

## CRISIS & CHRISTMAS SEALS

### Tuberculosis in Early Washington

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A century ago more Washington citizens were dying of tuberculosis than from any other cause. The terrible disease was ubiquitous, its classic symptoms including progressive weakness, fever, and an exhausting, racking, blood-producing cough. Called "consumption" for centuries because of the way it "consumed" the lungs, in the late 1800s it was officially designated tuberculosis (or TB) after the tubercles, or lesions, in the lungs that characterized the disease.

Tuberculosis was utterly unpredictable. Death could be preceded by a miserable, chronic illness or by a rapid decline of the brain, spine, bones, kidneys, intestines, skin, and neck glands. It could also "seed" throughout the body in "miliary" form, in which tiny lesions the size and shape of millet form in multiple organs. Inexplicably, tuberculosis could even subside and apparently disappear, or be so mild from onset as to escape detection in more cases than were recognized at the time. The disease could even flare up from a "latent" form and become extremely virulent and contagious. Before 1900 virtually every citizen of the "Northwest Corner" who had not already succumbed carried either active or latent tuberculosis. TB had become a true epidemic, ominously threatening the growing and prospering new state of Washington.

Its multiethnic sources (see sidebar below) combined to make TB Washington's number one cause of death: 124 out of 1,356 total deaths in the sparsely populated state in 1892, 447 by 1902, and 1,406 out of 12,000 deaths in 1913. Statistics for the number of known cases, reported as only 1,000 in 1913, were utterly unreliable—many thousands would have been more accurate, based on later knowledge. The state health department (1906) noted that only a third of the recorded tuberculosis deaths had been previously reported as known cases.

Scientific advances in prevention and control of somewhat similar "ancient" diseases—smallpox, syphilis, etc.—were well-known by the mid 1800s, but there were as yet no vaccinations or medications for consumption. Tuberculosis care had benefited from some clinical observations, such as transmissibility, demonstrated in 1868 by Jean A. Villemin. Rene P. H. Laennec learnedly described diagnostic lung findings in 1816 with use of the stethoscope, and then died of consumption himself, as did many giving care to active cases.

Finally, in 1882, Dr. Robert Koch of Austria reported his anxiously awaited medical-biological discovery of a microbe, the bacillus that had previously defied laboratory scrutiny. He rendered the germ visible with special staining under the microscope, found it in "sick" tissues, grew it in the laboratory (cultures), transmitted it to new tissues, organs and cultures, thus confirming its infectiousness and the fact that it was the cause of tuberculosis.

Although the tuberculosis bacillus, *Mycobacterium tuberculosis*, had been "captured" in Europe in 1882, it was not tamed until 30 or more years later and continued to infect a large portion of

the population. In 1900 TB's presence in Washington was most alarming, and yet, inexplicably, officials were ignoring it.

A Dr. E. Jordon of Seattle voiced an apparently popular view, that Koch's assertions were "poppycock," and claimed that his own theories and treatment were beyond criticism. By that time it was not unusual for many doctors, particularly those with some writing ability, to author articles and even texts proclaiming their own interpretations and treatments of many conditions as the best, without need for scientific proof. Major reforms in medical education and standard physician qualifications took place at this time. Standards of practice and high-caliber medical schools soon became the order of the day.

The public was gaining awareness of the TB epidemic, albeit slowly. Editorials declared the grave danger of the disease. The state medical society appointed a special committee on tuberculosis before the turn of the century. Washington's Department of Health in its first biennial report (1892) drew attention to the imminent dangers of ignoring the disease. The health department's report on TB in 1908 still described the lack of governmental initiative but noted that the new Society for the Study, Prevention, and Control of Tuberculosis was energetically advocating greater public concern and action.

The first such society in Washington was formed in Spokane on September 12, 1906, by Dr. William R. M. Kellogg. He sought to involve other areas of the state with publication of a bulletin. Unfortunately, he soon died, but what he had started was picked up in Seattle in 1909. Dr. Christen Quevli, who had come to Tacoma from Norway, was deeply involved in the anti-tuberculosis activities of the area's leagues and medical societies. It is of note that when he became president of the Washington Society for Prevention and Control of Tuberculosis, the legislature passed regulations for documentation and initial control of TB. He eventually became president of the national anti-TB group while also carrying on a practice with major tuberculosis emphases.

Local groups were enthusiastically supported and increased in number to 38 locations throughout the state. They became unified, went through multiple name changes, and became allied with the rest of the country and then the world. They coalesced into the Washington Tuberculosis and Health Association and in the 1950s linked with similar groups elsewhere to form the National Tuberculosis Association (NTA), which had a medical arm, the American Thoracic Society (ATS). A final transition in name took place in the latter part of the 20th century when the NTA became the American Lung Association. The state organization is now the American Lung Association of Washington (ALAW), which has reduced emphasis on tuberculosis and given greater attention to other respiratory diseases.

These surface details only hint at the basic and most meaningful activities of many concerned citizens who came together with one purpose: to conquer the illness that had produced such overwhelming havoc—tuberculosis. With the aid of the Boy Scouts of America, churches, civic and business groups, the anti-TB leagues sought to bring about legislation, sanitation, treatment, isolation, and other measures, and through education reduce the spread of the disease. They were successful to a degree, although they engendered some resentment and backlash. There were those who labeled the clamor an excessive "phthisophobia" (fear of phthisis—TB specialists are still occasionally referred to as phthisiologists).

Within the first 10 years of the 20th century the anti-TB activists in the east had adopted the banner of a red cross in conjunction with the American Red Cross organization and initiated the

development and sale of seals, or stamps, at Christmas time, providing much-needed income for both organizations. The two organizations separated in 1919 and the NTA adopted a new seal design with the red double-barred Cross of Lorraine, calling them Christmas Seals, a title they have used ever since.

These seals became indelibly etched in the minds and hearts of the American people as the symbol of a fight for the good of all persons against seemingly insurmountable odds, most specifically against tuberculosis. The seals were sold singly or in sheets, by mail, or door to door, by volunteers, at newspaper stands, in the cold blustery weeks before Christmas. They clearly symbolized the fight against TB, their prizewinning motifs changing from year to year. Christmas Seals were depicted in posters, magazines, movies, and newspapers; adopted in school contests or on stage; eventually adorning accessory scarves, jewelry, tree decorations, address labels, greeting cards, etc. Some were modified to a Jewish Chanukah style.

All 38 anti-TB groups in Washington promoted the sale of Christmas Seals, adding to the yuletide spirit with gala festivities, and attractively enhancing the season. The seals were colorful, picturesque, timely reminders of the holidays, and yet underneath there was always the dismal note of despair over the ravages of an undefeated enemy—"The White Plague," tuberculosis—invading the bodies of innocents. Early activities of the anti-TB groups in Washington centered on preventing transmission of the disease and treating those most ill. Spitting was condemned because it spread germs; laws were passed to criminalize it, and arrests were made. This culminated in the "death of the spittoon."

Treatment remained uncertain. Henry Trudeau, in the Saranac Lakes area of upstate New York, came to be considered the protagonist of bed rest, fresh air and sunshine, good diet, and mild exercise as therapies for TB. He brought the concept from Europe, instituted it in the local mountains, created a cadre of physicians and nurses (almost all had had tuberculosis, as did Trudeau), and spread the gospel to the rest of the country. There was no question but that it was more successful than less rigid measures used previously.

The very best place to manage a patient for this type of treatment was in a sanatorium, an institution much like a hospital but limited to patients with tuberculosis. Washington had no such institutions, although there had been "tent cities" and "pest houses" in some areas. Naturally, city neighborhoods were opposed to TB tent cities within their bounds.

Seattle was the first site, in 1911, of a sanatorium, Firland, where beautiful buildings housed 100 adult patients and dozens of children. It provided a place for Trudeau-type treatment with full medical and support staff. It also was the locus of a controversy between staff and private physicians, the latter feeling they were illegally being denied the right to give continued care to their own patients. The Anti-Tuberculosis League was one of the main defendants in a suit that was finally settled amicably.

Firland was ultimately donated to King County. Spokane built a similarly beautiful sanatorium, Edgecliff. Tacoma had the Pierce County Sanatorium, and Seattle acquired another institution, Morningside. The United States Public Health Service, Cushman Institute, became an Indian Health Service hospital (Tacoma). There were also the Marine Service and the Veterans Administration TB hospitals. Eventually, there were 13 sanatoria only partially meeting the state's needs in the first half of the 20th century. After World War II a converted wartime naval hospital became a new, larger Firland, providing many more much-needed beds.

Sanatorium hospitalization could either be a great relief for the sick patient or a burden of incarceration, but the greatest overall benefit for well over 50 years was the isolation of active cases, which kept uninfected individuals from being exposed to a patient's breath, sputum, or other body secretions. As more and more active cases were removed from the mainstream, the number of new cases declined and public health was improved. The logical next step was searching for new cases. Identifying previously unknown victims of the disease was of utmost importance in gaining control over it.

The mental anguish that tuberculosis patients and their loved ones suffered can be likened to the dismay engendered these days by cancer, AIDS, Alzheimer's, and the like. There are some still living who can recall the desperate fear that gripped those who came under the shadow of TB. This fear was channeled into such meaningful endeavors as the Anti-Tuberculosis League, which provided education, guidance, and assistance.

A sanatorium stay was by no means a holiday. Edgecliff (Spokane) records for early years showed that deaths often exceeded live discharges. Even those who improved had long stays involving a great deal of bed rest. Betty McDonald, author of *The Egg and I*, wrote about her fears in the semi-fictional account, *The Plague and I*, during the 1940s. Her humor could not hide the fear and despair she felt, but she did leave "The Pines" (Firland) cured.

Many well-known books and operas dwelled on the languishing fate of those chronically suffering and then dying in "sans," TB "villages," or at home. There was a certain aura of prestigious romanticism attached to consumption, such as in *Camille*, *La Traviata*, or the lovers in *The Magic Mountain*. Sharpened senses were claimed, characterized by bright eyes and red cheeks in a pale countenance. Many well-known politicians, authors, philosophers, poets, artists, and their subjects succumbed to the disease. The impression of consumption being a disease of the elite was probably false since we know that in the last 500 years mortality in Europe alone was horrendous for all segments of the population. In more recent years, Eleanor Roosevelt, Vivien Leigh, Adolf Hitler and his father are a few of the more notable or notorious victims of the disease. Dashiell Hammett wrote some of his novels while a patient at Cushman Institute in Tacoma.

The "typical" tuberculosis patient, however, at least in the logging centers and seaports of Washington, was too often noted to be from the overcrowded flophouses, filthy rooms, taverns, and brothels of Skid Road where person-to-person spread of all diseases was practically a matter of course. As this became obvious, some of those active in the community effort to stem tuberculosis, after witnessing the self-inflicted squalor of drunks, prostitutes, beggars, and such, lost their enthusiasm for helping.

As cases of TB were confined for treatment, the incidence and mortality of the disease gradually and significantly declined. The battle against TB in this state and elsewhere entered a new phase. Thanks to the isolation of active cases, the chances of becoming infected were diminishing. Quarantine of all active cases was suggested—a theoretical albeit impractical ideal. Milk as a source of tuberculosis was handled by killing all skin-test positive cows.

Roentgen's invention of the "x-ray" (1890) was the godsend that allowed early and easy detection of TB. Since most cases were pulmonary, the chest x-ray could show negligible, minimal, moderate, or advanced lung disease. If abnormal, the chest "film" demanded thorough medical follow-up. Chest x-rays of inductees in both world wars unexpectedly revealed large numbers of "hidden" cases.

Voluntary chest x-ray screening of Washington's entire population became the goal of health departments and tuberculosis associations at all levels, and they attained that goal. Intercommunity contests were held to reward the county or locale that could screen "the mostest the fastest." Mobile units, horse-drawn or horseless, were used. Additional focus was placed on jails, hospital admissions, nursing homes, teachers, and food handlers. These case-finding efforts paid off as numerous unsuspected early cases were found in the many thousands thus tested. This put a tremendous load on existing care and isolation facilities.

There were those who were not happy at being confined, and in some instances refused isolation, thus contributing to the spread of the disease. This predicament, which went on for many years, called for court-ordered incarceration. Washington, under the direction of Dr. Cedric Northrop, TB control officer for the Seattle/King County Health Department, led the way with "locked wards" in sanatoria for the recalcitrants who, for whatever reason, would not voluntarily stay confined. Generally, there was compliance with isolation since most understood its importance in preventing spread of the disease. The Christmas Seals agencies participated actively in education and counseling under health department supervision.

Dr. Robert Koch and others had sought to produce immunity to tuberculosis, injecting nontoxic extracts, as was being done successfully with some other illnesses. Unfortunately, this did not work with TB, but a unique situation was discovered. The skin injection site would react with swelling and redness (positive) or not react at all (negative). A positive skin test was found to identify persons with viable tuberculosis bacilli in the body, even when there was no sign of active infection. This "latent tuberculosis" might flare up at any time, thereby spreading infection. It is surmised that 100 percent of the population in Washington (and the world) in 1900 had active or latent TB. By 1950 isolation had reduced positive skin tests to only 8 percent in children. They are found today in only 0.4 percent of school-age children in average United States populations.

As the 20th century dragged on, particularly after the 1930s when sulfa drugs were curing many other infections, consumption could still only be treated with conventional fresh air and bed rest. The frustration of tuberculosis patients and their physicians was turning into desperation. Researchers sought anything that would return a TB patient to even near-normal health. Surgery had become safer, and occasionally removal of a solitary "tuberculoma" had resulted in a cure. The success of this approach depended on the disease having a single focus, which was rare. Then another role for surgery was found.

Dr. Christen Quevli, the elder, in Tacoma was credited with performing the first "collapse therapy" for tuberculosis in Washington. Thoracoplasty, removing ribs at the top of one side of the chest and shrinking that lung, became the prime form of surgery thought to be useful in healing tuberculosis during the next several decades. A major surgical procedure, or combination of such, it produced a partial collapse of the tuberculous lung. Surprisingly, this promoted healing, and infected sputum was no longer produced. Obviously, the disease had to be localized to one side. It was a difficult, painful procedure, often done in stages, and did not always work. Yet, often enough it did, even though the collapsed lung lacked full function.

Less traumatic procedures were devised, such as placing space-occupying bags of air, paraffin, or Lucite "ping-pong balls" under the upper ribs. Alternatively, air could be injected into the body cavity and replenished at weekly intervals (pneumothorax, pneumoperitoneum). There were lines of patients in the hallways awaiting their turn on the special equipment for their weekly "refill." These and other procedures of the 1930s, 1940s, and 1950s, now seen as radical,

were the best tuberculosis specialists had to offer until after World War II. Sanatoria were converted to include surgical suites or patients were temporarily transferred to large hospitals in the nearest metropolitan centers. Volumes of new thoracic surgery texts and journals were produced, and additional academic faculty positions and services were created all over North America and Europe, due in large part to the new collapse procedures.

Over half of all tuberculosis patients availed themselves of such measures, including writer Betty MacDonald. Some success was apparent, and patients could be discharged with "negative" sputum. In retrospect, a significant number with only mild or moderate disease would probably have improved on their own. Former patients who had undergone thoracoplasty were often seen listing towards the resected side. Ping-pong balls or wax spicules could erode to the surface years later.

Finally, in 1947, streptomycin made its appearance—the first effective anti-TB drug. It was developed after a member of the National Tuberculosis Association suggested to Dr. Selman Waksman, a soil biologist, that there might be anti-TB substances in "dirt." Waksman and an associate, Dr. Albert Schatz, isolated an extract from a soil fungus, streptomyces, and found it to be highly effective for inactivating the tuberculosis bacillus. A Nobel Prize was awarded to Waksman alone, engendering a great deal of resentment on the part of Schatz.

"Strep," which had to be injected intramuscularly, had some serious side effects; and resistance to the drug could occur unless it was given with another anti-tuberculosis drug. Nevertheless, it was infinitely better than the previous "nothing."

Pharmaceutical firms in many countries raced to find a cure for the hundreds of thousands of consumptives and those with nonpulmonary TB. But it was not until 1952-53 that the world was elated by the results of many clinical trials, including those done in Washington, with isoniazid (iso nicotinic acid hydrazide, INH), plus another drug—PAS (para amino salicylic acid, a relative of aspirin) and/or streptomycin. At least two drugs had to be taken for two years, and this could be done at home once the sputum had no bacilli. The combination proved effective enough to nearly eliminate tuberculosis in the United States, Canada, and Europe.

Tuberculosis mortality in Washington subsequently declined strikingly to nearly nil, where it remains at present. Incidence fell more gradually, but by 1985 there were only 6.2 cases per 100,000 population, down to 4.0 in 2003, lower than the national average. Most of the sanatoria in Washington were closed by 1970. Edgemoor in Spokane was one of the last to shut its doors in 1978 after treating 10,000 patients in 64 years. The offices of the American Lung Association of Washington were reduced to four, one for each point of the compass and one central headquarters in Seattle, which is home to Washington's Tuberculosis Advisory Committee, chaired by the state health department's tuberculosis control officer.

Twenty years ago it seemed TB, at least in this part of the world, was conquered or soon would be. Then, unfortunately, with success in sight:

- Many United States cities have had a surge in new cases, mostly in immigration centers.
- The HIV/AIDS virus sequence exploded, interacting with TB, each worsening the other.
- Multiple drug resistance to anti-TB medications appeared, partly spread worldwide from Siberia when the USSR Health Control Program was usurped by new local policies, too often inadequate, encouraging bacilli to become drug resistant.

- The homeless have become a major reservoir; they require physically supervised drug administration for many months.
- Legal and illegal immigrants brought in more active tuberculosis from the rest of the globe where the disease is now worse than ever—over nine million cases and two million and more deaths per year have been reported since 2003.

Paradoxically, as tuberculosis diminishes, fewer and fewer physicians recognize it, and the danger now exists of ineffective treatment due to misdiagnosis.

Despite all this, tuberculosis in Washington is at an all-time low, as it is in much of the developed world. Sporadic newsworthy cases, usually foreign born, pop up occasionally, reminding us of the lurking danger. Incarceration/isolation has been a necessity, albeit rarely. This unconquered disease still requires many months of combined, closely supervised multiple drug treatment, with lifelong follow-up by phthisiologists. Antibiotic resistance still surfaces too frequently.

Fortunately, improved management and control persists in this part of the world and is improving elsewhere. But TB, one of the oldest scourges of mankind, is resisting conquest. Research studies, supported by the American Lung Association and many other sources, some under way at the University of Washington, are finding new avenues for anti-TB endeavors, by genetic, molecular, and other means. True control—which involves diverse socioeconomic, cultural, religious, and multiple international factors—still eludes us, but science is gaining.

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*Author Wilbur Hallett, MD, FACP, is guest curator of the exhibit, The Battle against Tuberculosis in Washington, on view at the Washington State History Museum September 10 through December 17, 2006. Hallett is a Washington State Historical Society member and volunteer, and a member of the American Lung Association who has long been active in the fight against tuberculosis.*

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#### **Sidebar:**

##### **Tuberculosis through the Ages**

Tuberculosis has existed for millennia. Hippocrates described the tubercles (root-like bulbs) in the lungs of patients with "phthisis" in Greece over 2,000 years ago. Mummies up to 5,000 years old in Eurasia and Africa have been found with the "gibbus" or hump deformity of the spine caused by tuberculosis. This relatively common form of the disease inspired the legends of hunchbacks, such as Quasimodo of Notre Dame in Paris. Centuries earlier scrofula was found in abundance in Europe and was known as "The King's Evil," claimed to be curable by the "touch of royalty."

Unlike smallpox, measles, and other devastating diseases imported from the Old World, tuberculosis existed before European contact in the Americas. Archaeologists have found pre-Columbian mummies frozen for centuries in the glaciers of the Andes whose remains bear DNA evidence of tubercular lesions. In Colorado, too, human remains demonstrate that Native Americans suffered from tuberculosis before the arrival of Europeans. Scientists can identify

changes in a person's skeleton, such as on the ribs, for example, that are caused by pulmonary tuberculosis.

Nevertheless, much, if not most, of the pervasive TB in the 19th-century Pacific accompanied the pioneers, settlers, and immigrants of European background when they came west.