

# The Mayo Brothers (William James Mayo 1861–1939, Charles Horace Mayo 1865–1939): Pioneers of group surgical practice

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**T**he aim of medicine is to prevent disease and prolong life; the ideal of medicine is to eliminate the need of a physician.  
– WJ Mayo, MD

Instead of a playground, William James and Charles Horace Mayo spent much of their childhood in the operating room. By age 12, William J was his father's 'first assistant' while his younger brother, eight-year-old Charles, was the anaesthesiologist. The Mayo brothers used their talent and ambition to expand and improve the hospital first created by their father, Dr WW Mayo. This led to the creation of the Mayo Clinic, which to this day, remains renowned internationally for unparalleled patient care, interdisciplinary medical treatment, and cutting edge research and education.

**EARLY INFLUENCE** Tall, slender with blue eyes and light hair, William grew up to be a lively and proud surgeon, an avid equestrian, gymnast and boxer. His younger brother Charles was stocky with dark eyes and hair, and was more gregarious and studious. Despite their differences, they were inseparable playmates and shared a love for mischief. It is said that William often busied himself teasing girls, and Charles regularly cut school.

The Mayo family farm in Minnesota was an unlikely place for exploration and learning. After completing their lessons in literature, Latin and the arts at the Rochester Training School, the Mayo children received supplemental science lessons from their parents. Father taught chemistry and physics, and introduced anatomy with the aid of a skeleton he saved from his days as a coroner. Mother focused on other topics, using the rooftop telescope to teach astronomy and foliage from the family's farm for botany lessons.

The patriarch WW Mayo was a prominent and successful surgeon, and was fondly called 'the little doctor' because of his 5' 4" stature. He was also a community leader, serving as a school board member, city mayor and state senator. Described as a "champion of the working man's rights," he promoted cooperation and respect, values he imparted to his children who often accompanied him on ward rounds

and house calls. Given their early and intensive exposure to medicine, it was no surprise that both William J and Charles chose to become physicians. William J graduated from the University of Michigan in 1883, followed by additional studies at the New York Postgraduate Medical School and New York Polyclinic Medical School. Charles graduated from the Chicago Medical School (now Northwestern) in 1888 and did postgraduate work in New York City. After completing their medical training, the two Mayo brothers returned to Rochester to join their father's private surgical practice.

**TRAGEDY TO OPPORTUNITY** In August 1883, a powerful tornado devastated the quiet town of Rochester,

Minnesota, destroying the high school, courthouse and numerous businesses. The storm killed 24 people and injured many more. As there was no hospital in Rochester, Dr WW Mayo converted the local dance hall into a temporary medical facility. However, over 200 families requested help, which exceeded the available services. Refusing to turn patients away, he sought the help of Mother Alfred Moes and the Sisters of St Francis, who agreed to provide nursing care despite not having any formal medical training. This collaboration allowed Mother Alfred Moes to enlist the help of WW Mayo to build a permanent hospital in Rochester. Over the next four years, the Sisters fundraised the \$2,200 needed to purchase a nine acre plot



west of Rochester, and together with the Mayo doctors, designed Rochester's first hospital. Staffed initially by the three doctors Mayo and the Sisters of St Francis, the 27-bed St Mary's Hospital opened on September 30, 1889. That was the humble beginning of the Mayo Clinic.

The mission of the newly created St Mary's Hospital incorporated the values that WW Mayo emphasised in his personal and professional life: altruism, cooperation and education. Committed to providing care to anyone in need regardless of the ability to pay, the hospital attracted a large and increasing number of indigent patients. It grew to accommodate these demands and added numerous specialists. Soon, treatment became a

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collaborative effort between staff doctors, trainee-physicians, nurses and other healthcare providers, including social workers, dieticians and laboratory staff.

**ACCOMPLISHMENTS** The indigent patient population served by the Mayo Clinic meant that there was a broad spectrum of clinical pathology to learn from. The Mayo Brothers seized this opportunity to develop various surgical operations. William J Mayo specialised in abdominal surgery, and described techniques for the excision of the pylorus and duodenum in constructing a posterior gastrojejunostomy, as well as the dissection of the rectum and surrounding lymph nodes for cancer. Charles had a more diverse surgical interest and introduced novel surgical approaches to tic douloureux, cataracts and bunions.

In addition to their clinical accomplishments, the Mayo brothers also held many leadership positions. Both William and Charles served as chief surgical consultants for the United States Army during the First World War. William was named to the University of Minnesota's Board of Regents and appointed president of the American Medical Association, the American Surgical Association and the American College of Surgeons. Charles also served as president of the American Medical Association and the American College of Surgeons.

Following their retirement, William J and Charles purchased neighbouring homes in Tucson, Arizona, returning regularly to Rochester in their capacity as board members of the Mayo Clinic. On a trip to Chicago in May 1939, Charles fell ill and died of lobar pneumonia. Two months later, his elder brother lost his battle with stomach cancer and died on July 28, 1939.

**THE MAYO LEGACY** The Mayo Clinic is the earliest example of group surgical practice in the United States, and the initial hundreds of surgical procedures by the two brothers quickly increased to some 3,000 operations by the turn of the century. News of the Mayo brothers' innovations drew hundreds of visiting doctors, sparking the creation of the Surgeons Club and organised courses in graduate surgery. By 1907, some 7,500 patients were

being treated, two-thirds of whom were surgical patients. These were large numbers at the time, although the Clinic now serves over a million patients. The Mayo Clinic became the prototype for many other successful multispecialty practices, including Guthrie Clinic in Pennsylvania, Crile Clinic in Cleveland, Lahey Clinic in Boston and Ochsner Clinic in New Orleans. In 1915, William J and Charles donated \$1.5 million to establish the Mayo Foundation for Medical Education and Research with the University of Minnesota. In 1972, the Mayo Medical School came into being. In 2007, the Mayo Clinic offered a breathtaking total of 257 postgraduate medical courses and 7,000 hours of continuing medical education.

The Mayo Health System now includes medical centres in Florida and Arizona in addition to its flagship campus in Minnesota. The Mayo Clinic treats prominent celebrities and the indigent poor alike, its undiluted vision being to provide the *"best care to every patient every day through integrated clinical practice, education and research."* The Encyclopedia Britannica describes it as *"the standard against which all other clinics are judged."* Mayo's statistics in 2010 are awe-inspiring – it had over 3,700 staff physicians and scientists, some 3,300 trainee-physicians, and a total clinic patient population of just over one million, with 123,000 hospital admissions. Its total assets are listed at \$9.579 billion.

## BIBLIOGRAPHY

- Clapesattle H. The Doctors Mayo. Garden City: Garden City Publishing Co Inc, 1941.
- Lamb MN, Farley DR. William Worrall Mayo – a forward-thinking physician. *Curr Surg* 2003; 60:641-2.
- Mayo Clinic. The Tradition and Heritage of the Mayo Clinic. Available at: [www.mayoclinic.org/tradition-heritage/](http://www.mayoclinic.org/tradition-heritage/). Accessed December 4, 2008.
- Mayo Clinic Facts – 2010. Available at: [www.mayoclinic.org/about/facts.html](http://www.mayoclinic.org/about/facts.html). Accessed February 11, 2011.
- Nelson CW. The doctors Mayo and organized medicine. *Mayo Clin Proc* 1990; 65:3.
- Nelson CW. Origins of the name "Mayo Clinic". *Mayo Clin Proc* 1997; 72:296.
- Rutkow IM. Moments in surgical history: the doctors Mayo. *Arch Surg* 2001; 136:603.
- Todman D. William Worrall Mayo (1819-1911). *J Med Bio* 2008; 16:177.
- van Heerden JA. Brothers. *Arch Surg* 1997; 132:471-80.