Developing Treatments

Syphilis

From the time mankind first discovered the pleasures of sex, the torment of sexually transmissible infections has been inescapable. Syphilis first made its impact in Western Europe in the 1490s, possibly brought back by Christopher Columbus' sailors.

Syphilis is caused by the corkscrew-shaped spirochaete *Treponema pallidum*, which was discovered in 1905 by Fritz Schaudinn and Erich Hoffmann. It is mainly transmitted by sexual intercourse, but can also be passed on by an infected mother to the foetus during pregnancy. The disease has three distinct phases. If left untreated, syphilis progressively destroys the skin, mucous membranes, bones and internal organs, resulting in death.

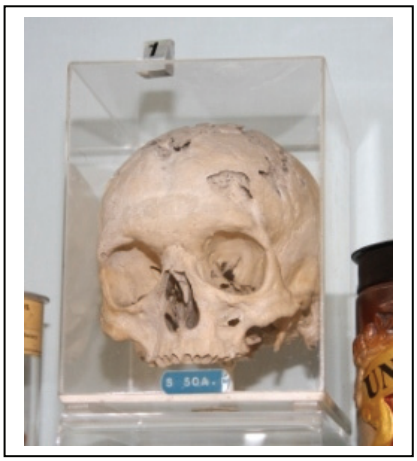
Congenital syphilis has now all but disappeared in the developed word but can still be found in developing countries. This is transmitted to the foetus during pregnancy from an infected mother. Sufferers may have small stature, flat faces, saddle noses, sometimes with the septum eaten away, wrinkling, patchy hair loss and notched, peg-shaped teeth.

Syphilis – the disease

Syphilis first made its impact in Western Europe in the 1490s. Since that time argument has raged: was it a new disease brought back from the New World as an unequal trade for the Western diseases taken to the Americas which decimated the indigenous populations in the so-called 'Columban Exchange'? Or was it a disease already found in Europe which now assumed a new virulence? The evidence of palaeopathology is not conclusive but suggests an American origin. The virulence of the disease in the late 1400s and early 1500s supports the hypothesis that it was attacking a virgin population among Europeans.

The disease has three distinct phases. Primary syphilis, when the disease is at its most infectious, is characterised by chancres (ulcers) on the genitals and by buboes (swelling of the lymph glands). If left untreated, the secondary stage of the illness develops and is marked by extensive rashes, fever, general exhaustion and aching bones. This may be accompanied by alopecia resulting in a moth-eaten appearance to the scalp. There may then be a latent period before tertiary syphilis develops in a third of untreated cases.

Tertiary syphilis progressively destroys the skin, mucous membranes, bones and internal organs. Tumours attack the bones eating away the nose and palate. General paralysis of the insane results from a general softening of the brain.



Syphilitic skull showing necrosis of the bone and lesions that are in the course of healing, pre-1851.

RCSPC/S 50A.1
Loaned by kind permission of The Hunterian Museum at the Royal College of Surgeons of England.

Gradually that glistening springtime, that flower of his youth perished utterly, that vigour of mind; then the wasting sickness with its filthy scabs covered his sorry limbs and, deep within, his bones began to swell with hideous abcesses. Ugly sores began to devour his lovely eyes and his love of the holy light and to devour his nose, which was gnawed away, leaving a piercing wound.
Fracastoro, *Syphilis,* 1513.

Syphilis was at first known as the 'Great Pox' on account of the pustules that covered the body of the sufferer. The Italians called it the 'Spanish' or 'French Disease', the French 'the Pox of Naples', the Japanese 'the Portuguese Sickness', the Tahitians 'the British Disease' and the Turks 'the Christian Disease'.

The name 'Syphilis' comes from a Latin poem *Syphilis sive Morbus Gallicus* written in 1511 by the Veronese physician Girolamo Fracastoro. This poem gives a diagnostic account of the infection and of the various remedies for it, as well as telling the story of the shepherd Syphilis who is punished by the god Apollo for blasphemy by being struck down with the disease. Apollo also provides a remedy for it in the form of guaiacum.

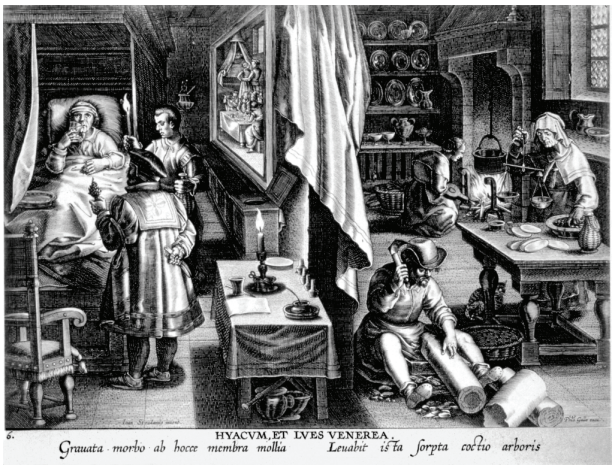
Girolamo Fracastoro, the physician and poet who coined the name 'syphilis', c. 1540
By permission of the United States National Library of Medicine.

Guiaiacum: a Catholic monopoly trade

Guaiacum, also known as 'lignum sanctum' or 'holy wood', was the wonder cure of the early 1500s. People believed it was the tree from which the cross on which Jesus was crucified was made. The wood was originally brought to Europe from Isola Beata off the coast of Hispaniola (Haiti). It was felt to be an appropriate treatment for syphilis on the grounds that if the disease had come from the New World, God would have provided the cure for it

locally. Ulrich von Hutten, a sufferer from syphilis, believed that as in the case of the Saxon peasant who cured all his ills by drinking hot buttered beer, the simplest remedies and those provided by God were the best.

Guaiacum wood
The wood was ground to very fine sawdust, soaked in eight times its weight in water, boiled and reduced to half its volume. The scum was then dried to provide a powder to be used on the sores. The remaining liquid was reboiled and drunk by the patient to promote salivation and sweating to drive out the infection.

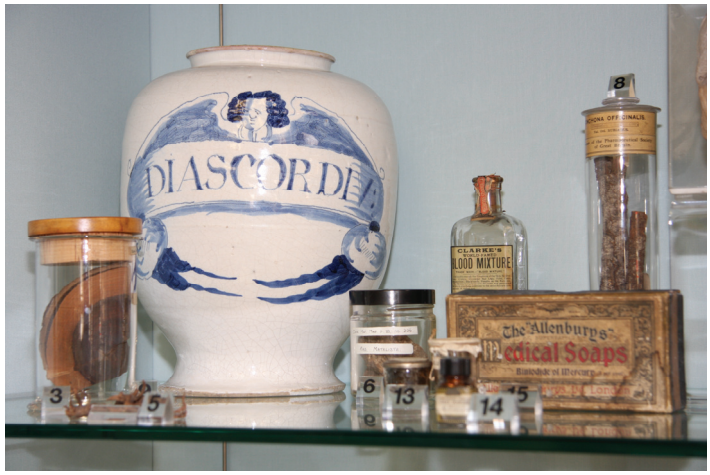


Engraving by Philippe Galle after J. Stradanus from *Hyacum Et Lues Venerea,* showing the preparation and administration of guaiacum, 1500s.
By permission of the United States National Library of Medicine.

The Fugger family of Augsburg had a monopoly on the import of guaiacum into Europe. They had underwritten the indulgence of Cardinal Albrecht of Brandenburg that had triggered the German Reformation and had financed the successful bid of Charles V for the Crown of the Holy Roman Empire. Therefore this dynasty of merchants and their cure were regarded with suspicion by Protestants, though guaiacum remained popular in Roman Catholic countries.

Hail great tree sown from the sacred seed by the hands of the gods … hope of mankind, pride and new glory from a foreign world; if only the holy powers had wished you to have been born under our heaven … yet, you shall be known in these parts and and you will be lauded under our heavens, wherever through our poem the Muses can make you travel by the lips of men.
Fracastoro, *Syphilis,* 1513.

Other remedies from the New World



Various New World weeds, roots and woods were used to promote sweating and salivation, including China smilax (Root of Chinas), tobacco, sarsaparilla, bryony root, sassafras wood and cinchona bark.

Bryony root
Gather the shoots of the white bryony when it has not yet unfurled its branches, has not yet woven a shady arbour and bidden its green clusters hang down.
Fracastoro, *Syphilis,* 1513.

ROYAL PHARMACEUTICAL SOCIETY

Clarke's Blood Mixture, twentieth-century
Clarke's Blood Mixture contained sarsaparilla and according to an advert of 1876 would 'cleanse the blood from all impurities, from whatever cause arising.' In the early 1900s, an advert claimed that "No matter what the symptoms may be, the real cause of a large proportion of all disease is bad blood. … It never fails to cure Scrofula, Scurvy, Scrofulous Sores, Glandular Swellings and Sores, Cancerous Ulcers, Bad Legs, Secondary Symptoms, Syphilis, Piles, Rheumatism, Gout, Dropsy, Black-heads or Pimples on the Face, Sore Eyes, Eruptions of the Skin and Blood, and Skin Diseases of every description'. After the passage of the 1917 Public Health (Venereal Diseases) Act, which made it an offence for anyone but a qualified doctor to offer a cure for sexually transmissible infections, the claim to cure syphilis had to be omitted from the packaging.

Cinchona bark
Andreas Vesalius was a strong proponent of cinchona bark to treat syphilis. It had traditionally been used by South American natives to treat fever, skin diseases and the symptoms of the menopause.

Electuarium diascordium
Water germander was the main ingredient for the electuarium diascordium, a herbal preparation with a honey base. Quincy gave a recipe in his *Compleat Dispensatory* of 1718, which included cinnamon, cassia word, gum Arabic, opium, sorrel seeds, gentian, Lemnian sealed earth, pepper, ginger and sugar of roses, as well as water germander and honey.

Mercury

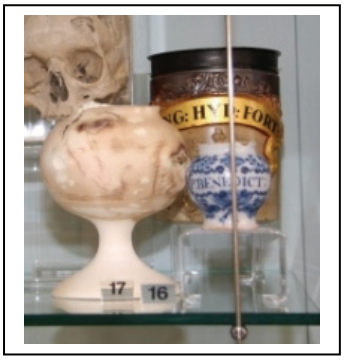
The treatment for syphilis favoured by Protestant Europe was mercury. In the form of 'unguentum Saracenicum', or Saracen's ointment, this had been a staple of Arab medicine for the treatment of scabs, psoriasis, leprosy and other skin diseases. Alchemists in Western Europe also used it as a remedy for skin diseases. Paracelsus advocated its use because of his belief that the best remedies were local ones.

As mercury was found all over the world and now that syphilis was a world-wide disease, it was preferable to guaiacum which came from the Indies. It remained the most effective cure until the twentieth century. It became a truism that a night with Venus would be followed by a lifetime of Mercury.

Mercury was first administered as an ointment and later as pills, liquors or as a fumigation. The drawbacks of mercury were such unpleasant side effects as profuse sweating, corrosion of the membranes of the mouth, gum ulcerations, loosening of the teeth and erosion of the bones.

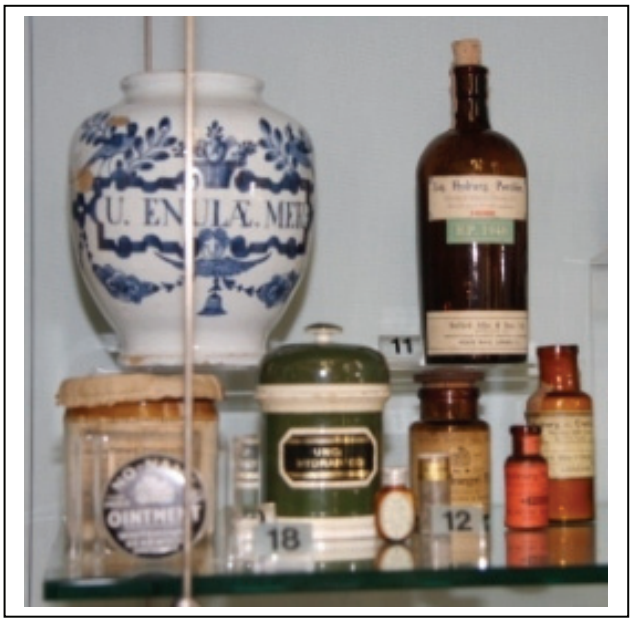
She bathed him in the silver fount of salvation … thrice cleansed the body of the youth in its entirety: he wondered at the old shameful skin sloughed off, his body stripped of its malignant stain.
Fracastoro, *Syphilis,* 1513.

Mercury ointments



- Tin-glazed earthenware jar with label for ‘elecampane and mercury ointment’, 1700-30
- ‘Ung Hyd Fort’ (strong mercury ointment) salt-glazed stoneware jar, with metal lid, 1800s
- Ceramic ointment pot with label ‘UNG HYDRAR.CO’ – compound mercury ointment, around 1900
- Ung. Hydrag, Plumbi et Zinc, ceramic pot with paper cover, Stafford Allen and Sons, London, mid twentieth century

The ointment was made by mixing equal parts of a strong ointment of mercuric nitrate, lead subacetate ointment and zinc oxide ointment.



Mercuric chloride

Pil. Hydrarg, mercury pills, from a medicine case

Hydrarg. Perchlor, mercuric chloride, British Drug Houses, around 1900

Pil. Hydrargyri. P.B., bottle of mercury pills, Evans Sons, Lescher & Webb 1943

Calomel

Calomel is another name for mercurous chloride.

Bottle containing 100 calomel tablets, Burroughs Wellcome and Co., 1900-40

Blue pills

Blue pills is another name given to mercury pills. *Quain’s Medical Dictionary*, published in 1902, stated “In early syphilis blue pill usually fulfils all the requirements of the case.”

Grey Powder

Grey powder is another name for mercury and chalk powder.

Grey Powder tablets, Femergin brand. 1/6 grain of mercury per tablet, 1940-70

Mercury with chalk powder, Dakin Brothers Ltd, London, 1900-50

Quack Cures

It was not only qualified physicians, surgeons and apothecaries who offered treatment for venereal disease. Mountebanks and charlatans preyed on the fears and hopes of ‘those children of Venus … anchored in a strange harbour’ and offered painless alternatives to mercury. In doing so they resorted to the old staples of guaiacum, sassafras and sarsaparilla. However, they kept the ingredients of their cures secret, offering merely ‘a Herculanean antidote against the pox’ and remedies ‘so private that the wife shall not know whether her husband be cured of that distemper, nor the man of his own wife, nor none of their relations shall take any notice of their cure’. Booksellers and bakers sold such concoctions as Isaac Swainson’s Velno’s vegetable syrup, Keyser’s pills and Kennedy’s Lisbon diet drink.

Pilulae Benedictae (Blessed Pills), London, 1720-40
Blessed Pills claimed to 'purge Choler and Melancholy, all gross and tartarous humours, salt and mucilaginous, from the very profound parts; cure Madness, Frenzy, Melancholy, Quartans, Scabs, Itch, Cancers, Leprosies, Scurvy, Dropsy, Gout, French Pox, and purify the whole Mass of Blood'.

Morison's Pills, early twentieth century
In 1825, James Morison wrote of syphilis that **'**All persons acquainted with, and practising the use of, the vegetable universal medicine, will not have to dread the contagion of this disease, which has already made so many victims, more owing to the pernicious chemical preparations prescribed for it, than to the malady itself; they will prevent, and cure it if already caught. They may consider them as a certain guarantee, if properly persevered with'.

'**No name' ointment (2.8% w/w ammoniated mercury), Whitehouse, Bearwood and Smethwick, England, 1930-50**
In order to avoid the stigma of syphilis, there was often a reluctance to state what the illness actually was that was being treated.

Salvarsan

Salvarsan or Compound 606 was the first modern effective alternative to mercury. This arsenical compound was discovered by the German chemist Paul Ehrlich and his research assistant, Sahachiro Hata, in 1909. Ehrlich was searching for a 'magic bullet' against the spirochaete and found it after performing a series of experiments with 606 different synthetic compounds.


Ehrlich in seinem Arbeitszimmer

Paul Ehrlich in his cluttered study in the Royal Prussian Institute of Experimental Therapy, c. 1909
By courtesy of the Paul Ehrlich Institute, Frankfurt

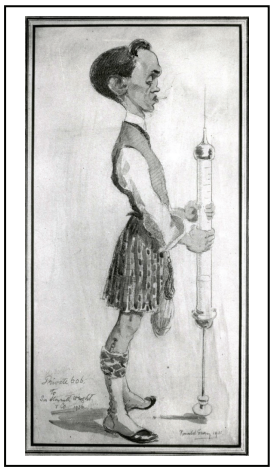
Salvarsan was administered by intramuscular and intravenous injections. Ehrlich took a personal interest in the precise administration of salvarsan and warned against the risks of fever if the needle was not absolutely sterile; he recommended painting the patient's skin with iodine before injecting salvarsan.

Salvarsan was toxic and could cause abdominal pains, vomiting, convulsions, jaundice and skin complaints. In 1914 Ehrlich developed neosalvarsan from compound 914 as a milder, soluble form of salvarsan, though he himself believed compound 606 to be superior.

Salvarsan preparations
Salvarsan, Meister Lucius and Bruning
Neosalvarsan 'ISO double ampoule', 1933
Novarsenobillon 'bipoule', May and Baker, 1948
Novarsenobillon powder, 1953

ROYAL PHARMACEUTICAL SOCIETY

Private 606, 1909
Paul Ehrlich sent one of the earliest samples of salvarsan to reach Britain to his friend Almroth Wright, who as an immunologist had no time for any form of chemotherapy. Wright passed it on to his younger colleague Alexander Fleming who was skilled at the new technique of intravenous injection. Fleming was a territorial soldier in the London Scottish Regiment and was depicted by the artist Ronald Gray as 'private 606' in recognition of his growing reputation as a pox doctor.



By courtesy of the Alexander Fleming Laboratory Museum (St Mary's NHS Trust)

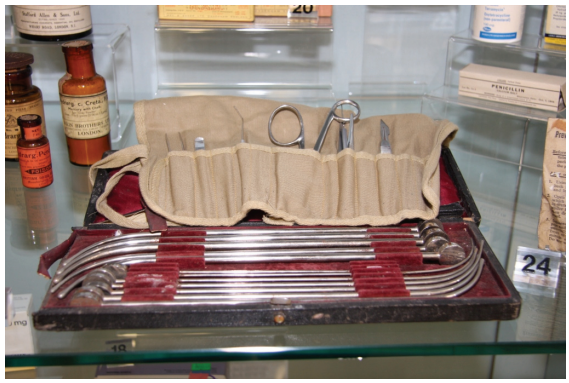
Iodoform

Iodoform is a yellow crystalline compound of iodine used as an external antiseptic. It was recommended in *Martindale*: *the Extra Pharmacopoeia* for syphilis from the 1880s onwards.

Thymol iodide (iodoform substitute), CJ Hewlett & Sons, London, 1930-60

The Great War

During the First World War, the incidence of venereal disease rose among the troops. The German and American armies issued preventative kits, containing calomel ointment for syphilis, potassium permanganate solution for gonorrhoea and cotton swabs, to be used soon as possible after intercourse. The British thought that this would encourage promiscuity but eventually had to set up disinfection stations. Medical officers were issued with portable kits for surgical treatment of diseased men.



Portable VD kit issued to RAMC doctors in Great War, 1914-18.
Loaned by courtesy of the Alexander Fleming Laboratory Museum (St Mary's NHS Trust)

Antibiotics

The treatment of syphilis was revolutionised during the Second World War by the use of penicillin, discovered by Alexander Fleming at St Mary's Hospital, Paddington in 1928. It was developed by a team of researchers led by Howard Florey at the Sir William Dunn School of Pathology, Oxford, in the 1940s. Its importance for the treatment of syphilis was first demonstrated by John Mahoney at the United States Marine Hospital and Venereal Disease laboratory at Staten Island, New York, when he treated a young sailor with penicillin only to find little trace of the spirochaetes in the patient's blood after only four hours and could declare him free of disease after 15 days.

Penicillin still remains the drug of choice for syphilis, although other antibiotics are also used.

During the North African campaigns of 1943 more men were out of action from venereal disease than from wounds. Newly-developed penicillin seemed to offer the answer to the manpower problem, but the War Office was nervous of the likely protests if the public found out that penicillin, which was in short supply, was being used on men with VD rather than on wounded war heroes. The matter was referred to Winston Churchill who decreed that 'this valuable drug must on no account be wasted. It must be used to the best military advantage'. This was interpreted as sanction for the use of the drug on VD cases.

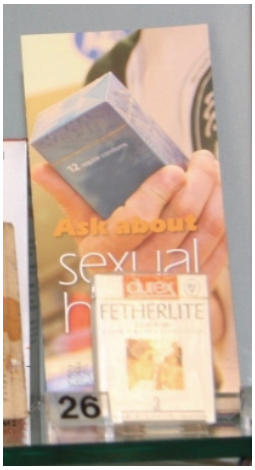
Penicillin Calcium Salt, 100,000 Oxford Units, Merck and Co, New Jersey, 1944
Aureomycin (3%) ointment, Lederle Laboratories, 1965-70
Terramycin tablets (100mg), Pfizer, 1970s
Terramycin capsules (250mg), Pfizer, 1970s
Erythromycin sugar free suspension (erythromycin ethylsuccinate Ph.Eur), Norton Healthcare Ltd, London, c. 2002

Contraception

Gabriele Fallopio has been credited with the invention of the condom, although his precaution against catching syphilis or gonorrhoea was to be used immediately after, rather than during, intercourse. He recommended that the man should cover his penis after intercourse with a cloth soaked in a concoction of wine, guaiacum shavings, copper flakes, precipitated mercury, gentian root, red coral, burnt ivory and powdered deer-horn. In the 1600s there was even a short-lived fashion for anti-venereal underpants.

In the 1760s, James Boswell disliked the use of a condom made from an animal bladder during intercourse and complained that he had been careful 'to engage in armour, which I found but a dull satisfaction'.

Washable vulcanised rubber sheaths appeared in the 1800s. The first latex condoms went on sale under the name of 'Dreadnoughts' in the early 1920s and were marketed as 'the strongest, thinnest and silkiest protectives in the world'.



Photograph shows:

Condoms, Durex Featherlite, 1995

Ask about sexual health' leaflet, produced by the Royal Pharmaceutical Society, October 2005
The Royal Pharmaceutical Society first produced this leaflet for *Ask About Medicines* week, to encourage the public to approach their pharmacist for advice about sexual health.