

## Experience in the clinical training of nurses for isolated northern regions

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In 1972, the Canadian federal government sponsored six pilot projects in the nurse practitioner field. The object was to offer additional university training appropriate to situations faced by nurses in isolated northern regions. Five of these programs are still operational and are collaborating to complete a core curriculum.

The University of Alberta, Edmonton, as one of the participants, holds two four-month courses per year and is now completing its fifth program. As of February 1974, 33 students had graduated. The average age of the students was 31 years, with a range from 23 to 49 years. The group included 11 midwives, one public health nurse, and four students with a B.Sc.N. degree. Three students had no previous experience of the North, but the average experience was 24 months (range 4 months to 10 years).

The course included initial tests, a lecture period, a period of clinical experience, further tests, and a final group of seminars. The lectures and initial testing covered 7 weeks, and the rotating clinical experience, a total of 12 weeks (Figure 1). The students in the first course were not pre-tested so our analysis of data is restricted to the three subsequent courses. Variables examined were: (a) knowledge of surgical techniques, (b) adult physical examination, (c) adult and paediatric simulated patient, (d) written examinations (Paediatrics, Obstetrics, General Medicine, and Surgical topics)

Using dogs, students were trained to suture various types of lacerations, to perform an intravenous cutdown and a thoracentesis. A surgeon was present to relate this experience to the clinical setting. Further practical experience in suturing was gained in the emergency rotation and some students had opportunities to help with cutdown procedures on patients.

The general adult physical examination was marked adhering to a strict key to minimize variation in evaluation (Table 1). Two sets of marks were given - one for perform-

	MON	TUES	WED	THURS	FRI
2 1/2 WKS	LECTURE			PRE TEST	
3 WKS	CLINICAL				
1 WK					
1 WK					
3 WKS					
1 WK					
3 WKS					
3 WKS					
1 1/2 WKS					
	LECTURE - 7 WKS (PLUS TEST)			CLINICAL - 12 WKS	

Figure 1 Illustrating the format of the course

ing a procedure, the other for doing it adequately. No partial marks were given.

Simulated patient situations where the person playing the role of the patient (adult) or parent (paediatrics) follows a detailed key regarding history were used (Table 2). The physical findings and laboratory data were available on specific questioning (paediatrics) or given to the student (adult) who was then required to reach a differential diagnosis and suggest appropriate management.

Pre- and post-test scores were based on identical material, although post-testing was more extensive. The results (Table 3) are shown as class averages for courses II, III, and IV; however, these parallel individual results fairly closely. The analysis was useful in finding both areas where the students were initially weak and areas where teaching was ineffective. The pre-testing also helped the students to see their learning needs. Prior knowledge of clinical topics was relatively consistent from one course to another. The average improvement also was gratifying and showed a consistency in teaching from course to course.

The necessity of delineating the core material so that evaluation could be more reliable led to a series of workshops among the five courses. Conclusions will be detailed in the form of behavioural objectives, as illustrated by

TABLE 1  
Objective marking scheme for examination of ears, adult physical key

Procedure	Performance of procedure		Technique of examination	
	Possible marks	Marks awarded	Possible marks	Marks awarded
External ear and auditory canal	1		1	
Drum	2		2	
Hearing	2		2	
Total	5		5	

TABLE 2  
Example of marking scheme for simulated patient

I.	Identification	
	13-month-old male child	2
II.	Chief complaint	
	diarrhea and vomiting	2
	for 3 days	2
III.	History of present illness	
	Well until 6 months of age	2
	Formula - had been Similac	2
	Solids (cereal, meat, veg., fruit) at 6 weeks	2
	Since 6 months, BMS* vary from 2 to 5 mushy BMS/day	4
	Never tarry, no blood or mucus	4
	Appetite very good - can't fill him up	4

\* BMS = blood and mucus containing stools

TABLE 3  
Scores of three classes for initial and final tests, with improvement in marks over the course (class average, in per cent)

	Pre-test	Post-test	Improvement
II	40.83	74.00	33.17
III	39.71	74.30	34.30
IV	34.70	65.70	31.00

two examples: to know that the peak incidence of bronchiolitis is found in children less than 2 years of age; to recognize increased respiratory rate, indrawing without stridor, inspiratory rales, and expiratory wheeze as signs and symptoms of bronchiolitis.

The lecture blocks (1 week each) were interspersed with clinical rotation where possible. The necessary background material was covered near the beginning of the course and lecturers were chosen not only for specialist knowledge, but also for their experience of the work. Further seminars were included during clinical rotation. One week consisted of a live-in seminar on alcoholism and psychiatric problems, held at an alcoholism treatment centre.

The clinical periods, each three weeks in duration, ran concurrently and the students rotated through them in pairs. The medical rotation was at the Charles Camsell Hospital, which has a high proportion of Indian and Eskimo patients. It focused mainly on adult history taking and physical examination. Evaluation and management of common medical problems were also taught. Although some of the students had much field experience, they initially found difficulty in completing an adequate physical examination and describing their findings. Thus, this was seen as a vital part of the course.

The paediatric rotation again focused initially on history taking and physical examination. Common paediatric problems were covered in seminars. Experience in starting intravenous medication and doing lumbar punctures was emphasized.

The rotation through the emergency room gave students opportunity to assess patients, suture lacerations, and read common X-rays.

In Obstetrics and Gynaecology, ante-natal care assessment of risks and monitoring of labour was stressed. Since northern policy is to evacuate all primiparous and other high risk pregnancy patients to hospital, no attempt was made to develop proficiency in the delivery of such patients.

Teaching in laboratory procedures, practical and preventive dentistry, and surgical techniques was interspersed with the Emergency and Medical rotations.

At the present time, a proposal for objective evaluation of the nurses who have returned to the field is being prepared, based on the behavioural objectives of the core curriculum. Our subjective impression is that the course has improved both the nurses' handling of situations and their confidence and so has prolonged their average stay in the

North. However, we hope to confirm this when the objective evaluation becomes available.

#### SUMMARY

In 1972, the Canadian government sponsored pilot projects at six universities aimed at providing further clinical training for nurses in isolated northern regions. Five of the projects are still operational and are collaborating to produce a core curriculum. The courses are of four months' duration and at the University of Alberta are divided into: (1) pretest, (2) lecture block, (3) clinical rotation, (4) post-test periods, and (5) a week of seminars on alcoholism and psychiatric problems in the North. Particular emphasis is placed on history taking and physical examination. Common problems are discussed with a view to helping the nurses decide between the urgent case requiring evacuation and those less urgent. The nurses are also given guidelines for better handling of cases in the nursing station. Clinical rotations are three weeks each (Obstetrics and Gynaecology, Medicine and Out-patient, Emergency, and Paediatrics). Technical skills (suturing, intubation, beginning IV's and LP's) are also taught. There are eight students per course; four courses have been completed. Extensive pre- and post-testing has shown significant results. Field evaluation is presently being anticipated jointly for all five programs.