

Discovery and Development of Anesthesia Timeline

ca. 4000 BCE: Some Sumerian artifacts depict opium poppy that was used for pain relief.

ca. 2250 BCE: Babylonians relieve toothache with henbane (*Hyoscyamus niger*).

ca. 1600 BCE: Acupuncture was being practiced in China, according to Shang Dynasty pictographs on bones and turtle shells.

ca. 1187 BCE: In Homer's *Odyssey*, the Greek goddess Circe uses deliriant herbs (*Mandragora* and/or *Datura*) in a brew to seemingly transform Odysseus' men into swine.

650 BCE - 393 AD: At the Oracle of Delphi, Apollo's Pythian priestesses utter prophecies after breathing in fumes emanating from geologic faultlines beneath the Temple to Apollo. One of the inhaled gases may have been ethylene, an inhalational anesthetic which will be popular clinically by the mid-1920s AD.

ca. 600 BCE: India's Sushruta uses cannabis vapors to sedate surgical patients. Over ensuing centuries, other herbs like aconitum would supplement that sedation in India and eventually in China.

ca. 400 BCE: Assyrians use carotid compression to produce brief unconsciousness before circumcision or cataract surgery. Egyptians employ the same technique for eye surgery.

ca. 350 BCE: Plato refers to *ANAIΣΘΗΣΙΑ* in his work *Timaeus*.

64: Dioscorides, a Greek surgeon in the Roman army of Emperor Nero, recommends mandrake boiled in wine to "cause the insensibility of those who are to be cut or cauterized."

ca. 160: Hua Tuo (ca. 111 – 207 AD) performs surgery with his general anesthetic Mafeisan, a wine and herbal mixture

ca. 800 – ca. 1200s: After herbal mixtures including opium, mandrake, henbane, and/or hemlock are steeped into a soporific or sleep-bearing sponge (“spongia somnifera”), the sponge is dampened so that anesthetic vapors or drippings can be applied to a patient’s nostrils. These sponges were likely historical cousins to the so-called Roman or Arabic sponges (used during crucifixions, surgeries, and other painful events).

ca. 1350: Inca shamans chewed coca leaves mixed with vegetable ash and dripped their cocaine-laden saliva into the wounds of patients.

1525: Paracelsus (1493–1541)—First to use ether on animals.

1540: German physician and botanist Valerius Cordus (1515–1544), synthesizes diethyl ether by distilling ethanol and sulphuric acid into what he called “sweet oil of vitriol.”

1659: The future “Sir Christopher Wren” and Anglo-Irish chemist Robert Boyle (1627–1691) pioneered intravenous therapy by injecting opium through a goose quill into a dog’s vein.

1771 – 1786: Joseph Priestley (1733–1804)—English chemist and natural philosopher, discovers “airs” of oxygen and nitrous oxide; the first to isolate oxygen.

1779: Franz Anton Mesmer (1734–1815)—In *Mémoire sur la découverte du magnétisme animal*, he describes using magnets and hypnosis to cure many ailments.

July, 1800: Humphry Davy (1778–1829)—In his *Researches...*, Davy observes “As nitrous oxide in its extensive operation appears capable of destroying physical pain, it may probably be used with advantage during surgical operations in which no great effusion of blood takes place.”

1804: Japan’s Hanaoka Seishu (1760–1835) formulates his general anesthetic Tsusensan.

1805: Pharmacist Friedrich Sertürner (1783–1841)—Isolates a new substance from opium, which he later names “morphium” after Morpheus, the god of dreams.

1824: Henry Hill Hickman (1800–1830) describes carbon dioxide anesthesia for animals.

1842: William Clarke (1819–1908)—In Rochester, New York, a medical student etherizes a single patient for a dental extraction.

Dr. Crawford W. Long (1815–1878) etherizes James Venable for removal of neck cysts on March 30, 1842. Dr. Long would become honored as the 1st anesthesiologist on a US Postage stamp (1940) and as the inspiration for the 1st “National Doctors Day” on March 30, 1991.

1846: On October 16, 1846 William T. G. Morton (1819–1868) made history by being first in the world to publicly and successfully demonstrate the use of ether anesthesia for surgery. This occurred at what came to be called “The Ether Dome,” at Massachusetts General Hospital on patient Edward Gilbert Abbott. Surgeon John Collins Warren noted, “Gentlemen, this is no humbug.” Dr. Oliver Wendell Holmes, Sr. (1809–1894)—suggests the terms “anaesthetic” and “anaesthesia” in a letter to William T. G. Morton. News of Morton’s ether demonstration was carried by the paddle steamship Acadia from Boston to Dr. Francis Boott and then on to Dr. James Robinson (1813–1862), who extracted a tooth on December 19, 1846, under ether anesthesia. In 1847 Robinson authored one of the first textbooks on anesthesia: *A Treatise on the Inhalation of the Vapour of Ether for the Prevention of Pain in Surgical Operations*.^{*} On December 21, Scottish surgeons in Dumfries, Scotland (Dr. William Scott) and in London (Dr. Robert Liston) amputate limbs of etherized patients— the first such surgical anesthetics in the British Isles. Liston commented, “This Yankee dodge beats mesmerism hollow.” Dr. Liston describes the surgery in a letter to Dr. Francis Boott, which is published in *The Lancet*. The WLM owns this letter.

1845: Dr. Horace Wells (1815-1848)-After bravely volunteering to inhale nitrous oxide for his own dental extraction back in December of 1844, Dr. Wells demonstrates nitrous oxide anesthesia for a tooth extraction near Massachusetts General Hospital, but the partial anesthetic is judged a “humbug”

1847: In Scotland in 1847, obstetrician Professor James Y. Simpson starts giving women chloroform to ease the pain of childbirth “Chloroform quickly becomes a popular anesthetic for surgery and dental procedures as well,” the museum website says. “Chloroform was discovered independently in 1831 by the USA's Samuel Guthrie, France's Eugène Soubeiran, and Germany's Justus von Liebig.”

1853: Drs. Charles Pravaz (1791-1853) and Alexander Wood (1817-1884) “independently invented the hollow hypodermic needle, which will be attached to an earlier invention, the syringe popularized in 1845 by Ireland's Francis Rynd.”

1853 & 1857: “Dr. John Snow (1813-1858)-A full-time anesthetist since 1847, Dr. Snow popularizes obstetric anesthesia by chloroforming Queen Victoria for the birth of Prince Leopold (1853) and Princess Beatrice (1857).” His books *On the Inhalation of the Vapour of Ether* and *On Chloroform and Other Anaesthetics* enlightened physician-anesthetists. His sourcing of the 1854 London cholera epidemic to the Broad Street water pump founded epidemiology.”

1863: “‘Professor’ Gardner Quincy Colton (1814-1898) of the Cooper Institute in New York reintroduces nitrous oxide.”

1856: “Dr. Edmund Andrews (1824-1904) of Chicago proposes using nitrous oxide mixed with oxygen as an anesthetic in the Chicago Medical Examiner.”

1884: “Dr. Karl Koller (1857-1944)-Viennese ophthalmologist and colleague of Sigmund Freud, introduces cocaine as an anesthetic for eye surgery.”

"Dr. William S. Halsted uses cocaine (1852-1922) for the first regional (mandibular or jaw) nerve block with cocaine."

1889: At the Philadelphia College of Dentistry, Henry I. Dorr, MD, DDS was appointed as the world's first Professor of the Practice of Dentistry, Anesthetics and Anesthesia. "The world's first multidisciplinary 'Professors of Anesthesia' will follow in dentistry at Chicago's American College of Dental Surgery (1892, George Leininger, MD) and in medicine at the New York Homeopathic Medical College (1903, T. Drysdale Buchanan, MD)."

1891: In Pittsburgh, Pennsylvania, "*The Dental and Surgical Microcosm* is published as the world's first journal 'devoted chiefly to the science of Anesthesia and Anesthetics.' "

1893: The London Society of Anaesthetists, "the world's first anesthesia society," forms in London, United Kingdom.

1894: "Medical students E. Amory Codman (1869-1940) and Harvey Cushing (1869-1939)-develop the first anesthesia record using observed respiratory rate and palpated pulse rate. By 1901, Cushing will add blood pressure measurement by Riva Rocci sphygmomanometry; by 1903, respiratory rate and heart rate as auscultated by precordial stethoscope (use of which was pioneered by Cushing on dogs and by his favorite physician-anesthetist, S. Griffith Davis, on patients)."

1898: "Dr. August Bier (1861-1949)-Conducts the first spinal anesthetic using cocaine; 10 years later, he popularized the intravenous regional ("Bier") block."

1901: "Caudal epidural analgesia is described independently by France's Drs. Jean-Anthanase Sicard and Fernand Cathelin. Their innovation comes after an inadvertent epidural injection by Dr. J. Leonard Corning (1855-1923)."

1902: "Dr. Mathias J. Seifert of Chicago coins the words 'anesthesiology' and 'anesthesiologist.' He asserted that an 'anesthetist' is a technician and an 'anesthesiologist' is the scientific authority on anesthesia and anesthetics.

1905: "Dr. Frederic W. Hewitt administers a chloroform-ether mixture to the future King Edward VII. Perhaps tugging on the portly prince's beard (to keep the royal airway open) inspired Hewitt by 1908 to design his oral 'air-way.' "

1907: "Dr. A. Frederick Erdmann (1867-1953)-Founds the Long Island Society of Anesthetists (LISA), the first professional anesthesia society in the USA. (LISA membership starts as 9 total)."

1911: "The Long Island Society is renamed the New York Society of Anesthetists (NYSA). (NYSA membership reaches 23 in 1911.)"

1914: "The first of two editions of *Anesthesia*, the USA's first such comprehensive textbook, is published by Dr. James T. Gwathmey, the 1912 NYSA President."

"Dr. Dennis E. Jackson develops a carbon dioxide (CO₂) absorbing anesthesia system, allowing for a patient to re-breathe their exhaled air containing the anesthetic, cleansed of the carbon dioxide, resulting in the use of less anesthetic and the avoidance of waste."

1916: "The first of seven editions of *The Art of Anaesthesia* is published by Dr. Paluel J. Flagg, the 1919-1920 ASA President."

1920: "Arthur Guedel publishes his eye signs of ether anesthesia in the *American Journal of Surgery*. His Guedel (oral) airway is still used today, and he has been memorialized by the Arthur E. Guedel Memorial Anesthesia Center, San Francisco, CA."

1922: “From Cleveland, Ohio, *Current Researches in Anesthesia and Analgesia* is launched by Francis H. 'Frank' McMechan (1879-1939) as the world's first journal published by an anesthesia society, the International Anesthesia Research Society.”

1923: “Dr. Isabella Herb administers the first ethylene-oxygen surgical anesthetic. She demonstrated the remarkable trance-like state that low-dose ethylene could induce in human subjects.”

1927: “Dr. Ralph M. Waters arrives at the University of Wisconsin, Madison. From there he will train his anesthesia residents (Waters' trainees were affectionately known as 'Aqualumni') in one of the world's 1st university-based residency training programs in anesthesiology. Waters also will pioneer carbon dioxide absorbing apparatus (To-and-Fro Canister), will clinically introduce intravenous sodium thiopental and inhalational anesthetic cyclopropane, and will become the ASA President in 1945.”

1929: “The Anaesthetists' Travel Club is organized by Dr. John S. Lundy, who will popularize use of the intravenous anesthetic thiopental (Pentothal) and will become the ASA President in 1946. The popularity of thiopental-as a swift-onset intravenous agent for inducing general anesthesia-will pave the way for other totally unrelated intravenous induction agents, such as ketamine, etomidate, and propofol.”

1933: “To the NYSA (the future ASA), Dr. Paul M. Wood formally donates his personal collections, which form the basis of his future namesake, the Wood Library-Museum of Anesthesiology.”

1935: “Dr. Emery A. Rovenstine arrives at Bellevue Hospital in New York to establish a premiere residency there. Having co-pioneered in the 1930s the use of cyclopropane and punch-card databases of his anesthesia cases, he co-founds the American Board of

Anesthesiology and New York's Postgraduate Assembly in Anesthesiology. He will serve as the 1943-1944 ASA President and will receive the ASA's Distinguished Service Award in 1957."

1936: "The New York Society of Anesthetists is renamed the American Society of Anesthetists. (The ASA's membership reaches 487 in 1936.)."

1937: "Prof. Robert R. Macintosh-Appointed to the world's 1st endowed chair in Anaesthetics, Oxford's Nuffield Professor Macintosh would introduce his curved laryngoscope blade-the world's favorite-in 1943 and be knighted in 1955 for redesigning aviators' life jackets."

1940: "Two years after forming as a subsidiary to the American Board of Surgery and the year after administering its first written examination, the American Board of Anesthesiology (ABA) is granted independent board status. The ABA helped define anesthesiology as a medical specialty and provided the American medical establishment with formal recognition of physicians specializing in the art and science of anesthesia. An ABA founder, Dr. Paul M. Wood also serves as Business Manager for *Anesthesiology*, the journal that the ASA begins publishing in July of 1940."

1941: "Henry K. Beecher, MD- After his appointment to the USA's first endowed chair in anesthesiology as Harvard's Henry Isaiah Dorr Professor of Anesthesia Research, Prof. Beecher will pioneer understanding of medical ethics, patient consent, clinical trials, the placebo effect, and "brain death."

"Dr. Robert Hingson develops Continuous Caudal Anesthesia, an innovation in obstetrical anesthesia that provides continuous pain relief for prolonged or difficult labor. In 1958, Dr. Hingson starts Brother's Brother, a nonprofit charity for supplying medical, educational, and agricultural supplies worldwide. His needle-free 'Peace Guns' would mass-immunize millions by jet injection and would be featured as the 'Hypospray' in *Star Trek* and many science-fiction films."

1942: “Drs. Harold Griffith (1894-1985) and Enid Johnson (1909-2001). Squibb's Lewis H. Wright, MD supplied pharmaceutical grade curare to Drs. Griffith and Johnson for the world's 1st successful anesthetic use of the muscle relaxant. The curare had been received by Squibb in raw form in 1939 following Ecuadorean expeditions by Richard C. Gill (1901-1958).”

1945: “After receiving the first Distinguished Service Award of the newly renamed American Society of Anesthesiologists, Wood Library-Museum Founder Paul M. Wood announced his plans for New York's 1st Post Graduate Assembly in Anesthesiology (PGA). (ASA membership reaches 1,977 in 1945.)”.

1953: “Dr. Virginia Apgar (1909-1974)-Publishes now-universal APGAR Score to assess the health of newborns. She will direct the precursor to the March of Dimes and will be honored (1994) as the 1st female anesthesiologist to grace a U.S. postage stamp.”

1954: “Drs. Henry Beecher and Donald Todd publish "Deaths Associated with Anesthesia and Surgery," reporting their research findings on perioperative mortality.”

1955: “The World Federation of Societies of Anaesthesiologists (WFSA) was constituted at the first World Congress of Anaesthesiologists (WCA) in Scheveningen, the Netherlands in 1955.”

1956: “The UK's Dr. Michael Johnstone clinically introduces halothane, the first modern-day brominated general anesthetic. The USA's first uses of halothane would follow by Drs. C. Ronald Stephen and then E. S. 'Rick' Siker, who would become the 1973 ASA President.”

1958: “John W. Severinghaus developed a complete gas apparatus by combining his practical version of Stow's CO₂ electrode with Clark's pO₂ electrode.”

1960: “Drs. Joseph Artusio, Alan van Poznak *et al.* begin human trials of the inhalational anesthetic methoxyflurane.”

1963: “Dr. Edmond I. Eger, II describes minimum alveolar concentration (MAC), later characterized as “the concentration [of inhaled anesthetic] producing immobility in 50% of patients subjected to a noxious stimulus.”

“Dr. Paul M. Wood passes away and his namesake Wood Library-Museum opens 6 months later in a two-story annex to the ASA's one-story headquarters on Busse Highway in Park Ridge, Illinois.’

1964: “Dr. Günter Corssen *et al.* begin human trials of the dissociative intravenous anesthetic ketamine.”

1966: “Dr. Robert Virtue *et al.* begin human trials of the inhalational anesthetic enflurane.”

1969: “The ASA launches the Self-Evaluation Program, the first in a series of educational initiatives for members. Renamed the Self-Education and Evaluation Program (SEE) by 1979, this initiative provides a self-assessment which practitioners could complete at their own convenience. SEE enables anesthesiologists to gain an objective measure of their professional knowledge and provides guidance for continuing education. By 2004, the Anesthesiology Continuing Education Program (ACE) was launched. ACE facilitates lifelong learning by allowing practitioners to assess their status of knowledge, identify any areas of improvement, and prepare for the written anesthesiology recertification examination.”

1970: “Dr. J. Antonio Aldrete publishes his Post Anesthetic Recovery Score.”

1972: “Isoflurane is clinically introduced as an inhalational anesthetic.”

1985: “The Anesthesia Patient Safety Foundation (APSF) is founded by the ASA.”

1986: “The ASA approves the first medical standard-of-care for basic intraoperative monitoring. In subsequent years, the ASA promulgates evidence-based *Practice Parameters and Standards, Guidelines, and Statements.*”

1990: “The Overseas Anesthesia Teaching Program (OTP) is founded by Dr. Nicholas M. Greene. Later, the Global Humanitarian Outreach Program (GHO) encourages volunteerism, supports anesthesia education and training in low- and middle-income countries, advocates for long-term academic partnership with hospitals and universities in countries of need, and collaborates with organizations, institutions, and initiatives with common missions and philosophies. In 2011, the ASA awards the first Nicholas M. Greene, M.D. Award for Outstanding Humanitarian Achievement.”

1992: “Desflurane is clinically introduced as an inhalational anesthetic.”

1993: “The ASA publishes its first *Difficult Airway Algorithm*, specifying a safe and systematic approach to assisted ventilation in patients under general anesthesia.”

1994: “Sevoflurane is clinically introduced as an inhalational anesthetic.”

“The ASA establishes an online presence for communication with members and the public. A website will coalesce into www.asahq.org.”

1999: “In its report *To Err is Human*, the Institute of Medicine lauds the efforts of anesthesiologists in improving patient safety.”

2000-2012: “Starting in 2000, Maintenance of Certification (MOCA) begins for newly-minted Diplomates of the American Board of Anesthesiology (ABA). Over the next dozen years, individual ASA members and then a formal ASA committee work with the ABA to establish a Simulation Education Network (SEN) to assist in educating and certifying anesthesiologists in their medical specialty.”

2009: “The Anesthesia Quality Institute (AQI) is founded by the ASA.”

2011: “The ASA Charitable Foundation is established.”

2012: “Publication of *The Heritage of Anesthesia: Patrick Sim's Annotated Bibliography of the Rare Book Collection of the Wood Library-Museum of Anesthesiology*. From 1971-2010, Patrick Sim, MLS had worked as the sole and then the senior librarian at the ASA's Wood Library-Museum of Anesthesiology. (The ASA's membership reaches 50,023 in 2012).”

2013: “As its membership numbers pass 50,000, the ASA breaks ground for its Schaumburg, Illinois complex.”

2014: “The ASA moves into its new Schaumburg, Illinois complex.”

2016: Protect Safe VA Care

U.S. Department of Veterans Affairs (VA) preserves physician-led, team-based care for Veterans in VA health care facilities.

Text derived from the following sources:

“History of Anesthesia.” *Wood Library-Museum of Anesthesiology*, 2 Dec. 2020, www.woodlibrarymuseum.org/history-of-anesthesia/. Accessed 12 Mar. 2023.

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