

National Tuberculosis Curriculum Consortium – A Multidisciplinary Project for Tuberculosis Education

a report by

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Tuberculosis (TB) remains one of the deadliest diseases in the world. Each year it is estimated that eight million new cases of TB occur from all countries and approximately three million people die from the disease.¹ Although the case rate for TB has declined in the US, an estimated 15 million are infected with *Mycobacterium tuberculosis*.² Although educational materials from organisations such as the Centers for Disease Control (CDC) and the American Thoracic Society (ATS) are available, the materials cannot be easily accessed for various educational levels and for different health fields. The National Tuberculosis Curriculum Consortium (NTCC) project aims to address these limitations to enhance TB education for students at various levels of education and for different health fields such as medicine, nursing, nurse practitioner, physician assistant, respiratory therapy, pharmacy and public health.

Objectives of the NTCC

The NTCC is funded by the National Heart, Lung, and Blood Institute of the National Institutes of Health (NIH). This is a five-year project and the consortium is currently in the second year of the project. There are three main goals with specific aims of the NTCC:

Goal 1 – To establish the consortium as a test-bed environment for designing, implementing and evaluating programmes to strengthen TB curriculum.

- Cultivate a network of investigators from 30 nationwide medical and allied health schools.
- Create a TB website with various portals accessible to consortium faculty, participating school instructors and students and the general public.
- Develop sets of TB competencies as standards for evaluating TB curriculum and student knowledge, clinical skills and attitudes by targeted health fields

and educational levels.

- Conduct needs assessment for TB curricula, instructors and students at participating schools.
- Develop curricular enhancements and instructional material and strategies to improve TB programmes, such as creating course modules to integrate TB into mainstream courses.
- Design and implement a programme plan based on prioritised goals and objectives to meet the specific needs of each medical or allied health school.
- Evaluate programme effectiveness by surveying instructors and testing students.

Goal 2 – To promote and impact curricular and educational materials and training opportunities.

- Collaborate with associations of educators and present work of consortium at conferences.
- Work through the certification process by reviewing past exams and serving on test-writing committees.

Goal 3 – To expand and increase access to educational materials and training opportunities.

- Reinforce lifelong learning by presenting and holding TB workshops at professional meetings.
- Disseminate TB competencies, instructional materials and education materials that are culturally and socially appropriate, in multiple languages and at a sensible literacy level through the TB website.
- Provide distance-learning programmes through the TB website for practising health professionals to maintain proficiency in TB and obtain continuing medical education (CME), continuing education units (CEUs) or other credits.

1. "Groups at risk: WHO Report on the Tuberculosis epidemic", World Health Organization (1996), Geneva, Switzerland.
2. Starke J R, Jacob R, Jereb J, "Resurgence of tuberculosis in children", J. Pediatr. (1992), 120: pp. 839–855.

How the NTCC is Organised

In recent years, treatment and prevention of TB has shifted from in-patient to out-patient settings and from experts who focus on a narrow set of patients to generalists who deal with TB in the context of delivering much broader health services. With this trend, there is a growing tendency for non-physician clinicians to provide healthcare alongside physicians.³ The NTCC is co-ordinating the activities of the multidisciplinary team of faculty members who have experience in the area of TB, curriculum development and implementation and state-of-the-art technology for education. These consortium members were chosen carefully and their member schools will serve as the first testing grounds to determine successes and challenges in implementing the programmes to meet the needs of their own schools. The NTCC will then be able to assess the overall effectiveness of the project based on collective experience before disseminating materials that may be useful to similar schools throughout the US.

The NTCC is located at the University of California in San Diego and consists of five curriculum centres and 25 partner schools. The partner schools represent primarily urban communities with high TB case rates. Faculty members are from 13 medical, six nursing and three each of respiratory therapy, physician's assistant, pharmacy and public health. Some faculties also represent partner organisations (POs), whose major focus is on the education of educators or on accreditation or curricular programmes. The POs will also focus on certification of professional competence or on continuing education of healthcare providers. One of the strengths of this organisational model lies in the inclusion of deans, programme directors and faculty members who are able to implement curriculum reform at their own institutions and will help to propagate the work of the consortium to reach other faculty, students, in-training professionals, affiliated house staff and practising healthcare providers throughout the US. Some of the schools involved with the NTCC are Columbia University, Northeastern University, University of Michigan, Stanford, Tulane, Georgia State University, Johns Hopkins, University of Nebraska and University of Washington.

What has Happened So Far and What is Available Now

During the first year of the project, a Web-based TB education portal was established to support all aspects of the consortium's activities. At the present time, this is used primarily by consortium members but, as educational materials are developed, the portal will be

made available to educators and eventually the general public. The portal can be accessed at <http://ntcc.ucsd.edu> Educational materials produced by the CDC and other reputable organisations provide a foundation from which the NTCC's efforts build. These materials and others that the NTCC has compiled are linked on the portal. The panel at the end of this article lists a few examples of resources available on the Web for TB education. The portal is being continually updated throughout the project as new materials are compiled or developed. Eventually, a catalogue of curricular resources available for instruction of TB will be posted to the portal.

The NTCC members have also approved a set of competencies for students in eight different professions – medicine, nursing, nurse practitioner, physician assistant, respiratory therapy, medical technology, pharmacy and public health. These TB competencies address the knowledge, skills and attitudes that define the standards for target health fields and educational levels. They will ultimately define the material to be taught and what each student must learn.

One of the objectives of the NTCC is to assess the extent to which the TB competencies are met by the current curriculum of the consortium institutions. The goal is to motivate schools to improve their TB curricula and then to review students' performance on post-graduate examinations to identify areas of deficiencies. The next step is to disseminate these competencies in professional journals, through the TB education portal, and through conference presentations. For example, the five core competencies approved for respiratory therapists are as follows.

- Demonstrate knowledge of the following:
 - epidemiology of active and latent TB infection (LTBI) and risk factors for acquisition of TB;
 - clinical syndromes associated with TB infection and differences in adult, paediatric and HIV-infected populations;
 - treatment of TB infection;
 - public health TB control system; and
 - available resources for updating knowledge about TB.
- Gather accurate and essential information pertinent to the diagnosis and care of patients or populations

3. Druss B G, Marcus S C, Olsson M, Tanielson T, Pincus H A, "Trends in care by nonphysician clinicians in the United States", *N. Engl. J. Med.* (2003), 348 (2): pp. 130–137.

infected by TB, including medical interviews, physical examination, historical records and results of diagnostic tests and/or surveillance.

- Formulate recommendations and implement respiratory management plans for patients infected with TB, incorporating knowledge of best practice and patient preferences.
- Demonstrate interpersonal and communication skills that foster the development of effective relationships with patients and families affected by TB.
- Apply knowledge of community and public healthcare for patients with TB and their families.

The next major objective of the consortium will be the student TB survey. This will be one way to assess students for their basic knowledge of tuberculosis and how confident they feel about taking care of patients with LTBI or active TB disease. Before the curriculum can be strengthened, it is necessary to understand what is being taught. The intent is to conduct student TB surveys over the following four years, with the first survey reflecting knowledge and confidence of students completing their education at a time when NTCC materials have not been widely available.

In subsequent years, more NTCC materials will be

available to participating schools and students will be assessed as to their awareness of these materials, whether or not they have been used by the students and/or whether or not they may have made a difference in their knowledge and confidence. Individual students will be surveyed only once near completion of their education, so each year's classes will be made up of different individual students.

The Future

Tuberculosis has been a relevant topic for healthcare professional and educators for a very long time. Experts find that the critical principles in TB patient care are poorly understood and errors are frequent. It is critical to understand why the large amount of teaching material already available is not used consistently in the classrooms of schools. Teaching modules that include appropriate instructional strategies and materials that can be easily adapted by educational institutions, along with educational plans that describe prioritised goals, will lead to a TB educational reform process.

Effective training in the management of patients with TB requires repeated exposure to TB education throughout the healthcare professionals' careers, from academic to on-the-job training. The NTCC will provide a resource for healthcare professionals to learn and then maintain their proficiency in the area of TB in a convenient, efficient and cost-effective manner. n

Examples of Web-based TB Resources Currently Available

<http://medlib.med.utah.edu/WebPath/TUTORIAL/MTB/MTB.html>
(vivid graphics)

<http://www.nobel.se/medicine/educational/tuberculosis/index.html>

<http://www.nlm.nih.gov/medlineplus/tutorials/tuberculosis.html>
(intended for patients or the general public)

<http://www.cdc.gov/nchstp/tb/pubs/SSmodules.htm>

The CDC has several continuing education programmes online, but they are not as interactive as the above two interactive links.

The following are TB model centres with online courses as well as interactive CD-ROMs:

Charles P. Felton National Tuberculosis Center, New York
<http://www.harlemtbcenter.org/>

Francis J. Curry National Tuberculosis Center, California
<http://www.nationaltbcenter.edu/>

New Jersey Medical School National Tuberculosis Center, New Jersey
<http://www.umdnj.edu/ntbcweb/tbsplash.html>