managing therapy, (2) monitoring and following up care, and (3) delivering emergency care. A survey on training programmes that had access to the model curriculum indicates that it has been helpful to them and their students and that the case studies were accurate in content and up-to-date. Respondents recommended that a similar approach should be offered in other content areas.

Keywords: Clinical therapeutics curriculum; Nurse practitioner education; Physician assistant education; Problem-based learning

INTRODUCTION

During the past decade, state and federal authorities in the United States have broadly increased the prescriptive privileges of non-physician health care providers. As a result, it has become imperative that accredited educational programmes in the United States for physician assistant (PA) and nurse practitioner (NP) programmes effectively teach and document the competencies of their students in the field of “clinical therapeutics”, an inclusive term for curricular components specifically designed for teaching pharmacy and pharmacotherapy.

In the United States, PAs work under the supervision of a physician and carry out diagnostic and treatment services according to pre-set guidelines or standardized protocols.

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NPs perform diagnostic and treatment services somewhat more independently in a physician office or in their own practice. State law in each of the 50 states specifies services that PAs and NPs can provide. Thus, there is variability from state to state regarding their medication duties.

PAs and NPs both complete a two-year, post-baccalaureate graduate programme that awards a Masters degree. The difference is that, while PA programmes are located in schools of medicine and admit students from a variety of four-year college-level programmes, including nursing, NP programmes are located in schools of nursing and admit only graduates of nursing schools. The training of PAs and NPs in the field of clinical therapeutics varies amongst educational programmes. One aim of the Model Clinical Therapeutics Project (MCTP) Consortium was to move towards the standardization of training at least in the PA programmes.

In 1993, seven regional health science centers formed a consortium, MCTP with four objectives: (1) to construct a national clinical therapeutics curriculum model as a resource for training and evaluating PA and NP students, (2) to strengthen and standardize the resources for training and evaluating clinical therapeutics in all PA and NP training programmes, (3) to develop a database of evaluation instruments and measurement techniques for assessing clinical knowledge and competencies of graduating students, and (4) to hold regional faculty development workshops to teach the model curriculum to PA and NP educators nationwide.

DESIGN AND INTRODUCTION OF THE MODEL CURRICULUM

A 1994 MCTP survey of the 55 then-accredited PA programmes in the United States confirmed a wide variation in the clinical therapeutics learning objectives, instructional methodologies and design, and competency assessment (Wilson *et al.*, 1995). MCTP members, meeting 13 times over 3 years,

constructed a problem-based curriculum. In a traditional subject-based curriculum, the course content is divided into topics and subtopics; whereas, in a problem-based curriculum, content is presented in a series of patient cases.

Problem-based learning was introduced to medical education in North America in the 1960s and 70s by McMaster University at Hamilton, Ontario (Barrows and Tamblyn, 1980), but did not become widespread in the United States until the 1980s when, among other medical schools, New Mexico (Kaufman *et al.*, 1989) and Harvard (Office of Educational Development, Harvard Medical School, 1989) pursued major curriculum design changes. As summarized by Papa and Harasym (1999), problem-based learning is predicated on the educational principle that imparting information in the context of problems makes new information more memorable and accessible.

In addition to a curriculum overview and teaching strategies for case-based instruction, the MCTP model curriculum is organized into four major sections: (1) fundamental principles of pharmacotherapeutics, pharmacokinetics, and pharmacodynamics; (2) general principles of the autonomic nervous system; (3) general principles of antimicrobials; and (4) 150 specific disorders organized by the system. For example, the nervous system includes seven disorders: headaches, Parkinsonism, seizures, nocturnal myoclonus, restless leg syndrome, status epilepticus, and cerebrovascular accidents.

For each disorder, fundamental objectives from section one and objectives specific to the disorder are provided and matched to cases designed to reflect three levels of clinical therapeutics responsibilities commonly delegated to PAs and NPs: (1) initiating and managing therapy; (2) monitoring and following up care; and (3) delivering emergency care.

For example, for the respiratory system, objectives and cases are provided for the PA or NP to initiate and manage bronchiolitis, pneumonia, influenza, croup, asthma, and the common

TABLE I Initiating and managing the common cold

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| <i>Objectives</i> |
| (1) Correctly prescribe and teach patients to use intranasal corticosteroids and intranasal cromolyn in the treatment of allergic rhinitis. |
| (2) Correctly identify five groups of patients in which systemic decongestants should be used with caution. |
| <i>Subjective data</i> |
| A 23 year-old woman who says she's "hooked" on neosynephrine comes to the clinic. She began to use this product two months ago when her allergies were "acting up". |
| <i>Objective data</i> |
| Nasal mucosa appears hyperemic, congested, with areas of increased tissue friability. |
| <i>Assessment</i> |
| (Rebound) Rhinitis Medicamentosa. |
| <i>Questions</i> |
| What medications should be continued and which may be initiated in order to treat this condition? <i>Use of a topical nasal decongestant for longer than 4–5 days can lead to "rebound" congestion (a worsening of nasal congestion when the drug is stopped). Several options exist for managing this condition. Abrupt discontinuation of the topical decongestant is recommended, and topical nasal corticosteroids may be initiated, then tapered, over several weeks to maintain patient airways during the withdrawal phase.</i> |
| What prophylactic medication may be used to prevent future problems? <i>Antihistamines, oral decongestants, and topical corticosteroids are the prophylactic drugs of choice, and should be targeted at patient-specific symptoms. For example, nasal congestion may be helped by systemic decongestant. Rhinorrhoea, nasal itching, and postnasal drip are helped by systemic antihistamines and topical nasal corticosteroids (recognising that topical steroids need to be used regularly, and maximum benefit may take 2–6 weeks).</i> |

cold; to monitor and follow up care for chronic obstructive pulmonary disease; and to deliver emergency care for anaphylaxis. Table I, for example, shows the objectives and case for initiating and managing the common cold.

In 1996, 62 PA and NP faculty staff participated in five regional workshops conducted across the United States to introduce the new curriculum to PA and NP teachers and to help them implement it in their own training programmes. Subsequently, the first edition of the model curriculum was purchased (at \$75 to cover printing and overhead costs) by 58 out of 64 (90%) accredited PA programmes in the United States and by 23 out of 42 (55%) NP programmes that could be identified as having a primary care focus (MCTP

Consortium, 1996). In 1998–1999, an expanded and revised second edition was purchased by 86 out of now 94 (92%) accredited PA programmes and 32 of 58 (55%) NP programmes (MCTP Consortium, 1998).

METHODS

The Project Director (second author) elicited potential survey questions from the MCTP Consortium members and drafted a survey critiqued by two consortium volunteers. He designed the final survey using 23 questions and pilot tested this draft with the clinical therapeutics coordinator of his own PA programme. The pilot test confirmed that the survey could be completed in 10–15 min.

In the spring and summer of 2000, the Project Director sent questionnaires to the clinical therapeutics coordinators of 86 PA programmes and 32 NP programmes ($n = 118$) which had access to the curriculum. To encourage completion, the Project Director sent a letter to programme directors letting them know that a survey had been sent to their curriculum coordinators. Non-responding coordinators were sent e-mails and/or telephoned with reminders.

SURVEY RESULTS

Questionnaires were returned by 69 PA programmes (80%) and 14 NP programmes (43%) for an overall return rate of 70% ($n = 83$), including five programmes that answered some, but not all, the questions.

In terms of curriculum modification, 56% reported that access to the MCTP curriculum model has caused them to increase the number of clinical therapeutic objectives, and 59% reported that it helped them make their objectives more detailed. Seventy-six percent reported that the MCTP Model Curriculum objectives gave them

new insights into the strengths and weaknesses of their own curriculum, and 85% agreed that the model curriculum was valuable to them and to their students.

Ninety-six percent of the programmes reported that the case studies in the model curriculum were accurate in content and up-to-date in terms of drugs. Ninety-three percent also found that the cases were easy to use as models for writing their own case studies, and 92% now use the problem-based approach in teaching some portion of their clinical therapeutics curriculum. Ninety-three percent of the programmes reported that model cases were most useful in small groups, 89% in one-on-one tutorials, and 85% in self-assessments. Model cases were identified as less useful (67%) in large classes.

Forty-four percent of the reporting programmes indicated that they became more confident in their graduates' prescribing competencies; 56% reported no change in these competencies. Overall, 70% of the reporting programmes indicated that the MCTP model curriculum helped them improve the way they teach clinical therapeutics, and 73% feel more confident about scrutiny of their curricula by outside programme accreditation organizations and state agencies.

COMMENTS

The MCTP model curriculum, developed by a consortium of seven academic medical centers, is widely used and is positively viewed by PA and NP programmes in the United States. This approach is recommended for other curriculum areas. In fact, 68% of the reporting programmes using the MCTP curriculum think that it would

be valuable for a similar approach to be taken to develop model curricula for other content areas.

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