

## Early Tuberculosis Nursing in British Columbia

Glennis Zilm and Ethel Warbinek

Au début du siècle, la tuberculose était au Canada la principale cause de décès, le taux de mortalité étant en 1900 d'environ 200 pour 100 000 personnes. En 1944, ce taux était tombé à environ 20 pour 100 000 personnes. On estime qu'entre 1895 et 1945, les infirmières ont rempli un rôle nouveau, unique en soi et essentiel à l'enraiment de la maladie. Le présent article rapporte la première phase d'une étude qui a consisté à examiner le rôle des infirmières dans l'enraiment de la tuberculose en Colombie-Britannique entre 1895 et 1945. L'étude préliminaire couvre la période allant de 1895 à 1920, alors qu'en Colombie-Britannique les premiers cours universitaires destinés aux infirmières de santé publique n'étaient pas encore mis en place; cependant, les infirmières commençaient à jouer un rôle important pour la santé publique en soignant les tuberculeux. À partir de sources primaires et secondaires, les auteurs établissent des données de base, étudient les soins prodigués précocement aux tuberculeux en Colombie-Britannique, énumèrent les événements cruciaux et fixent la poursuite éventuelle de la recherche.

Tuberculosis was Canada's leading cause of death at the turn of the century, with a mortality rate in 1900 of about 200 per 100,000 population. By 1944 mortality was reduced to about 20 per 100,000. It is postulated that between 1895 and 1945 nurses filled a new, unique, and essential role in bringing the disease under control. This article reports on the first phase of a study to examine the role of nurses in controlling TB in British Columbia between 1895 and 1945. This preliminary study covers the period 1895 to 1920, when B.C.'s first university courses for public health nurses had not yet been established but during which nurses began to play a significant public health role by nursing TB patients. Drawing on primary and secondary sources, the authors establish baseline data, examine early TB nursing care in B.C., identify critical events, and determine whether the research should proceed.

In Canadian schools of nursing at the close of the 1800s the generally accepted maxim was that at least one student nurse from every class would die from tuberculosis.<sup>1</sup> Tuberculosis (TB), also called *consumption*, *the wasting disease*, *phthisis*, and *the white plague*, was Canada's leading cause of death at the turn of the century. The mortality rate in 1900 was estimated at about 200 per 100,000 population.<sup>2</sup> Even in the 1920s, when it was known that TB was a preventable communicable disease, at least one student nurse in every class was likely to get the

---

Glennis Zilm, R.N., B.S.N., M.A., and Ethel Warbinek, R.N., B.S.N., M.S.N., are the authors of *Legacy: History of Nursing Education at the University of British Columbia 1919-1994*. Ethel Warbinek is Professor Emerita, School of Nursing, University of British Columbia. Glennis Zilm is an editor and writing consultant.

disease and spend a year or more in a sanatorium. Esther Paulson, who later became one of Canada's authorities on nursing patients with the disease, reported that five of her 17 first-year classmates in 1926 became TB patients.<sup>3</sup> With the discovery in 1944 of streptomycin as a specific drug effective against the tubercle bacillus, the disease could be cured. However, without the contributions of hundreds of nurses during the 1920s, 1930s, and early 1940s the disease could not have been brought under control and mortality reduced to about 20 per 100,000 by 1944.<sup>4</sup> Now, with drug-resistant strains of TB on the rise, a review of the history of TB nursing is relevant. Estimates are that one third of the world's people are infected with *Mycobacterium tuberculosis*. Annually, eight million new cases are identified and 2.9 million deaths occur worldwide.<sup>5</sup>

This article is based on a review of historical materials related to early TB nursing in British Columbia from 1895 to 1920.<sup>6,7</sup> It reports on the first half of an ongoing study of TB nursing in B.C. that arose from a still-larger historical research project that led to a book on nursing education at the University of British Columbia (UBC).<sup>8</sup>

The research questions that guide the TB study are:

1. What was the nature of TB nursing in B.C. between 1895 and 1945? What were the specifics of care at various points during the 50-year time span: (a) in hospitals, (b) in sanatoria, and (c) in the community?
2. What was the role of public health nurses in B.C. during this period in bringing TB under control (e.g., public education, case finding, follow-up treatment, care, and rehabilitation)?
3. Did the care given by nurses make a difference by reducing mortality and disability?

This article concentrates on the first phase of the study — TB nursing in B.C. from 1895 to 1920. It was decided to tackle this period to discover whether new sources and unpublished material relating to TB nursing care in B.C. were sufficient to warrant continuing. The major questions to be answered in this phase of the study therefore were:

1. What kind of TB care was offered by nurses in B.C. during the period 1895 to 1920?
2. Is there sufficient evidence to warrant proceeding with the second phase of the study?

This article provides background to the complete study by supplying information on early TB care in hospitals, establishment of and care in B.C.'s TB sanatorium at Tranquille, and the beginnings of public health nursing care in the community. The article closes with remarks on the establishment of the public health nursing baccalaureate and diploma programs in UBC in 1919 and 1920, which were strongly influenced by the need for public education on TB — still Canada's number-one killer disease in 1920.

### **History of the Disease**

TB has infected humans for at least seven thousand years.<sup>9</sup> *M. tuberculosis*, causative organism, is ubiquitous but most humans can resist the disease unless overcrowded conditions, poverty, poor housing, poor nutrition, or other immuno-suppressive disease conditions (e.g., HIV/AIDS) weaken their resistance. Serious outbreaks of TB infections and epidemics, including those of the 1990s, occur when host conditions are favourable to the spread of the disease.

The first hospital dedicated to the care of consumptives opened in 1840 in England<sup>10</sup>; the crowded, unsanitary, slum-like conditions in rapidly growing European cities following the industrial revolution encouraged the spread of the disease. In 1867 Jean-Antoine Villemin, a French physician studying phthisis, presented the results of his research to an international medical meeting, "demonstrating for the first time that TB was a specific and communicable disease."<sup>11</sup> The tubercle bacillus, as it was then called, was identified in 1882 by Robert Koch, a German physician, lending credence to the new "germ theory" of disease and its spread. Wilhelm Roentgen's discovery of X-rays in 1895 provided a base for diagnosing and following the progress of pulmonary cases.

Canada's first TB hospital opened in Muskoka, Ontario, in 1897. The TB hospitals, or sanatoria, attempted to isolate infected individuals, protect their families and communities, and provide an environment for the three essential principles of treatment: rest, good nutrition, and fresh air. However, nurses soon grew concerned about the emotional effects of separating a patient from family and friends for long periods. Charlotte Aiken, in her 1916 nursing textbook, advised that "freedom from worry and cheerful, comfortable surroundings" was a fourth principle of TB treatment. She considered it a mistake to remove a patient from familiar surroundings "under the delusion that a change of climate [would] cure him."<sup>12</sup>

However, public health authorities had become concerned with protecting of the community. By the turn of the century, hospitals in most communities provided treatment for acute cases in "infectious disease" wards or separate buildings. A tent formed the first TB ward at the Vancouver General Hospital until its TB building (a small wooden structure called Ward O) was opened in 1907.<sup>13</sup>

Whether in hospital or a sanatorium, education of patient and family about "contagion" was a key objective of nursing care along with isolation and symptomatic treatment until the patient either died or built up resistance. Although the most contagious, most common, and most recognizable form of TB was (and still is) pulmonary infection, the bacillus also could invade almost any site in the body and form small nodules, or tubercles (hence the name). It caused joint disease, kidney disease, meningitis, peritonitis ("consumption of the bowel"), and adenitis. Infections in the lymph glands and joints often were caused by the bovine variety of the disease through drinking unpasteurized milk or eating beef from TB-infected cattle. Tubercular joint disease was extremely common, with 80 to 90% of diseases of joints (most commonly involving the hip) caused by tubercle bacilli.<sup>14</sup> Tubercular meningitis was essentially a disease of childhood, almost inevitably leading to death within a short period.

### **Tuberculosis Care in Hospitals 1895-1920**

Treatment of TB from the late 1890s to the 1920s was often primitive and ineffective. For example, Watson describes treatment for meningeal TB:

An ice-bag should be applied to the head, and the bowels should be freely opened; for this calomel in young children answers admirably. Counter-irritation applied to the back of the neck or the shaven scalp in the form of blisters or stimulating liniments is recommended by some....The diet must consist principally of milk. The room should be kept darkened and absolute quietness observed.<sup>15</sup>

Treatment for pulmonary TB offered more hope and was a little more humane. There were two types of pulmonary TB — chronic and acute, the latter being rapidly fatal. The hope for patients experiencing the chronic type lay in arresting progress of the disease so that nature could achieve resolution.

In 1893, Isabel Adams Hampton, in one of North America's first nursing textbooks, described nursing care for chronic TB. The "cure" was a stay of a year or more in a sanatorium, usually located in a dry,

mountainous area, which was supposed to facilitate breathing.<sup>16</sup> Sanatoria focused on open-air treatment, with an emphasis on warm, absorbent clothing, good food (especially milk, cream, butter, and suet), a great deal of outdoor life, rest, and exercise that could be tolerated without fatigue. Cod liver oil was prescribed for all kinds of TB, and by the turn of the century had come to be considered a "food," to be given to all patients, rather than a drug. However, it was not palatable and patients objected to a tablespoon or more three or four times a day.<sup>17</sup>

Care of sputum was a major focus in nursing, to control the spread of TB. Hampton recommended that sputum be burned immediately or deposited in a strong disinfectant solution:

Patients must be made to use sputum-cups; they should never be allowed to expectorate into a handkerchief, or in fact anywhere except into the proper receptacles. The sputum-cups can be sterilized by steam or by being boiled in a 2 per cent. soda solution.<sup>18</sup>

Many authorities still thought the disease was hereditary, but Hampton made this astute observation:

We scarcely need the support of a theory of heredity in consumption: when we think of a child kissing a parent, perhaps many times daily, over whose lips thousands of tubercle bacilli are hourly passing, and when we think of that same child inhaling the dried bacilli and their spores, which always float about in the dust of a house containing tuberculous patients, it would seem strange that the disease does not occur more often.<sup>19</sup>

The early symptoms of pulmonary TB indicated a lesion in the lung that would break down and spread rapidly into adjacent healthy tissue. Eventually there would be spread to the regional lymph nodes and into the bloodstream, after which foci could develop in any organ. The primary symptom was an abnormal increase in sputum, often blood-streaked. Other "constitutional symptoms" included a "troublesome, hacking cough," loss of appetite, loss of weight, fatigue, general lassitude, increased respiration, "flushed cheeks and bright eye" low-grade febrile reaction, particularly in the afternoon, copious clammy perspiration, and excessive sweating at night.<sup>20</sup>

Treatment was addressed at relieving symptoms and reflected the medical armamentarium of the time. Watson advised such treatments as antiseptic inhalations or antiseptic drugs given by mouth; both methods included substances like creosote, carbolic acid, eucalyptus oil, turpentine, iodine, and friar's balsam. Chest pain was relieved by "painting iodine over the seat of the disease," and "blisters" or liniment were applied. For cough, a mixture containing "morphia" was often



ordered. Night sweats were treated by dressing the patient in flannel clothing, sponging the body with tepid water to which a little vinegar was added, or administering belladonna solutions. Quinine was sometimes ordered to bring down an excessively high temperature. Loss of appetite and stomach irritability were usually treated with "bitters," often combined with arsenic. Not unexpectedly, diarrhea was also prevalent in these patients. Treatment for diarrhea involved a lead/opium pill or bismuth/copper remedies. Watson noted, "When these measures failed, the opium-and-starch enema often proved successful."<sup>21</sup>

Hemoptysis (the coughing up of blood) was a dreaded symptom, indicating spread of the lesion into a blood vessel in the respiratory tract. Hemorrhage was a frightening experience for both patient and nurse. Watson advised that "the nurse must enjoin absolute quietness in the recumbent position, with the head and shoulders raised."<sup>22</sup> A light icebag would be placed on the chest and small lumps of ice would be given to the patient to suck. Talking was forbidden. Hot-water bottles were applied to the feet and the nurse plotted pulse and temperature findings religiously. Medications used to keep hemoptysis in check included ergot, turpentine, acetate of lead, and sulphuric acid; further, it was felt that the diet "must be restricted to slops."<sup>23</sup> It was essential for the nurse to know how to deal with hemorrhage during a violent coughing spell. One early textbook recommended that all TB wards have a large hemorrhage basket containing the requisites for prompt treatment — the 1920s equivalent of a "crash cart"; these included ice caps and an ice pick, rubber bibs, basins, towels, large gauze squares, and morphine sulphate, atropine sulphate, and nitroglycerine.<sup>24</sup>

### Nursing Care in B.C.'s Tranquille Sanatorium

In B.C. at the turn of the century, wealthy patients with consumption would move to dry, mountainous climates to "take the cure." In the 1890s two ranches in the Tranquille Creek area near Kamloops staked out in the 1860s by William Fortune and Charles Cooney began to accept consumptives as boarders. The boarders lived in tents, shacks, or small cabins near the ranch houses and generally took care of themselves as long as they could. Mary Cooney Norfolk, daughter of Charles Cooney, became well known as a "lay nurse," offering care to the consumptives on the Cooney ranch under the supervision of Kamloops physician Dr. R. W. Irving.<sup>25</sup> A Mrs. Fortune offered good food and some care at the Fortune ranch.<sup>26</sup>

At the turn of the century public concern was being expressed because of the rapid spread of the disease and because of the lack of care and isolation facilities. In 1900 the Canadian Anti-Tuberculosis Society was set up in Toronto. By 1904 B.C. community leaders and physicians recognized the need for a similar organization, and the Society for the Prevention and Treatment of Consumption and Other Forms of Tuberculosis was formed to help bring "the plague" under control. It lobbied the government for funds and took on the task of raising money on its own to develop a sanatorium. This organization arranged to purchase the Fortune ranch for \$58,000 and to build a proper sanatorium on the site.

Hatfield provides anecdotes about the change from the lay nursing system to the new, professional approach to care. The new régime, supported by the provincial medical health officer, Dr. C. J. Fagan, had decided to scrap the old furniture that had been purchased along with the Fortune property:

This furniture was old and, when the coverings had become dirty, another layer had been put over it, so that some of the chairs had six layers and certainly were not sanitary. Dr. Fagan decided to have these burned up. When Mrs. Fortune saw him there was a battle royal. He told her that the chairs and furniture were loaded with germs and had a lot of tubercle bacilli in them. She... said that she had lived there for thirty years and had never seen any.<sup>27</sup>

The new Tranquille Sanatorium, the centre of TB treatment for the entire province, was opened to 10 patients on November 28, 1907, with Dr. Irving as medical superintendent and Jean Matheson as lady superintendent. Miss Matheson, a graduate of Regina General Hospital, had been matron of Royal Inland Hospital in Kamloops when it opened its nursing school in 1904. Her salary in 1908 was \$60 per month.<sup>28</sup> By 1910 the hospital had accommodations for 49 patients, four nurses, and 12 attendants. Its official name was the King Edward Sanatorium and the surrounding ranch was the Alexandra Ranch. Miss M. Thomas became superintendent of nurses in 1913. Some of the older buildings were closed and new ones were erected.

Care of patients in "the San," as it was soon called, was generally "light" nursing, with an emphasis on teaching patients how to care for themselves, how to prevent spread of infection, and how to teach their families to look after them. The cost of keeping a patient in Tranquille was estimated at \$55 per month, and the average stay was 200 days.<sup>29</sup> Patients were nursed in large, screened veranda rooms open to the fresh air. One nurse recalled that in winter nurses had to wear their

coats and when patients were awakened for their six a.m. temperature routines they would have frost all around their faces and on the top of their blankets.<sup>30</sup> The regimen of rest, fresh air, and good nutrition generally proved successful in arresting the disease. For example, in the first 18 months of operation the Tranquille Sanatorium, 66 patients were discharged, with 23 of these able to take up their customary lives and 20 others able to return home in remission although not able to return to work or active lifestyles; in 17, the disease was considered "progressive" (incurable but no longer infectious), but only six patients had died.<sup>31</sup>

The isolation from families also resulted in a decreased spread of the disease. On the other hand, family life was considerably disrupted by the long hospitalizations.

Nurses working in sanatoria or on hospital TB wards rarely contracted the disease. They appreciated the importance of good technique and the emphasis on patient teaching. The vulnerable nurses were those who worked on the general wards, where they were exposed to undiagnosed TB patients, in situations where they frequently were overworked, tired, and worn out by the typical 64-hour work week.<sup>32</sup>

### **Tuberculosis Nursing Care in the Community, 1895-1920**

Public health care in B.C. was in its infancy at the turn of the century. Organization of public health services began in 1893 with establishment of the Provincial Board of Health. The first provincial permanent medical health officer, Dr. Charles J. Fagan, was appointed in 1899. Before this, temporary medical health officers coped with emergencies, such as outbreaks of smallpox or other contagious diseases.

Two of Dr. Fagan's primary goals were to bring TB to the public's attention and to attempt to get it under control. He was instrumental in forming the Society for the Prevention and Treatment of Consumption and Other Forms of Tuberculosis and in initiating a public education campaign. By 1901 use or sale of milk from TB-infected cows was prohibited and TB was made a notifiable disease, meaning that, by law, all cases were to be reported to public health authorities.

The Victorian Order of Nurses (VON), founded in 1897, had pioneered community nursing in Canada and had introduced training in community nursing, including TB care. The first professional visiting community nurse in B.C., Isabelle Maud Hill, was appointed VON nurse in Vancouver in 1901.<sup>33</sup> In 1914 she was hired by the anti-tuber-



culosis society in Vancouver<sup>34</sup> and became the first nurse in B.C. to work full time in TB care. Miss Hill was a pioneer nurse specialist.

The society and the public health authorities were especially concerned with public education about TB and with health in the schools. Two pamphlets were issued by Dr. Fagan's department in 1908; the first dealt with "the scourge of consumption and modern methods of combatting its ravages" and the second contained advice to children in language they would easily understand, such as "Don't spit on slate or use any slate that others have spit upon" and "Don't eat candy or chewing gum that others have sucked or bitten pieces off."<sup>35</sup>

Curricula in nursing schools stressed the contagious nature of TB and that its control depended upon public education. Graduates, most of whom worked as private-duty nurses in homes, were therefore aware of the need to teach hygiene to adults and children alike, and because they were well prepared and knowledgeable school boards and private societies began to hire them.

In 1912 the *Vancouver News Herald* carried the following ad:

The Vancouver Girls' Auxiliary of the Anti-Tuberculosis League is anxious to secure the services of a capable and well-trained nurse upon whom they can rely to second them in their efforts to combat consumption in this city. The nurse will be expected to visit cases of consumption and advise as to the best methods of treatment as well as "giving instruction in preventive measures."<sup>36</sup>

A similar ad in the *Vancouver Province* asked for a nurse to "instruct the ignorant and encourage the wise."<sup>37</sup> The nurse who was hired for the part-time position was a Miss A. Gillis, a graduate of Boston City Hospital who had considerable experience in district nursing in New York's East Side. She drew up a 10-point job description that included the revolutionary idea of regular follow-up visits for all patients discharged from hospitals or sanatoriums.

In 1913 "a deputation of ladies from the Vancouver Anti-Tuberculosis Association" urged the police commission to enforce the bylaw against expectoration. They recommended that notices in English, Italian, Chinese, and Japanese be posted to inform people that "they must not spit on the sidewalk."<sup>38</sup> Bylaws were passed in many locations and many of these remain in effect today.<sup>39</sup>

Local, provincial, and national anti-TB societies continued to introduce programs, especially in large centres such as Vancouver. In 1914 a free clinic was set up in Vancouver through donations from the Rotary Clubs, with Miss Hill staffing the clinic to do case finding and follow-

up visits. She was appalled at the crowded living conditions and poverty that she saw, and with financial assistance from the anti-TB society was able to assist in some of the situations.<sup>40</sup>

In addition to the community nursing care provided through the VON and the anti-TB society, municipal and provincial governments were beginning to hire nurses for health education and follow-up for contacts of infectious diseases, including TB. The first school nurse in Vancouver, Elizabeth Breeze, was appointed in 1910 to help supervise the health of 9,800 children in Vancouver's 16 schools.<sup>41</sup> Several other B.C. communities, such as New Westminster and Victoria, also hired nurses through their school board budgets.

In 1911 the *Medical School Inspection Act* was passed by the B.C. Legislature. Shepherded through by education minister Dr. Henry Esson Young, it provided for a physical examination for every school-child in the province at least once a year. However, since few physicians were available, the provincial health department began to recognize that nurses could effectively fill this role. Dr. Young (who left politics in 1914 and succeeded Dr. Fagan as Secretary of the Provincial Board of Health) began pressing for advanced education in public health nursing. This was a factor leading to the establishment of Canada's first university baccalaureate program in nursing, at UBC in 1919.<sup>42</sup>

### Nursing Program at UBC

Dr. Young was a strong and influential advocate of a degree program for public health nurses. He believed they could carry out essential education in many areas, including prevention and control of TB. Because of the work they were already undertaking, Dr. Young recognized the expanded role that public health nurses could play in government service.

Another factor in the establishment of the UBC nursing department in 1919 was increasing concern over the poor health of young men called up for military duty for the First World War. Following the war the League of Red Cross Societies recommended that its member organizations concentrate on preventing disease (especially TB, venereal diseases, and malaria) and promoting health. The proposed UBC degree program would have a strong public health component as well as a strong administration component for its final year. Its advocates therefore thought it would be eligible for some of these funds.

Instead, the Canadian Red Cross Society called for short, certificate courses for public health nurses, and suggested that its provincial

branches offer subsidies to universities for post-graduate education for public health nursing.<sup>43</sup> In 1920 the B.C. branch provided a \$5,000-a-year salary for three years for a public health "chair." A department of public health, separate from the department of nursing, was set up. Dr. R. H. Mullin, head of both the UBC department of bacteriology and the Provincial Laboratories, was considered the logical choice to run the program, but he elected to share his salary with a nurse to ensure that the program was truly a nursing one.<sup>44</sup> These Red Cross funds, although administered separately, also helped launch the baccalaureate program.

The nurse chosen to head the public health nursing certificate course was Mary Ardronie MacKenzie, who had been the chief superintendent of the VON in Ottawa from 1908 to 1917.<sup>45</sup> Mary Ard. MacKenzie, as she was called, had a B.A. degree from the University of Toronto and a "Higher School" teaching certificate. She had taught high school in Quebec before taking a nursing course in Boston and additional midwifery training in New York. After a few years teaching nursing, she took the VON post. Mary Ard. MacKenzie was also the second president (1912-14) of the Canadian National Association for Trained Nurses (later renamed the Canadian Nurses' Association). When she left the VON she moved through three short-term appointments at the senior level in the United States, but was pleased to return to Canada to become associated with UBC for three years.

The first program was a 14-week public health nursing course for 26 graduate nurses, starting November 15, 1920, and ending in late March 1921. The content was communicable disease education and prevention generally, but TB was given special consideration and the students were required to do TB fieldwork. The new Rotary Clinic for Chest Diseases in Vancouver was one of the fieldwork sites. The graduates were intended to be generalists in the area of child and family health, but their work centred on infectious disease control, especially identification and control of TB.<sup>46</sup>

A majority of graduates of the five-year degree program also were expected to go into public health. Thus in the first four years as well as the final one, in which they could specialize in either public health or administration and teaching, strong emphasis was placed on a scientific base for nursing. The first two years of the program, taught on campus, were "heavy on the sciences."<sup>47</sup> These sciences included bacteriology, which was taught by Dr. Mullin; through his efforts, the UBC nurses received the most current information on the pathology of TB.

The nursing texts of the early 1920s provide an interesting view of how TB nursing was taught and of how course content had changed since the turn of the century. Although advances in microbiology had led to laboratory tests that could confirm a diagnosis of TB, the lab procedures were costly. "Observation" of signs and symptoms was of prime importance in making differential diagnoses, especially for nurses who would be working in the community, screening patients and referring them for appropriate treatment. Thus nursing texts described the distinctive early signs and symptoms of TB. The environment was a major factor for the nurse to consider, although some texts of the 1920s still mentioned heredity as a cause. Several pages might be devoted to the various signs and symptoms of TB, such as the type of cough (hacking). Appearance of sputum was a major component of course content. Public health nurses were usually responsible for the collection of sputum specimens from patients: this required careful attention both to obtaining a sample of the required quantity and quality and to ensuring that the nurses did not infect themselves through handling specimens.

Several small but effective nursing measures introduced in the early 1900s helped prevent the spread of TB. Since tubercle bacilli can form spores resistant to drying and remain infectious for years outside the body, sterilization methods (a domain of nursing) included burning, exposure to sunlight for four or more hours, and boiling. Early in the century, nursing texts stopped recommending that handkerchiefs be boiled and ironed and began recommending the use of newspaper squares or inexpensive cheesecloth handkerchiefs that could be placed in bags and burned.<sup>48</sup> Nurses were able to pass on these modest cost-saving techniques to families, as newspaper squares were available even to families in poor economic circumstances.

### **Tuberculosis in the Closing Years of This Period**

In the 25-year span covered in this article, TB care and TB nursing changed markedly. Bacteriological research led to a greater understanding of the cause of TB and the method of its spread. Medical and scientific advances occurred, such as pneumothorax treatment for cases of rapidly advancing pulmonary TB; introduction of air into the pleura caused the lung to collapse, which put it into a state of "rest."

The Mantoux, or tuberculin, test, introduced in 1908, was particularly helpful in case finding and by 1920 was being used to determine whether nurses and doctors had been infected. X-ray technology was developed considerably during the period under review, although it



was expensive and potentially dangerous (however, the full extent of the dangers had not yet been recognized).

The number of patients in the sanatorium at Tranquille grew steadily during this period, but running the San was becoming expensive for the anti-TB society. The Tranquille administrators had pressed for hospitals to take on more acute cases partly as a cost-saving measure, since the San was more suited to the treatment and care of chronic patients. The provincial government supplied a basic grant and municipalities also provided funds, usually based on the numbers of their residents admitted to the San. Patients paid for a portion of costs based on a sliding scale according to their means. A large amount of money came from the society's public fund-raising efforts, but the sanatorium frequently ran a deficit.<sup>49</sup> Just at the end of the period under review the provincial government was debating the merits of taking over the operation of the Tranquille sanatorium, which it did in 1921. The hospital, all its property, and many of its supporting grants were turned over to the province and the anti-TB society became the Tranquille Tuberculosis Publicity Society, still concerned with raising funds but also returning to its educational and promotional functions.

Mortality rates were dropping. Whereas in 1900 the mortality rate was estimated to be about 200 per 100,000 population, in 1921 the B.C. rate had fallen to 77.8 per 100,000.<sup>50</sup> Although there was still a long way to go, a downward trend was evident.

The main development in the fight against TB during this period, however, was the organization of public health services and the recognition that nurses were of prime importance in educating the public and in finding new cases and having them treated. The few nurses involved with TB work in B.C. were proving effective. Public health and nursing leaders were recognizing the need for well-educated nurses with a strong background in science. This resulted in the introduction of public health nursing courses at UBC.

### **Discussion and Conclusion**

Although it is too early in the course of this project to answer the research questions posed for the whole study, this first phase suggests that nursing care did indeed make a difference. Mortality and disability were reduced in these early years.

The data collected during the first phase and reported here provide a solid base for comparisons in the next phase. Specific information has been gathered on the kinds of TB nursing that were provided in hospi-



tals, sanatoria, and the community. The early role of public health nurses in B.C. in controlling communicable diseases had been identified. We have seen that nurses became active partners in public health programs to control TB.

The research suggests more than a coincidental relationship between the involvement of nurses in health promotion and successful efforts in the battle against TB. The results of the first phase of the project indicate that further study is warranted. More in-depth study of the period 1895 to 1920 should uncover information about nurses' day-to-day work with TB patients in hospitals, sanatoria, and the community — including their role in the social and emotional aspects of care — as well as about the health risks they faced themselves. The proposed second phase of the study (1920 to 1945) will cover a period in which nurses took a much more active role in public health and community care.

Such further research will be timely, because tuberculosis is once again on the rise in North America. The lessons of the past will have implications for the future.

### Notes

1. Zilm, G., & Warbinek, E. (1994). *Legacy: History of nursing education at the University of British Columbia 1919-1994*. Vancouver: UBC Press/UBC School of Nursing, p. 42.
2. Wherrett, G. J. (1977). *The miracle of the empty beds: A history of tuberculosis in Canada*. Toronto: University of Toronto Press.
3. Paulson, E. (1964). Nursing care of the tuberculosis patient. In Canadian Tuberculosis Association, *Institute for nurses on tuberculosis and respiratory diseases* (Proceedings of an Institute held by the Canadian Tuberculosis Association and the Saskatchewan Registered Nurses' Association, Regina, May 13, 1964) (pp. B1-12). Ottawa: Canadian Tuberculosis Association, p. B5.
4. Hatfield, W. H. (1934). *Economics of tuberculosis*. Unpublished manuscript for the Health Education Group of Vancouver, issued by the Provincial Board of Health. Available in the Esther Paulson Papers, pp. 7, 10; Wherrett, 1977, p. 252.
5. Ungvarski, P. J., & Staats, J. A. (1995). Clinical manifestations of AIDS in adults. In J. H. Flaskerud & P. J. Ungvarski, *HIV/AIDS: A guide to nursing care* (pp. 81-133, esp. 108-112). Philadelphia: W. B. Saunders.
6. We drew largely on unpublished, uncatalogued primary materials that came to light during research for the book on the nursing program at UBC. We received a donation of documents from Esther Paulson, a TB nurse for 35 years (1929-1964). She was senior nurse administrator for the B.C.

Division of Tuberculosis Control, first director of nursing for the George Pearson TB hospital in Vancouver, and an active nursing leader serving as president of the Registered Nurses Association of B.C. and on the Boards of the Canadian Nurses Association and the Canadian Lung Association. We reviewed contemporary nursing texts from the period, especially those related to TB and TB nursing. We also have access to oral history tapes and interviews with several B.C. nurses who were TB patients or had TB nursing experience. We are doing a literature search of professional periodicals to identify pertinent items related to TB and its care; this area of research will be expanded in the next phase of the study.

7. Hatfield, W. H. (n.d.). *History of Tuberculosis in British Columbia* (Parts I and II). Unpublished manuscript available in the Esther Paulson papers. We were especially fortunate to obtain a rare copy of this unpublished manuscript, which was written by the Director of Tuberculosis Control for the Province of British Columbia from 1935 to 1951. He drew largely on primary sources that apparently have since disappeared; we know from other primary materials that he wrote to various nursing leaders for information while he was working on the manuscript, but their replies have not yet been found.
8. Zilm & Warbinek, 1994.
9. Nikiforuk, A. (1991). *The fourth horseman: A short history of epidemics, plagues, famine and other scourges*. Toronto: Viking. See also Tynes, L. Lee (1993). Tuberculosis: The continuing story. *Journal of the American Medical Association*, 270, 2626-2617, which provides an excellent overview of the history.
10. Canadian Tuberculosis Association (1967). *CTA Xmas Seal Kit, 1967: Press section — Newspaper fillers*. Unpublished typescript copy of information supplied to newspapers by CTA. Available Esther Paulson Papers.
11. "50 years of the Union." (1971, January). *Tuberculosis Quarterly Review* [publication of the International Union against Tuberculosis], p. 4.
12. Aiken, Charlotte A. (1916). *Clinical studies for nurses* (3rd ed.). Philadelphia: W. B. Saunders, p. 109.
13. Hatfield, I., n.d.; Kelly, N. (1973). *Quest for a profession: The history of the Vancouver General Hospital School of Nursing*. Vancouver: Vancouver General Hospital School of Nursing Alumnae Association.
14. Watson, J. K. (1905). *Handbook for nurses* (3rd ed.). London: Scientific Press.
15. *Ibid.*, p. 354.
16. Hampton, I. A. (1893). *Nursing: Its principles and practice for hospital and private use*. Philadelphia: W. B. Saunders (Facsimile edition, 1993).
17. Watson, 1905.
18. Hampton, 1893, p. 439.
19. *Ibid.*
20. Descriptions of symptoms come from various sources, esp. Weeks-Shaw, Clara S. 1901. *A text-book of nursing for the use of training schools, families, and*

*private students* (2nd ed.). New York: D. Appleton & Co., pp. 321-322; see also Watson, 1905, p. 321; Hampton, 1893; Hampton Robb, 1910.

21. Watson, 1905, p. 325.
22. *Ibid.*, p. 327
23. *Ibid.*
24. Aiken, 1916, p. 113.
25. Norfolk, W. (1979). *Cooney and his clan*. Prince George, B.C.: Sunshine Press.
26. Hatfield, I., n.d., p. 1.
27. *Ibid.*, p. 15.
28. *Ibid.*, p. 17.
29. *Ibid.*, pp. 16, 25.
30. Walker, Marion (1987). *Oral history interview*. Interview by Sue Holmes, May 2, 1987. Vancouver: RNABC Oral History Collection.
31. Hatfield, I., n.d., p. 25.
32. Smith, Marion (1987). *Oral history interview*. Interviewed by Anne M. Dunn, April 25, 1987. Vancouver: RNABC Oral History Collection.
33. Shore, Helen (1994). Isabelle Maud Hill (notes and CV). Unpublished papers available in the biographical files in the Registered Nurses Association of B.C. Helen Randal Library.
34. Hatfield, I., n.d.
35. *Ibid.*, p. 20.
36. *Ibid.*, p. 33.
37. *Ibid.*
38. *Ibid.*, p. 31.
39. Personal communication from R. Gill, B.C. Ministry of Health, TB Control, August 31, 1995, noting B.C. Regulations 142/59, Section 70. Also personal communication from the Office of the Clerk, B.C. Legislature, citing the Railway Act (1979), Ch. 354, part 36, related to spitting on trains.
40. Hatfield, I., n.d., p. 43.
41. Hatfield, I., n.d.; Green, Monica M. (1984). *Through the years with public health nursing: A history of public health nursing in the provincial government jurisdiction British Columbia*. Ottawa: Canadian Public Health Association, p. 7.
42. Zilm & Warbinek, 1994.
43. Gibbon, J. M., & Mathewson, M. S. (1947). *Three centuries of Canadian nursing*. Toronto: Macmillan, p. 342.
44. University of British Columbia (1920). *Senate minutes, Tuesday, April 20, 1920*. Vancouver: Author.
45. MacKenzie, M. A. (n.d.). Curriculum vitae. From the MacKenzie files in the Canadian Nurses Association Library. This sheet was a copy of a single-sheet résumé taken from the Mathewson files, Library, School for Graduate Nurses, McGill University. Information on her life is scant and was culled from a variety of sources. A file on her is available in the University of B.C.

School of Nursing Archival Collection and additional information has been supplied to the Canadian Nurses' Association and Registered Nurses' Association libraries.

46. University of British Columbia (1921). *UBC calendar 1921-1922, seventh session*. Vancouver: Author, p. 186.
47. Wood, Beatrice Fordham Johnson (1991). *Oral history interview*. Interview by Sheila Zerr, March 20, 1991. Vancouver: RNABC Oral History Collection. [Transcript by Ethel Warbinek available UBC SoN AC].
48. Compare Hampton, 1893, and Hampton Robb, 1910. Hampton Robb, Isabel (1910). *Nursing: Its principles and practice for hospital and private use* (3rd ed.). Toronto: J. F. Hartz. The author is the same person; Robb was her married name.
49. Hatfield, I., n.d., see esp. pp. 40, 60-61.
50. Wherrett, 1977, p. 255.