

# Inpatient Beds for Patients With Syphilis—Hospital Innovation 1919

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Dr John H. Stokes, first chair of the Section on Dermatology and Syphilology at the Mayo Clinic from 1916-1924, was faced with the conundrum of managing patients with syphilis in the hospital. Among the issues he had to contend with were the social stigma, need for specialization, multidisciplinary treatment standardization, infection control, safety, protection of patient records, patient experience, funding, and census management. In his review of the topic in 1919,<sup>1</sup> as well as a *JAMA* article 3 years previously,<sup>2</sup> he explored these issues with an innovative approach that appears quite modern in its administrative structure and approach.

The incidence of patients with syphilis admitted to a hospital for other causes was a distinct concern to Stokes. At Saint Marys Hospital, he found that 6% of all admitted patients had positive results for syphilis on the Wassermann test, and he cited a range of 6% to 31% in his review of the literature<sup>1</sup> (Table).

This high volume of positive test results emphasized the need for a trained serologist on the hospital staff. Dr Stokes believed that in addition to the diagnostic cornerstones at the time of admission of a urinalysis and blood pressure determination, a Wassermann test was needed. Stokes wrote that it was essential to test patients in order to initiate treatment as well as protect the staff. He noted 3 extragenital syphilis infections within surgical personnel over the course of a year. His protocol for infected patients included private rooms if possible, quarantine, boiling or “phenolizing” the dishes, disinfection of thermometers and surgical equipment, careful risk avoidance of oral or anal lesions, and avoidance of syphilophobia and panic among the staff.

When it came to admitting patients specifically for treatment of their syphilis, Stokes

wrote, “Sexual disease is only just beginning to be recognized as a hospital problem.”<sup>2</sup> Why would a patient with syphilis need to be admitted to the hospital? Stokes laid out his reasons, which included the need for prolonged and deliberate clinical observation, an intensive treatment protocol, multidisciplinary cooperation, research, and prevention of error. He believed that a dedicated multidisciplinary staff was key, stating that “to achieve maximum harmony and efficiency, in- and out-patient phases must be under the same chief and same staff<sup>1</sup> as a unit organization, what we would term *service line* in modern parlance.

From an administrative standpoint, his approach to bed management was very forward-thinking. He noted the importance of “bed turnover” and the need to keep the length of stay short—down to 6 days, similar to what he noted was the standard at the time for a tonsillectomy. His calculations were based on 1800 patients with syphilis being treated annually in Rochester, Minnesota. For this volume, he estimated the need for 30 beds. In 1961, Little<sup>3</sup> described a formula that translates to a basic rule in hospital

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TABLE. Report of Positive Wassermann Test Results in General Hospital Admissions

Hospital	No. (%) of patients
Children's Memorial Hospital, Chicago, IL	101 (28)
Children's Hospital, Boston, MA	111 (31)
Boston Marine Hospital, Boston, MA	312 (24.7)
Peter Bent Brigham Hospital, Boston, MA	4000 (15)
Boston City Hospital, Boston, MA	500 (16)
Cook County Hospital, Chicago, IL	160 (11.3)
University Hospital, Ann Arbor, MI	2000 (6)

Data from *Mod Hosp.*<sup>1</sup>

management: the census is a product of the number of admissions multiplied by the length of stay. Little's calculation for 1800 patients over a year is  $1800/365 \text{ days} \times 6 \text{ days length of stay} = 29.6 \text{ bed census}$ . Stokes was right on target with his estimate of inpatient beds needed.

Stokes was concerned about the funding of care, as well as the patients' perception of the care they received. He noted the high cost of the medication arsphenamine and the need for partial prepayment. He wrote, "The success of any service for syphilis will be proportional to the extent to which it individualizes its patients."<sup>1</sup> Stokes was concerned with finance but a more importantly, with the good of the patients. He stated that there is no reason that patients should be obliged to submit to low-quality or socially stigmatized care "merely because of their poverty."<sup>1</sup>

Syphilis is not the scourge a century later that it once was thanks to antibiotics and education, although it has certainly not disappeared as a source of human illness and misery. Cases of primary and secondary syphilis increased 76% from 2013 to 2017, with over 30,000 cases according to Centers for Disease Control and Prevention data.<sup>4</sup>

Dr Stokes' plan to handle a large volume of cases in the hospital showed a forward-thinking approach from clinical care to census management. Then, as now, there are limitations to resources, needs and demands of patients, and opportunities to innovate and improve how we care for patients. His approach of a century ago still resonates with the inpatient challenges of our modern age.

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