



Phlebotomy

For centuries, bloodletting was understood as a procedure to restore health — before it was finally discredited in the late 19th century.

Extracting blood from a patient is an ancient practice and common across cultures. In the Western medical tradition, the understanding of a balanced and healthy body was centred around the four humours, one of which was blood. Galen, a Greek physician in the Roman Empire, advocated the therapy of bloodletting — treating patients with fevers, apoplexy (stroke) and headaches by taking blood.

Over the centuries, bloodletting or phlebotomy was used to treat a wide variety of symptoms and conditions, sometimes to the point of death. Blood was thought to contain the three other humours, so evacuating the veins or ‘breathing a vein’ through small incisions with a short, sharp knife or fleam could release, or reroute, dangerous excess humours, cooling and

ventilating the patient's core. The procedure could even be performed pre-emptively before an ailment was felt, or to prepare for a hot summer.

To cure a specific illness, blood could be taken directly from the painful, affected area, or alternatively, furthest away from the root cause, drawing the humours from a corresponding part of the body.

The illustration of the bloodletting figure (see cover image) indicates locations on the body where the patient could be bled for differing symptoms and diagnoses. Bleeding the basilic vein found just above the inner elbow was believed to be helpful for treating the stomach and liver. The veins in the thumb were linked to aches and pains in the head. The thick purple veins under the tongue were used to relieve dizziness and problems in the throat. Bleeding the flat vein between the heel and the ankle on each foot was thought to relieve diseases of the genitals, if followed by bleeding the related vein on the opposite upper arm.

Barber surgeons were advised to be swift and to project a cheerful, jovial personality for their patients, reducing the fear of the procedure.



The influence of the stars and planets guided the practice as various parts of the body were associated with lunar and planetary movements. Diagrams of the body with phases

of the moon and planets marked out, and the 12 signs of the zodiac, illustrated the best months and days for bloodletting therapies.



Another localised bloodletting practice of the 19th century involved scarification: scraping the skin with a cube-shaped brass box containing multiple small knives, followed by cupping: placing a glass cup over the skin and extracting the air by suction or prior heating.

Leeches

When applied to the skin, a leech, having three jaws and a hundred teeth, consumes about 5 to 10 ml of blood at each feeding, almost 10 times its own weight.

European use of leeches peaked between 1830 and 1850 as another method of bloodletting. Leech collectors, usually women, would wade into ponds with their skirts raised to attract the leeches to their bare legs, suffering blood loss themselves in the process.

Above: Barber's or surgeon's bowl, earthenware, maker unknown, France, 1770–1800. Powerhouse Museum. A5320. Gift of Christian R Thornett, 1966. Photo by Nitsa Yioupros.

Left: Fleam, or bloodletting knife, c 1860, R287



Today, leech therapy has made a comeback in the area of reconstructive and microsurgery. The species *Hirudo medicinalis* is used for medicinal purposes — their saliva contains anticoagulants which stop blood from clotting.

In Western medicine today, bloodletting is only undertaken for specific medical conditions and the practice of bloodletting as a therapy has been debunked.

Above: Apothecary jar with lid, for holding medicinal leeches, slip-cast earthenware, S Maw and Son, London, England, 1860–70. Powerhouse Museum. A5012. Gift of Harold Jones, 1957. Photo by ORDRE.

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Obstetrics

The problem with women

The ideal dominant humour representing balanced, good health was hot and dry with a sanguine, happy temperament. The female body was thought to be the opposite — Ancient Greek physicians and natural philosophers described women's bodies as more wet than the male, their bodies retaining moisture due to being loose-textured, spongy and like wool.

Galen, a Greek physician in the Roman empire, 2nd century CE, understood there to be a natural male superiority in the physical body; 'the female is less perfect than the male for one, principal reason — because she is colder'. This coldness and wetness of the female body led to the conclusion that regular menstruation was required to expel the excess blood that their cold, damp bodies could not make use of.

Medical writings on women's diseases focused on the reproductive organs, primarily the womb, (in Latin 'matrix', in Greek 'hystera'). The books in this room are open to pages detailing phases of a woman's reproductive life: virginity, menstruation, sterility, conception, abortion (miscarriage) and birth.

The womb

For centuries, the womb or uterus was central to understanding a woman's physical and mental health. An enduring theory was the wandering womb: the diagnosis for many women's illnesses. From ancient times through to the 17th century, it was thought the womb could physically move around inside a woman's body. Known as hysterical suffocation or suffocation of the mother, the womb had to be coaxed back into position in order to restore health. By the 18th century, ideas around female hysteria focused on the nervous system, but these conditions remained linked to a problematic womb.

Menstrual blood was thought to come from an excess in diet. As bloodletting was a common therapy to purge the body of the excess humour, it was thought that regular menstruation (catamenia or menses) was a healthy way for the woman's body to expel excess blood. Women were thought more likely than men to survive an acute fever because they had another method for expelling excess fluid and therefore recovered quicker.



Women who had stopped menstruating were deemed unwell and unnatural, with surplus blood building up in the body, putting pressure on different organs, which could lead to disease or death.

Women who were post-menopausal were often perceived as unproductive and unhealthy. Virgins were also of concern — the 16th century saw a newly described illness, the ‘virgin’s disease’. The cure that was proffered was to marry and have sex, which opened up the body and moved the retained blood around.

Up to the end of the 17th century, traditional childbirth was a ‘women only’ event, with midwives and ‘gossips’ (friends and neighbours) present in the birthing chamber. Physicians were not routinely involved, yet roles were slowly changing. Authority began to shift in the 18th century to male obstetricians or male midwives establishing professional control over childbirth with interventionist procedures such as the development of forceps.



Above & cover: *Recueil des planches du Système anatomique* (detail), by Hippolye Cloquet, 1825, RB/DQ034/10 (SET) v. 5

Left: *The Anatomy of the Human Gravid Uterus Exhibited in Figures* (detail), 1815, by William Hunter, RB/2153



Anatomical drawings of the uterus and women's reproductive organs provided a more accurate understanding of the female body, however the threat of infection after delivery and complications from difficult births meant delivering a baby, particularly in hospitals, could be deadly.

A breakthrough in understanding

Ovulation and the role of hormones in the menstrual cycle were discovered in the late 19th century, with scientists understanding that menstruation did not occur in women whose ovaries had been removed. It was finally understood that menstrual blood was the regular shedding of the lining of the uterus.

Above: *Holloway's almanac & family friend* (detail), 1894, by Thomas Holloway, O42/P470

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The most famous physician in the ancient world was Roman citizen, Galen. As a surgeon to the gladiators, he had extensive practice in trauma surgery, before becoming physician to the Roman emperor, Marcus Aurelius. Learning anatomy from dissecting animals (as human dissection wasn't permitted), he wrote many books on anatomy, physiology and pathology. He described operations for varicose veins, repair of a cleft lip and suture of the intestine after penetrating injuries to the abdomen.

In the Middle Ages, physicians didn't examine or touch their patients — they were educated gentlemen from higher levels of society. It was the barber surgeon who dealt with bodily fluids, wounds, amputated limbs and dead bodies. They drained abscesses, performed amputations and bloodletting, extracted teeth and treated the sores of venereal disease, getting their hands dirty through hard, physical work.

The revival of teaching and understanding human anatomy in the West began in the 16th century, in part after Galen's book *On anatomical procedures* was translated into Latin in 1531. This was his treatise on how to carry out a dissection. Yet

this ancient knowledge was controversially challenged by Belgian physician and anatomist Andreas Vesalius, working in surgery and anatomy at the University of Padua. He argued that Galen's dissection of animals was no substitute



for knowledge of the human body.

Vesalius was 'hands on', dissecting cadavers of executed criminals in Padua and published his influential 1543 book,

On the fabric of the human body.

An extraordinarily detailed, richly illustrated book, this was unlike any text on anatomy ever before published. The illustration on the frontispiece shows Vesalius himself lecturing to a huge crowd, standing directly beside a corpse, which he is dissecting with his own hands.

Surgeons of the 17th and 18th centuries required deep knowledge of human anatomy, great technical skill and composure.

Operations were traumatic, bloody affairs. Patients were blindfolded as they were brought in, strapped firmly onto the table.

The best surgeons were those who could wield their instruments, insert, remove, and sew up in minutes, due to the extreme levels of pain being endured. Surgeons repaired injuries, extracted bladder stones, excised cancerous tumours from the breast, but internal organs were left alone — any problems with the heart, liver, brain and stomach were treated by medicines, not surgery.

Above: *De humani corporis fabrica libri septem* (detail), 1543, *On the fabric of the human body in seven books*, by Andreas Vesalius, RB/F0115

Left: Engravings from the works of Teniers, Berghem, Vandervelde & c (detail), 1735–42, DSM/F759





The introduction of anaesthetics and antiseptic surgical procedures in the mid-19th century were two of the greatest innovations ever made in medicine. These anaesthetics meant surgeries could last longer, allowing new surgical techniques to progress, alongside antiseptic surgery which vastly reduced deaths due to post-operative infections.

Modern surgery

Our contemporary operating theatres and the procedures carried out in them bear very little resemblance to the profession of 160 years ago. In just over a century and a half, teams of specialised surgeons and medical professionals undertake organ transplants, 'keyhole' surgery with fibre-optic telescopes and recently, robotic arms controlled remotely by surgeons are used to conduct complex, though minimally invasive procedures.

Above: photo by the JC Gellidon, unsplash.com

Cover: *Margarita philosophica* (detail), 1512, The philosophical pearl, by Gregor Reisch, SC/1005

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Sexual health

Although gonorrhoea is the oldest known sexually transmitted disease, the outbreak of venereal syphilis in 15th century Europe was terrifying and deadly.

The great pox

Spreading first among French soldiers and women in Naples in 1495, it advanced throughout Italy, Germany and into the rest of Europe. Eventually it would travel across the globe via trade routes and colonisation. It was a debilitating, incurable and disfiguring disease and because it was sexually transmitted, its victims were stigmatised. It took until the 1940s for the disease to be effectively treated with antibiotics.

The Italians called it the French disease, yet the name varied — each country shifting blame to their enemy. The French named it the Neapolitan disease, and for the Russians, it was the Polish disease. The Turkish referred

to it as the Christian disease and in the 18th century, the ravaged people of Tahiti called it the British disease. In English it was called the 'great pox'. Syphilis spread throughout all ranks of society, from commoners to royal families, cardinals in the Vatican, even a pope. It wasn't an illness that could be hidden discreetly — the face would be disfigured with a creeping spread of purple and the eventual collapse of the nose.

There were three stages of the disease: if the first stage was left untreated, the bacterium spread through the whole body. The first symptoms were genital ulcers followed by a rash and eventually stinking pustules would cover the body. Joint pain and the destruction of flesh and bone were all common, affecting the gums, palate, jaw, and tonsils.

The tertiary stage, which might not appear until decades after the initial phase, eventually paralysed the sufferer, bringing on mental illness and eventually killing the victim. It could also be transmitted from mother to baby during pregnancy or at birth.

The early outbreaks in the 1490s were believed to be a direct punishment from God — a result of increased blasphemy and sinning. Another explanation was found in the stars — in 1484 Mars, Jupiter, and Saturn were in conjunction with Scorpio, the constellation most associated with the sexual organs.



Mercury

The only treatment believed to be effective was quicksilver or mercury, a chemical element used in Arabic and Chinese medicine to treat skin diseases. Mercury ointment would be smeared onto the pustules. It was also administered through fumigation (steam baths) and later via pills and injections, resulting in dangerous and unpleasant side effects like profuse sweating, corrosion of the membranes of the mouth, gum ulcerations, loosening of teeth and bone damage. Due to the near poisoning with mercury salts, patients tended to produce copious amounts of saliva.

In the 17th and 18th centuries, fashions adapted in order to hide the external signs of syphilis with rich and privileged gentlemen and ladies wearing wigs, gloves and face powder. It became a mark of the aristocratic rake, or man about town, to contract the disease and to keep on going — revelling in licentiousness. In Georgian London the exclusive No Nose Club was established.

Above: 'Mercury and his advocates defeated, or vegetable intrenchment', 1789, by Thomas Rowlandson, © The Trustees of the British Museum

Left: *Ein hübscher Tractat von dem Ursprung des Bösen Franzos* (detail), 1496, A fine treatise on the origin of the French evil, by Josephus Grünpeck von Bruhausen, RB/INC FACS/10



The tradition of the Grand Tour to the European continent brought an early end to several earls and other young gentlemen when they contracted the disease and died.

Women, especially prostitutes, had always been blamed for the spread of the disease. The assumption was, if a woman contracted the great pox, she had led a life of low morals. The disease spread from the brothel to the marriage bed, with wives and their unborn children also suffering. Multiple miscarriages and infant deaths were a common outcome.

Penicillin

The discovery of penicillin in 1928 by Alexander Fleming was the beginning of the antibiotic revolution. Ernst Chain and Howard Florey purified the first penicillin in 1942 and it became widely available to the general public in 1945 following its use in treating servicemen during World War II.

According to a 2019 report by the World Health Organisation, one million people across the world contract a sexually transmitted disease every day, with chlamydia, gonorrhoea, trichomoniasis and syphilis still of major concern. After centuries of suffering and death these diseases can now all be treated and cured with antibiotics.

Cover: Trials for adultery (detail), 1779–81, DSM/346.410166/1 SET

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Research lab

Exploring new territories, surrounded by never-before-seen plants, animals and people, European colonisers were quick to observe the climate, the quality of soils, the health of the local people and the natural resources they could extract. The fertile richness and abundance of these lands were recorded in detail with lavish, though often inaccurate, illustrations.

The greenhouse

As the age of European exploration and colonisation unfolded, there was a tantalising hope of discovering wonder drugs from the 'new world'. Europeans exploited Indigenous knowledge of medicinal plants, documenting, collecting and transporting specimens home.

Unsurprisingly, the design and construction of greenhouses in European centres began in the 17th century, around the same time as colonisation of the Americas, South-East Asia

and the Pacific. In England, the first stove-heated greenhouse was constructed at the Chelsea Physic Garden in 1681. By the end of the 18th century, the ultimate greenhouse, containing the abundance of empire, was to be found at the Royal Botanic Gardens at Kew, outside London.

Sir Joseph Banks, the first unofficial director of Kew Gardens aimed to collect, identify and record the entire flora of Britain's colonies. He sent plant hunters across the empire to acquire seeds, fruits and plants, and Kew Gardens became the place to grow, study and store the newly introduced specimens. Banks was commercially astute and saw the economic benefit to Britain if key crops from one colony could be transferred and successfully grown in another.

Among thousands of plants transported across the seas was cinchona. The medicinal uses of the bark of this tree were known to the First Nations people of Peru, and Europeans quickly recognised it as a cure for malaria from the mid-17th century. As European exploration and overseas trading bases increased, so did the threat of malaria and the demand for a regular supply of the plant. It wasn't until 1820 that quinine, an active agent in the bark, was extracted and isolated, resulting in purified quinine replacing the bark as the standard treatment for malaria.

The British organised an international plant transfer of cinchona from its native Andes to plantations in the Nilgiri



Hills in southern India. Equipped with regular supplies of quinine, the British could now exploit previously inhospitable regions of Africa and Asia, where the death toll would previously have been too great.



The global project to grow these plants for empire, trading companies and plantation owners meant large profits were made for a privileged few. An increasing range of agricultural and medicinal plants such as coffee, tea, sugar, rubber, cocoa and cotton were cultivated using enslaved and indentured people.

A global enterprise

Today, research scientists continue to investigate and test all manner of plants and plant compounds found in remote corners of the globe with the hope of therapeutic breakthroughs.

While discoveries continue, many plants that have been used for centuries continue to be grown for medicinal uses. The leaves and pods of senna (species of cassia plants), grown in tropical and subtropical regions, notably India and Somalia, is an over-the-counter medication used to treat constipation. Morphine, from the opium poppy *Papaver somniferum*, native to Turkey, is grown in

Above: The Sassafras tree (detail), *Joyfull newes out of the new-found worlde*, Nicolas Monardes, 1596, RB/2385

Left & cover: Cinchona Micrantha (detail), *Travels in Peru and India*, by Clements R Markham, 1862, RB/D4Q8



such diverse places as Afghanistan, Macedonia and South Australia, and is used as an analgesic (pain relief).

Digoxin and other digitalis glycosides, extracted from the foxglove plant, are cardiovascular drugs used to treat heart failure, and the common snowdrop plant found in Europe and North America is used in the management of cognitive disorders, such as Alzheimer's disease. Since 2015, the Pacific yew tree, native to the Pacific Northwest of North America, has been used as an anti-cancer treatment.

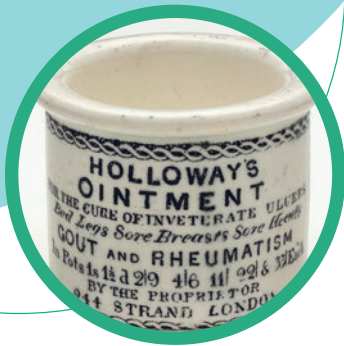
During World War II, chloroquine was developed as an alternative to quinine and became the main treatment for malaria, although quinine remains an important medicine for drug-resistant malaria. Although still found in Peru, cinchona trees are in danger of extinction due to vast swathes of forest being cleared to make way for plantations. Currently the largest cultivations of cinchona are found in the Democratic Republic of the Congo and Indonesia.

Above: photo by the National Cancer Institute, unsplash.com

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Pharmacy

From 17th century health cordials and elixirs through to global brands of the 19th century, this is 'do it yourself' diagnosis and treatment.

Whether following instructions from a domestic medical guide, a handed down family remedy, a purchase from a travelling quack doctor, or advice from a pharmacist, a patient could take matters into their own hands and attempt to cure themselves without costly doctors' fees. 'Over the counter' or 'through the post' treatments gave the patient agency and often privacy – receiving medication through the post meant no embarrassing clinic visits.

Popular published medical guides, usually the domain of the woman of the household, contained a range of treatment advice and remedies such as purging the patient with castor oil, Epsom salts, powder of jalap and rhubarb, all intended to clear the bowels, or laudanum for nervous exhaustion and

hysteria. There was advice for broken limbs, how to treat snakebite, or the bite from a mad dog.

By the 18th century the medicine cabinet was a household item — containing drugs that would purge, or relieve pain — very powerful, damaging substances such as mercury and opium were commonly found within the delicate glass bottles.

The 19th century saw patent medications and the rise of global brands aimed at chronic conditions such as headaches, wheezing, colds, impotence, anxiety, backache, indigestion, constipation, persistent aches and pains. The ‘secret ingredients’ generally contained small quantities of addictive painkillers. Advertising of these big-name brands in print and across buildings and billboards meant manufacturers created an enormous market for these products.

Quacks & Mountebanks

While trusted and proven healers were to be found within every society, there have also been the charlatans — those willing to turn a profit while selling hope to the sick through a quick fix wonder drug. The word ‘quack’ comes from the 16th century Dutch word, quacksalve — to describe a

fraudulent pretender to medical skill, persuasive in their own power to heal. An even older term, ‘mountebank’ was used to describe an itinerant seller of medicines, who would shout their wares in the marketplace, promoting



their 'miraculous' products. These characters are still with us today, particularly on social media: ready to offer 'miracle cures' to people made vulnerable by illness.



Regulation

Prior to 1900, government control over drug ingredients was non-existent in New South Wales. Soul Pattinson's Glycerine and Linseed for sore throats was based on morphia, although not mentioned on the label. The active ingredients of Blair's Gout and Rheumatic pills were morphia and colchicum, a traditional European folk medicine which was a strong emetic and purgative (causing both vomiting and bowel clearance). Paternoster's pills contained colchicum and opium. Dr Williams' pink pills for pale people contained arsenic and iron sulphate, both abortifacients (inducing miscarriage).

General practitioners faced competition from a range of unorthodox, hands-on practitioners; self-styled 'Professor' Thomas McCreery practiced in George St, Sydney, in the 1860s. Previously a furniture dealer, he was declared bankrupt, then took up herbalism. Without any training, he specialised in cancers, which he shrivelled with dilute acetic acid.

Above: Frank Weston's Wizard Oil advertisement (detail), 1874-75, 641.5/1

Left: *The illustrated practical mesmerist* (detail), 1856, 2nd edition, by William Davey, G 15 U 9



Printed advertisements for his 'Oriental Restorative' were among many similar advertisements published in local newspapers throughout 19th century New South Wales.

Today

The 1886 publication *Bruck's list of unregistered medical practitioners in Australia* named practitioners who were unregistered by local medical boards. This list extended into five editions and continues today with the Australian Health Practitioner Regulation Agency (AHPRA), which works with 15 national boards to regulate Australia's registered health practitioners. Their primary role is to protect the public and set standards and policies that all registered health practitioners must meet.

Above: photo by Roberto Sorin, unsplash.com

Cover: Holloway's ointment, c 1860, Holloways, 244 The Strand, London, R 762

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Nutrition

Scurvy is a disease triggered by a severe vitamin C deficiency. Deprived of this compound, the body literally begins to fall apart as collagen cannot be produced. In a healthy body, collagen is like the glue that holds together connective tissue, bones, and dentin in teeth.

After three months or so without vitamin C in the diet, the symptoms of scurvy will appear: spongy, bleeding gums and then even more dramatic symptoms. Old wounds reopen and the sufferer dies slowly and agonisingly.

It wasn't until the 1930s that scurvy was finally understood to be a disease resulting from vitamin deficiency.

The age of sail

Scurvy has always been present in populations where diets were poor. However it was during the 400 years of the 'age of sail', when larger, ocean-going ships, built by European powers, meant crews were at sea for months at a time and scurvy ran riot. Voyages undertaken by Columbus in 1492, to Vasco da Gama, Francis Drake and Magellan — all lost men to scurvy. Fresh supplies of fruit and vegetables could not be stored for long on board, so crews subsisted on a monotonous diet of biscuit, salt beef and port — which could prove deadly.

Scurvy was responsible for more deaths at sea than storms, shipwrecks, warfare and all other diseases combined. Over two million sailors perished from the disease.

Many dangerous or misguided cures were attempted, such as purging with saltwater, bleeding the patient, consuming sulphuric acid or vinegar, smearing mercury paste onto the open sores, or increasing sailors' workload in the belief that the disease was caused by laziness. Thinking scurvy was a disease of the sea, and that land itself was a cure, patients sometimes had a piece of turf placed over their mouth, or with their heads buried in a hole once back on dry land.



By the 17th century, a variety of new concoctions and recipes for scurvy were dispensed, yet the disease remained an ever-present threat.

The last 'great' British remedy was wort of malt: unfermented beer. Cheap and easily preserved for long periods of time, James Cook transported vast supplies of the wort on his ships, along with salted cabbage, spruce beer and lemon juice concentrate. The Admiralty requested that Cook experiment with wort of malt, but it ultimately proved useless. Joseph Banks on the *Endeavour* voyage relied on his own supply of concentrated lemon juice, or 'lemon rob' and orange juice as advised by Dr Hulme, which he mixed into various types of liquor to stave off the disease.

The simple and most effective prevention and cure for scurvy was citrus fruit, specifically, lemon juice. After much debate, the British Admiralty began to issue lemon juice as a daily ration aboard all navy ships in 1795.



Above: *Medical botany: containing systematic and general descriptions, with plates of all the medicinal plants ...* (detail), 1810, vol 2, by William Woodville, RB/DS581.63

Left: *Begin ende voortgangh, van de Vereenighde Nederlandtsche geoctroyeerde Oost-Indische Compagnie* (detail), 1646, 64/1



Today

These days we understand that citrus fruits, especially lemons, provide a good source of vitamin C. Although a rare disease in the 21st century, people can still develop scurvy if they do not eat enough fruit and vegetables. Sources of vitamin C include oranges, lemons, limes, guavas and kiwifruit. Broccoli, cauliflower, cabbage, Asian greens and tomatoes are also high in vitamin C. According to the Australian government's Healthdirect website, the richest source is the bush food known as the Kakadu plum, salty plum or gubinge.

Above: photo by Alexander Schimmeck, unsplash.com

Cover: Antique cutlery (detail) from *The Art Journal Illustrated Catalogue*, 1851, olddesignshop.com

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Scurvy has always been present in populations where diets were poor. However it was during the 400 years of the 'age of sail', when larger, ocean-going ships, built by European powers, meant crews were at sea for months at a time and scurvy ran riot. Voyages undertaken by Columbus in 1492, to Vasco da Gama, Francis Drake and Magellan — all lost men to scurvy. Fresh supplies of fruit and vegetables could not be stored for long on board, so crews subsisted on a monotonous diet of biscuit, salt beef and port — which could prove deadly.

Scurvy was responsible for more deaths at sea than storms, shipwrecks, warfare and all other diseases combined. Over two million sailors perished from the disease.

Many dangerous or misguided cures were attempted, such as purging with saltwater, bleeding the patient, consuming sulphuric acid or vinegar, smearing mercury paste onto the open sores, or increasing sailors' workload in the belief that the disease was caused by laziness. Thinking scurvy was a disease of the sea, and that land itself was a cure, patients sometimes had a piece of turf placed over their mouth, or with their heads buried in a hole once back on dry land.



By the 17th century, a variety of new concoctions and recipes for scurvy were dispensed, yet the disease remained an ever-present threat.

The last 'great' British remedy was wort of malt: unfermented beer. Cheap and easily preserved for long periods of time, James Cook transported vast supplies of the wort on his ships, along with salted cabbage, spruce beer and lemon juice concentrate. The Admiralty requested that Cook experiment with wort of malt, but it ultimately proved useless. Joseph Banks on the *Endeavour* voyage relied on his own supply of concentrated lemon juice, or 'lemon rob' and orange juice as advised by Dr Hulme, which he mixed into various types of liquor to stave off the disease.

The simple and most effective prevention and cure for scurvy was citrus fruit, specifically, lemon juice. After much debate, the British Admiralty began to issue lemon juice as a daily ration aboard all navy ships in 1795.



Above: *Medical botany: containing systematic and general descriptions, with plates of all the medicinal plants ...* (detail), 1810, vol 2, by William Woodville, RB/DS581.63

Left: *Begin ende voortgangh, van de Vereenighde Nederlandtsche geoctroyeerde Oost-Indische Compagnie* (detail), 1646, 64/1



Today

These days we understand that citrus fruits, especially lemons, provide a good source of vitamin C. Although a rare disease in the 21st century, people can still develop scurvy if they do not eat enough fruit and vegetables. Sources of vitamin C include oranges, lemons, limes, guavas and kiwifruit. Broccoli, cauliflower, cabbage, Asian greens and tomatoes are also high in vitamin C. According to the Australian government's Healthdirect website, the richest source is the bush food known as the Kakadu plum, salty plum or gubinge.

Above: photo by Alexander Schimmeck, unsplash.com

Cover: Antique cutlery (detail) from *The Art Journal Illustrated Catalogue*, 1851, olddesignshop.com

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Mental health

The word ‘melancholy’ comes from the Greek word for the humour ‘black bile’. Cold, dry, thick and sour, it wasn’t visible in the body, except in a blackened stool or dark-coloured blood. It was understood that melancholic people experienced sadness, suffered delusions, griefs, and were fearful: anxiety, terror, sudden frights and phobias were all indicators of the condition.

Saturn was marked as the celestial body of melancholy. It was understood those born under this planet tended towards a ‘saturnine’ gloomy temperament, prone to sorrow, fearfulness, solitude and silence.

A range of treatments could be prescribed; plants such as hellebore, borage, or St John’s wort, ground-up minerals and precious stones such as topaz, emeralds or antimony, as well as syrups, wines, pills and topical

ointments. More radical approaches included shaving the patient's head and applying cooling ointments, bloodletting and trepanning (drilling a hole in the skull). Like the medicines, these procedures were thought to purge the body of corrupt and excessive humours or even expel demons.

During the 17th and 18th centuries, Enlightenment thinkers continued to develop ideas laid down by ancient Greek philosophers in attempting to understand the mind — was melancholy physical or spiritual? Did man have power to control it? These theories examined the idea of identity, self and reason.

Asylums

Mentally ill people were commonly cared for within the family, local community or church parish, until the 17th century when sufferers began to be institutionalised in asylums. Unregulated, these were places where widespread abuse occurred.

The most famous and notorious asylum was Bethlam (commonly called Bedlam) in London. Founded in 1247, originally to house the poor, by the early 15th century it accommodated the mentally ill. By the 17th century, the hospital had become

a tourist attraction where visitors were allowed in to view the inmates. Once a patient was admitted, none of the 'therapies' administered, including regular bloodletting and purging, were actually effective.



Reforms

By the early 19th century, demands to reform these asylums were being made.

Humanitarian reformer and Quaker, Edward Wakefield investigated the conditions at Bethlam in 1814 and found excessive use of chains to restrain patients, a lack of separation between loud, disturbed patients and meek, melancholic people, along with violent assaults. On his visit, Wakefield met 55-year-old American marine, James Norris, who had spent 14 years there. Norris appeared to be lucid and rational, so the heavy chains that restrained him shocked Wakefield. The treatment of Norris provided the evidence of inhumane conditions needed to challenge the governors of the asylum and to call for government reform.

The 19th century saw an increase in the number of mental hospitals. No longer in chains, patients were observed by trained attendants. 'Madness' had come to be understood as a disorder that required compassionate treatment. In the Victorian era, high priority was placed on cleanliness of both the patients and their surroundings.



Above & left: details from *The anatomy of melancholy: what it is, with all the kinds, causes, symptomes, prognostickes and severall cures of it*, 1652, by Robert Burton, T0100489

Good architectural design was seen as important, and the old dark cells were replaced with light-filled, well-ventilated rooms.

By the 20th century, scientific study saw abnormal mental states further explained and psychological treatments widened. Questionable practices also occurred — frontal lobotomy, electroconvulsive therapy and a range of unethical treatments were tested on minority groups. A range of pharmaceutical medications were developed. Lithium, the first mood-influencing drug was introduced in 1947 to manage manic depression. Other antipsychotic and antidepressant drugs were developed by research laboratories in the early 1950s, making it possible for many patients to avoid hospitalisation. Valium became the world's most widely prescribed medication in the 1960s and Prozac was prescribed for depression from 1987.

While advances have been made in understanding mental illness, there is no single therapy or treatment for the multitude of highly complex and ever-expanding psychiatric conditions. We still have far to go to fully understand mental health and how to diagnose and treat mental illness.

Cover: *Margarita philosophica* (detail), 1512, The philosophical pearl, by Gregor Reisch, SC/1005

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Infectious diseases

Epidemic diseases have altered human history — destroying empires and dynasties, dramatically altering the course of wars and reshaping societies. First Nations peoples and cultures were decimated by diseases brought by colonisers and traders.

Epidemics of cholera, typhus, malaria, scarlet fever, measles or influenza could hit a population suddenly and spread rapidly. The deadliest epidemic in history was the plague.

The plague

The first documented outbreak of plague, 541–549 CE, spread from Egypt across the Mediterranean to the Middle East and into Western Europe. The 14th century saw the most fatal plague epidemic ever recorded, spreading from China through Europe via the Silk Road, killing more than one-third of the population. The last outbreak of plague occurred in England in 1665–66, and a selection

of books on display in this room date from this period. Sick Londoners were shut in their homes, a red cross painted outside the premises with a note reading, 'Lord have mercy on our souls' fixed to doors. Each infected house was guarded by two watchmen; and searchers, women of 'honest reputation', would enter the premises to examine the dead and confirm death by plague.

The discovery of how the disease was spread was made by Swiss scientist Alexandre Yersin in 1894. He isolated and identified the bacterium, *Yersinia pestis*, carried by fleas. Jumping from host to host and from boat to shore, fleas carried the disease across waters and continents.

Today, the World Health Organization reports 1000 to 3000 cases of plague worldwide every year, however it is easily treated with antibiotics.

Smallpox

Smallpox is the only infectious disease that has been eradicated. After a massive global vaccination program that ran for 20 years, the United Nations declared it eliminated in 1980.

The disease was spread by airborne droplets from blisters in the nose and mouth of an infected person, and by direct contact with body fluids and contaminated objects such as bedding and clothes. Patients' bodies became covered with pus-filled spots.



Survivors were left with pockmarks — particularly on the face.

Before vaccines, the only way people became immune to a certain disease was by contracting it and surviving. This idea of resistance to smallpox was understood by many cultures, and inoculation was a widespread traditional practice in China, India and Africa.



Inoculation and vaccination

Every September, from at least the early 1700s, Greek women in Turkey would inoculate children against smallpox by transmitting a small amount of smallpox matter into a vein of each child. The wife of the British ambassador, Lady Mary Wortley Montagu, herself a survivor of the disease, witnessed the procedure. Impressed, she instructed her physician at the British Embassy to inoculate her six-year-old son, Edward. Not long after her return to London, a smallpox epidemic broke out and she began a campaign to promote the practice.

Some 75 years after Lady Mary's promotion of inoculation, Edward Jenner's experiments with the cowpox virus proved that it could be used as a vaccine to prevent smallpox.

Above: Lady Mary Wortley Montagu (detail), 1720 engraved by H Cooper from a picture by Sir Godfrey Kneller, DSM/826.51/M

Left & cover: *An inquiry into the causes and effects of the variolae vaccinae ...* (detail), by Edward Jenner, 1884, DSM/Q616.913/J



The cowpox vaccine arrived in NSW in 1804 when samples of the vaccine were sent from India. Free vaccination was offered for children of the colonisers, with the Principal Surgeon in New South Wales, Dr Jamison, urging parents to obtain 'so great a blessing'. By August that year, 400 children in Sydney had been vaccinated.

These successes in NSW took place only after the devastating spread of smallpox to Gadigal people living around the harbour a year after European arrival. British observers described the deadly impact of the disease on Sydney's Aboriginal people, with marine officer Watkin Tench describing pustules, similar to those of smallpox, thickly covering their bodies. The disease spread out beyond the white settlement, with people bearing the scars of the disease seen as far as Broken Bay, Wellington Valley, Jervis Bay and Port Phillip.

Above: Vaccinating lancet and comb, 'Weir's vaccinator', ivory/metal/steel, maker unknown, possibly England, possibly 1850-1900. Powerhouse Museum, 8/16/1, purchased 1998. Photo by Sotha Bourn.

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General medicine

Knowledge of plants and their healing properties goes back to ancient times. Within every society, across cultures, there were individuals who held this knowledge and were charged with healing the sick and injured. For centuries leaves, seeds, fruits, bark, roots and flowers were ‘general medicine’, apart from invasive and dangerous surgery, or invoking the gods through chants and rituals.

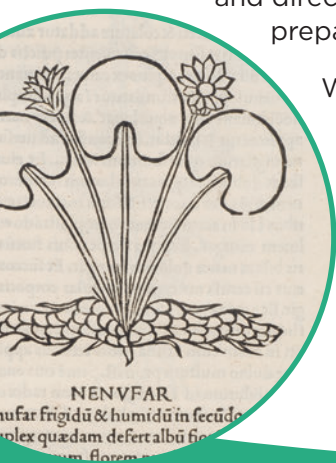
Some of the earliest societies who practised medicine — Chinese, Indian, Mesopotamian, and Egyptian — tended to combine the treatments of the physical with the spiritual or magical: the wearing of amulets, incantations or sacred rites.

With the evolution of writing, medicines and treatments began to be written down, first on clay tablets and then papyri. The earliest known medical text came out of Egypt around 1800 BCE and included instructions in gynaecological care after giving birth. Egyptian medicine influenced that of neighbouring cultures, including Greece.

The first written compilations of herbal knowledge began in Greece around 371 BCE. Ancient Greek and Roman physicians and philosophers were the founders of the Western medical tradition: Hippocrates, Aristotle, Theophrastus, Pliny the Elder, Dioscorides and Galen. These writings were copied, translated and copied again during the Middle Ages.

Herbals

The books in General Medicine are known as herbals and date from the late 15th through to the 16th century. These are descendants of the earliest written Western herbals; comprehensive compendiums of all known medicinal plants — documenting not only their uses, but often where and in which season to find them, when to pick them, and directions for their preparation.



With the invention of the printing press around 1440, knowledge of the healing properties of plants, along with illustrations, could be shared with wealthy, literate audiences.

While the earliest printed herbals were published on the European continent in Latin, some English printers began to publish in their own language in 1525, allowing the average educated person to identify specific plants and their medicinal virtues.



Women's knowledge

At the time these first books were printed in England, herbal knowledge had been women's business for centuries. The traditional healers (known as herb women, wise women or cunning women), used local plants as medicines from pre-modern times. Their knowledge was transferred orally, and treatments were a combination of natural medicines, healing charms, chants or songs. As these old traditions were vanishing, medical knowledge became the domain of male authority, however female skills of healing continued in the home. Growing, drying, pounding, boiling and distilling herbs for use as medicines were duties expected of a housewife. Many family recipe books included treatments for specific ailments.

Above: *Nova reperta* (detail), 1588-1605, New inventions of modern times, by Johannes Stradanus, RB/F468

Left: *Incipit Tractatus de virtutibus herbarum* (detail), 1499, The treatise on the virtues of herbs, by Arnaldus de Villanova, Richardson/INC/224



Today

We continue to purchase herbal supplements that have been used for centuries to treat the same ailments — garlic and horseradish for colds, comfrey for aching joints and inflammation, valerian and lavender for insomnia and anxiety.

Some ancient medicines have been found to be effective in eradicating bacterial infection, particularly with the growing concern of antibiotic resistance. In 2015, at the University of Nottingham, microbiologists reconstructed a 1000-year-old Anglo-Saxon remedy for eye infections — an eye salve — and found it could kill the modern-day superbug MRSA. The recipe, which included garlic, onion/leek, wine and the bile of a cow acted as a natural antibiotic.

Above: photo by Conscious Design, unsplash.com

Cover: *The Herball or Generall historie of plantes* (detail), 1597, by John Gerarde, Richardson/F271

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