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The Hypodermic Syringe and the Rise of Addiction

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NOTE: The original 1,000+ page manuscript for *Slaying the Dragon: The History of Addiction Treatment and Recovery in America* had to be cut by more than half before its first publication in 1998. This is an edited excerpt that was deleted from the original manuscript.

As early as 1656-1657, Christopher Wren, a professor of astronomy, experimented with the process of injecting drugs directly into the veins of animals and human beings. Wren's method used a quill feather-pen with an attached bladder. The discovery of an 1834 engraving showing the poet Thomas Campbell holding a workable hypodermic syringe offers a mysterious report of its development since no medical texts note the existence of such early use (Maurer and Vogel, 1973). While crude forms of transfusing blood and administering drugs did exist, the forerunners of the modern hypodermic syringe would not arrive until developments by the Irish surgeon F. Rynd in 1844 and by the Scottish physician Alexander Wood in 1853.

Rynd was the first to succeed at hypodermic injection in medicine, using a hollow needle and gravity to administer the drug. Wood provided a more effective hypodermic instrument and a more detailed description of the injection techniques.

Wood continued to improve his syringe and, by the late 1850s, "Dr. Alexander Wood's Narcotic Injection Syringes" were being advertised in British medical journals. There are conflicting reports of the people who introduced the hypodermic syringe into the United States. Two accounts note that the syringe was introduced in 1856 by Dr. Fordyce Barker (Terry & Pellens, 1928; Graham Mulhall, 1926), and another attributes its introduction to Antoine Rupper a few years before the Civil War (Macht, 1916, p. 859).

Drug injections by physicians or self-administered by patients were either subcutaneous (under the skin) or intramuscular (in the muscle). Intravenous (in the vein) injections were not used regularly, and patients who were being taught self-injection were warned not to puncture their veins. Intravenous injection of opiates did not emerge in the United States until the mid-1920s--a further advancement in the efficiency of drug administration that

exerted a profound effect on the future history of opiate addiction.

Before the hypodermic syringe came into use, people took opiates by mouth, through the nose (snuffing), through rectal suppositories, by absorption (massaging the drug into the skin--a technique introduced in 1809 by an English physician named Wheeler), by placing opiates in open wounds, or by blistering or lancing the skin and then inserting the drug--this last technique introduced by the French Physicians Dr. A. J. Lesieur in 1825 and Dr. G.V. Lafargue in 1836 (Howard-Jones, 1971; Hubbard, 1881).

Unlike earlier methods, the syringe provided an extremely efficient way of administering the drug--a method so efficient that its promoters claimed it could reduce the risks of addiction, because injection could take away the pain with smaller quantities of morphine than the doses required using other methods. In fact, Dr. Wood did not believe that morphine would be addictive if it were injected. Tragically and paradoxically, his wife was one of the first people to die from an overdose of morphine administered by hypodermic syringe.

Death was not the only unforeseen consequence of the hypodermic syringe. Abscesses and infections were common because of the failure of both physicians and patients to sterilize their syringes and needles. In 1867, Joseph Lister alerted the medical community to the widespread reality of infection from microbiological contamination in surgery. However, it would still be many years before sterilization became part of the ritual of drug injection. Meanwhile, morphine was routinely being injected by physicians, and by patients themselves, through non-sterile syringes and needles (Howard-Jones, 1971).

In spite of these risks, the hypodermic syringe became a mainstay in medicine. The syringe was not widely available at the beginning of the war, but its use increased by the end of the war, and its distribution to patients--particularly to sick or injured veterans--became widespread in the years following the Civil War. Magendie's introduction of a morphine solution for

hypodermic use sped the spread of morphine injection into the population at large (Petty, 1913).

The syringe became something of a social must to have. Many women had their syringes jeweled, so they could be disguised as charms and worn on their clothes. The less affluent ordered their hypodermic syringes from the Sears and Roebuck catalogue, which in 1897 sold kits ranging from \$1.50 to \$2.75, with extra needles available at 25 cents each.

The hypodermic syringe was an amazing advance in drug administration, and the injection of morphine became a medical panacea in the years following the Civil War. David Courtwright describes this era's morphine-filled hypodermic syringe as a magic wand that could cure little, but could relieve everything (Courtwright, 1978).

One of the first articles signaling alarm about addiction from injection of morphine was a T.C. Albutt report in the *Lancet* in 1864. Such reports became common in the 1870s, when hypodermic drug use gained wide popularity. In 1879, in his text, *The Hypodermic Method*, Dr. Robert Bartholow warned of the following dire consequence of this new invention:

The introduction of the hypodermic has placed in the hands of man a means of intoxication more seductive than any which has heretofore contributed to his craving for narcotic stimulation. So common now are the instances of habitual use, and so enslaving is the habit when indulged in by this mode, that a lover of mankind must regard the future with no little apprehension (Quoted in Kane, 1880).

In 1915 Charles Towns, founder of an addiction treatment hospital in New York City, declared that he considered the syringe "the chief creator of the drug habit in this country" (Towns, 1915, p. 9). The problem was not that there were no warnings about the practice of injecting narcotics; it was that the use of the hypodermic syringe was traveling faster than the knowledge of its potential dangers (Musto, 1985). By the early 1920s, there were clinical reports of

addicts who were as strongly addicted to the needle as they were to the drug itself (Flowers and Bonner, 1923).

One of the lasting lessons from the early history of the hypodermic syringe is that altering how a drug gets into the human body can radically alter our understanding of a drug's psychopharmacology, the drug's addiction potential and its personal and social consequences.

References

Courtwright, D. (1978). Opiate addiction as a consequence of the Civil War. *Civil War History*, 24, 101-111.

Flowers, M. and Bonner, H. (1923). *The menace of morphine, heroin and cocaine*. Pasadena, CA: Narcotic Education Association.

Graham-Mulhall, S. (1926). *Opium: The demon flower*. NY: Harold Vinal.

Howard-Jones, N. (1971). The origins of hypodermic medication. *Scientific American*, pp. 96-102, January.

Hubbard, F. (1881). *The opium habit and alcoholism*. NY: A.S. Barnes & Co. (NY: Arno Press Reprint, 1981).

Kane, H. (1880). *The hypodermic injection of morphia*. NY: C.L. Birmingham.

Macht, D. (1916). History of IV and subcutaneous administration of drugs. *Journal of the American Medical Association*, 66, 856-860.

Maurer, D. & Vogel, V. (1973). *Narcotics and narcotic addiction*. Springfield, Illinois: Charles C. Thomas.

Musto, D. (1985). Iatrogenic addiction: The problem, its definition and history. *Bulletin of the New York Academy of Medicine*, 61, 694-705.

Petty, G. (1913). *Narcotic drug diseases and allied ailments*. Philadelphia: F.A. Davis Co. (NY: Arno Press Reprint, 1981).

Terry, C. E. and M. Pellens (1928). *The opium problem*, Montclair, New Jersey: Patterson Smith.

Towns, C. (1915, 1920). *Habits that handicap: The menace of opium, alcohol, tobacco, and the remedy*. NY: Funk & Wagnalls Company.