

Hermann Boerhaave: father of teaching at the bedside

The very last day of this year marks the 350th anniversary of the birth of Hermann Boerhaave, the Dutch physician and polymath, who introduced clinical teaching while Professor of Medicine at the University of Leiden. Beside teaching medicine, chemistry and botany, in all of which he made important contributions, he followed patients of his who died to the autopsy room, where he taught his students to relate the features in life to the findings at post mortem. He must therefore be acknowledged as the father of the method of teaching still used in our medical schools today.

Boerhaave was born on 31 December 1668 in Voorhout, a little town outside Leiden in what is today Holland. His father, both a pastor and a schoolmaster, taught him Latin, Greek and history. His father died when Boerhaave was 15 years old, leaving a widow and nine children, of which Hermann was the eldest. At the age of 16 years, Boerhaave entered the University of Leiden to study philosophy and divinity, with the aim of becoming a teacher. After 6 years, he graduated Doctor of Philosophy, obtained a post in the University library and began to study medicine, attending the anatomy dissection classes of the famous Anton Nuck (after whom the peritoneal sac in the female inguinal canal is named).

Ten years after starting university, Boerhaave obtained his Doctorate of Medicine and began to practice as a physician in Leiden. In 1701 came appointment as reader in medicine, teaching physiology, pathology and therapeutics. The following year, at the request of the students, he also gave private lessons on anatomy and chemistry.

In 1709, the Professor of Botany died. Boerhaave was promptly appointed to the

vacant Chair. He had never taught botany, nor had he worked on the subject since his student days. Moreover, the duties of the professor included those of director of the botanic gardens. Boerhaave's capacity for work was enormous. He doubled the number of plants in the gardens, and introduced efficient hothouses for the cultivation of newly imported tropical plants. Each morning at 7 am he gave a 2-hour lecture on botany, in addition to his lectures on the theory of medicine and his increasing work as a medical consultant.

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In 1714 came the additional appointment as Professor of Clinical Medicine. With this came his charge of a male and a female ward, each of six beds, at St. Celia's Hospital. For the rest of his life, Boerhaave taught there twice weekly to large numbers of students from many countries. If a patient died, there was an automatic post-mortem examination, which was attended by Boerhaave and his followers, enabling correlation of the clinical features with the pathological findings. So here in Leiden was born the bedside clinical teaching, which is proudly carried on worldwide today. (The word 'clinical' comes from the Greek word 'clinos' – a bed.)

In 1718, the Professor of Chemistry at Leiden died. Boerhaave, who had been giving private lectures on the subject, was appointed to fill the vacancy. With this post, came the use of the chemical laboratory of the University. He was the first to isolate urea from the urine. In 1732 he published his two volume 'Elements of Chemistry'.

Boerhaave now held three Chairs in the University, those of chemistry, botany and medicine. As well as all this, he had an enormous private medical practice, which included many European nobilities. Indeed, his fame spread still further afield. It is said that a letter from a Chinese Mandarin, addressed simply to 'the illustrious Boerhaave, physician in Europe', found its way safely to him. The secret of Boerhaave's success, apart from high intelligence, was sheer hard work. He would get up before dawn and work late into the night to carry out his numerous commitments.

On the clinical side, Boerhaave introduced the clinical thermometer into his practice, although he did not record any research or observations in this field. He was the first to record a case of spontaneous rupture of the normal oesophagus. The patient was the grand admiral of the Dutch fleet, who collapsed after ingesting a massive banquet and having tried to induce himself to vomit. At autopsy, the oesophagus was found to have torn open just above the diaphragm. This unusual emergency, now labelled 'Boerhaave's syndrome', may be treated successfully by urgent left-sided thoracotomy and repair of the tear.

In 1729, Boerhaave retired from the chairs of botany and chemistry because of his increasing ill health, but kept up his duties as Professor of Medicine until his death.

In 1710, Boerhaave had married a merchant's daughter. They had four children, but only one, a daughter, survived into adult life. In the latter part of 1737, Boerhaave began to suffer from severe breathlessness and by April the following year he had developed ascites and marked oedema of the legs. He died on 23 September 1738, obviously of congestive heart failure. He was buried in the Pieterskerk in Leiden. His lasting memorial must be the bedside teaching that all of us have experienced and enjoyed, and which many of us practice. **BJHM**

Conflict of interest: none.

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