Establishing a Cluster of Radiologic Training Programs at Springfield Technical Community College

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This case study is a discussion of how radiation therapy technology (RTT) and nuclear medicine technology (NMT) programs were added to the program of a community college (Springfield Technical Community College) which until 1973 offered only a program in radiologic technology (RT). The introduction of the two new programs was accomplished by combining the classes of courses common to all three programs and relying on the hospitals responsible for the students' clinical experience for all specialized didactic teaching.

Springfield Technical Community College (STCC) in Springfield, Massachusetts, is a state-sponsored institution founded in 1966. In 1970 Edmond Garvey, President of STCC, initiated a program in radiologic technology in collaboration with Wesson Memorial Hospital and Springfield Hospital Medical Center. Of the new program's second graduating class, 17 of the 20 students who took the ARRT registry exam passed—a commendable record.

The RT program has an active advisory committee consisting of physicians and teaching technologists from the affiliated hospitals, the school's Division Chairman of Health Occupations, the Coordinator, and school instructors of radiologic technology. During the May 1973 meeting of the advisory committee, John W. Turner, Radiologist and Chief of Nuclear Medicine at Wesson Hospital, proposed that training programs for radiotherapy and nuclear medicine technologists be added in conjunction with the existing RT program at STCC. He reasoned that a combination of factors, including local needs for these specialists and available training resources at STCC and local hospitals, made setting up these new programs a logical step. The Advisory Board approved his proposal and Gordon Smith, STCC's Coordinator of Radiologic Technology, was given responsibility for the two new programs by Gilbert Rosenbrier, Dean of Academic Affairs.

Program Features

In the new NMT and RTT programs, all clinical subjects are taught entirely by Wesson Memorial Hospital personnel (physicians, medical physicists, and the radiotherapy supervisor) who are conveniently located just across the street from the STCC campus. Practicum during the second year is available at the Springfield Hospital Medical Center about two miles away.

The two hospitals involved in the program were already well equipped in both radiotherapy and nuclear medicine departments. For example, at Wesson Memorial, radiotherapy equipment includes a 4-MeV linear accelerator, a cobalt source, and an orthovoltage x-ray source. The nuclear medicine department has two gamma cameras with videotape, a single-head scanner, a liquid scintillation counter, and a TLD unit. Arrangements have been made for $10,000 to be spent on laboratory equipment by the school for use in the hospital teaching programs. (The RT program at STCC already had its own x-ray machine and dark room on the school campus for demonstration with phantoms.)

Students were selected by a committee of two doctors and the STCC program coordinator based on application data and letters of recommendation. This year there were 97 applicants for 24 total positions: 16 RT, 4 RTT, and 4 NMT. The successful applicants were invited for an orientation visit at one of the two hospitals in May before classes started in July. Neither the hospitals nor the school pay any student stipends. Students can get insurance at one hospital as student-members in the ASRT which is paid for by the students themselves. At the other hospital, insurance is

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Table 1. Radiologic Technology, Radiation Therapy Technology, and Nuclear Medical Technology Curricula

	Class hr/wk	Clinical or Lab	Prep	Total hr/wk
Summer special (8 weeks)				
Orientation and professional ethics	8	0	16	24
Fundamentals of radiologic technology *	0	32	0	32
	8	32	16	56
Semester 1				
English composition 1	3	0	6	9
Mathematics of radiology	3	0	6	9
Anatomy and physiology 1	3	3	6	12
Radiologic technology 1 *	3	3	6	12
Practicum for radiologic technology *	0	17.5	0	17.5
	12	23.5	24	59.5
Semester 2				
Composition 2; Introduction to literature	3	0	6	9
Anatomy and physiology 2	3	3	6	12
Radiation physics 1	3	3	6	12
Radiologic technology 2 *	3	3	6	12
Practicum for radiologic technology *	0	17.5	0	17.5
	12	26.5	24	62.5
Summer Special (9 weeks total)				
Principles of nulcear medicine (2 weeks)†	0	40	0	40
Principles of radiation therapy (2weeks) †	0	40	0	40
Principles of radiologic technology (5 weeks) *	0	40	0	40
	0	40	0	40
Semester 3				
Introduction to sociology 1	3	0	6	9
General psychology	3	0	6	9
Radiologic physics 2 ‡	3	3	6	12
Radiologic technology 3 *	3	3	6	12
Practicum for radiologic technology *	0	20	0	20
	12	26	24	62
Semester 4				
Introduction to sociology 2	3	0	6	9
Clinical physics ††	3	0	6	9
Radiologic technology 4 *	3	9	6	18
Practicum for radiologic technology *	0	22	0	22
	9	31	18	58

* Substitute Radiation Therapy or Nuclear Medical in place of Radiologic in these course titles for the RTT and NMT curricula, respectively.

† RTTs and NMTs rotate through the other two departments for two weeks each.

‡ Separate Physics 2 courses to be taught RTTs and NMTs.

†† Not applicable to RTTs and NMTs.

provided for by the hospital under the hospital employees insurance plan.

Table 1 shows that approximately half of the total class hours are common to the three programs, thus reducing the number of small classes which must be taught separately to the RTT and NMT students. RT courses shared with the RTT and NMT programs remained unchanged in content with one exception. Radiation Physics I was redesigned to include the basic principles of radiation safety and physics needed in all three radiologic sciences. References to specific instrumentation is now left to later specialized courses.

The new RTT and NMT curricula are designed to meet AMA Essential Requirements for accredited programs, and the school is applying for this approval. The RTT program is using curriculum materials developed for the American Society of Radiologic Technologists by Donald Henning of the Wesson Memorial Hospital staff. The NMT program is using the TERC draft Curriculum Guide, *Minimum Essentials for Educational Programs in Nuclear Medicine,* to develop courses taught at the hospital. These NMT course objectives and outlines will be published in **1974** in *Nuclear Medicine Technology, A Suggested 2-Year Post High School Curriculum,* under the sponsorship of the U. S. Office of Education.

Discussion

There are several schools which have established the same cluster of radiologic training programs, including the University of Vermont, Burlington in 1968, and the Community College of Denver, Colorado in 1969 (*1*). However, the Springfield program has the unique feature of a summer hospital experience for all radiologic science students before the first fall semester. While the student is mainly an observer at this time, it does give him or her an intensive hospital experience on which to confirm his decision to specialize in a radiological science.

A problem for all three curricula at STCC is the large total number of hours a week a student must commit to these programs. It can be as much as 62.5 hr/weeks, whereas the recommended number is between 50 and 55 hr/week. The reason for this large hourly commitment was that the AMA formerly required 2,200 hr of practicum in RT and RTT programs for accreditation. The recent policy position taken by the AMA Council on Medical Education has enabled radiologic technology programs to be more flexibly designed. Students now have a better opportunity to meet performance objectives instead of fixed practicum hours. On June 22 the "Organized Guide for College Programs" prepared by the American

College of Radiology was accepted by the AMA Council on Medical Education as guidelines for accreditation (*2*). The Council voted to announce publicly that it does not require any specific number of practicum hours for approval of educational programs for the radiologic technologist.

In the NMT program it would be desirable if a one-term course in basic chemistry could be substituted for some of the practicum during the second semester of the first year. This course could be waived if the student had taken a high school chemistry course.

Teaching a cluster of closely related occupations is much more cost-effective than teaching four-student RTT and NMT programs separately. The most cost-effective approach, however, is to regionalize RTT and NMT programs in large metropolitan areas. It has been found that a metropolitan area population of about 1 million is currently necessary to have sufficient hospital nuclear medicine facilities to place 20 NMT students for clinical experience (*3, 4*).

A final important feature of the STCC, RTT, and NMT programs is that all specialized courses are taught entirely by the hospital staff. The advantages of this organization are that the school did not have to hire additional staff, equip laboratories, or provide classrooms to teach these courses. This organizational feature provides a simple transition from an existing hospital-based certificate program in RTT and NMT to an associate degree program, which is the trend in allied health areas. The success of such programs depends on the close cooperation of school and hospitals. STCC's Advisory Board has exemplified what this team approach can accomplish.

References

1. *Case Studies* (nine programs include Refs. *3*, *4*). Cambridge, TERC, 1973
2. *Allied Medical Education Newsletter*, VI, No. 8, AMA, Aug. 1, 1973
3. *A Case Study of the History and Development of the Denver Collaborative Training Program in Radiologic Technology*, Cambridge, TERC, 1971
4. *Hillsborough Community College, an Evolving Program in NMT*, Cambridge, TERC, 1973