1 The history of wound care

Table 1.1 Historical references and wound care.

Age	Occasion
Hippocrates (c. 460–c. 377 BC) Cornelius Celsus (c. 25 BC–c. 50 AD) Claudius Galen (c. 130–c. 210 AD)	Early Greek and Roman physicians Wine or vinegar was used to cleanse wounds, and the follow-up treatment included the application of honey, oil and wine
Ambrose Pare (1510–1590)	Encouraged wounds to suppurate
Ignaz Semmelweiss (1818–1865) Louis Pasteur (1822–1895) Joseph Lister (1827–1912)	Accepted the germ theory and the introduction of antiseptics
Florence Nightingale (1894)	'Not in bacteriology, but looking into drains (for smells) is the thing needed'. Nightingale was a firm believer in the benefits of sanitation, hand-washing and application of strict hygiene practices
George D. Winter (1962)	Discovered the importance of moist wound-healing in experimental animals
Mary Ayton (1985)	Defined the terminology that is currently used for wound infection – wound contamination and wound colonisation
Vincent Falanga (1994)	Identified the concept of 'critical colonisation' with fresh insights into chronic wound-healing and non-healing wounds

Table 1.2 Wound care timeline.

Early civilisation	Romans, Greeks and Egyptians	19th century	20th century	21st century
Cave dwellers treating wounds	Hippocrates Galen Celsus	Sterility Antiseptics Silver Gloves, gowns and masks	Fleming antibiotics Industrial Revolution Development of absorbent dressings Nightingale's influence Ongoing research Role of specialist practitioners	The role of the expert tissue viability practitioner continues to grow
	Potions, magical spells Ointments Honey	Pasteur Lister Halstead	Significance of a moist wound site Topical antimicrobials product development Advanced wound care products: • Open-celled foams • Calcium alginates • Hydrogels	Emergence of negative pressure wound therapy; merging advanced wound care products along with suction

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Companion website: http://www.ataglanceseries.com/nursing/woundcare/

A brief history of wound care

Wound care and infection is not a modern phenomenon; it spans from pre-history to modern medicine. The healing of wounds is a complex process, influenced by a number of factors:

- The host (the patient)
- The environment
- The multidisciplinary team
- Available therapies.

Those providing wound care can no longer stick to a single approach in the progressive care of a wound. Wound care practitioners must critically select such wound-healing therapies that can respond to the healing phase of any wound using the best available evidence. For thousands of years, dressing materials have been continually developing so as to provide protection, absorption and act as a base for wound bed preparation. Over the last 30 years, the advances in would care have been more prolific as compared to the previous 2000 years.

Early civilisation

Since the era of cave dwellers, humans have been tending to their wounds in one form or another. Wound care continues to evolve from casting magical spells and applying potions and ointments to a more systematic approach (see Table 1.1). See Table 1.2 for the wound care timeline.

Romans, greeks and egyptians

As early as 14–37 AD, Cornelius Celsus (a Roman physician) described the four principal signs of inflammation using some form of 'antiseptic' solutions. Claudius Galen (130–200 AD), another Roman physician, had such expertise on the management of healing wounds that he is still considered the 'father of surgery' by many. Galen and some of his followers must be remembered for instigating the 'laudable pus' theory, whereby they incorrectly considered the development of pus in a wound as an encouraging aspect of the healing process.

The lint provided a fibrous base promoting the covering of a wound site, the animal grease offered a protective barrier to the environmental pathogens, and the honey helped with its antimicrobial actions. The Egyptians and Greeks observed the significance of covering a wound. The Greeks were the first to identify the difference between acute and chronic wounds, correspondingly calling them 'fresh' and 'non-healing'. Around 120–201 AD, a Greek surgeon, who served the Roman gladiators, made a number of contributions to wound care by successfully covering a moist wound site and recognising its importance.

After the fall of the Roman Empire, many of these advances were lost. In the Middle Ages in Europe, there was a regression in the field of wound care, returning to the use of potions and charms.

The use of honey as a wound care treatment has recently seen a revival. Ancient Egyptians used honey as a wound treatment as early as 3000 BC, and its traces have been found in Egyptian tombs. Honey is said to have been an essential part of the 'Three Healing Gestures' used by the Egyptians.

19th century

Pasteur's theories were associated with the impact of microbes on diseases, and the use of phenol by Lister introduced the modern 'germ theory' when he demonstrated the beneficial effects of carbolic acid (phenol) in the dressings of infected wounds at the turn of the century. Halstead introduced the wearing of gloves, gowns and masks, and silver was revived as an antiseptic used in dressings, enhancing the healing of wounds.

All of these events make the 19th century a significant and eventful era with regard to advances within the field of sterility and sterile surgical procedures. Skin cleaning, the use of antiseptics and debridement became common practices thereafter.

20th century

The 20th century brought some key advances, when there was a resurgence and rediscovery of the significance of a moist wound site with the invention and development of polymer synthetics used for wound dressings.

Fleming's discovery and the subsequent development of antibiotics provided us with potent antimicrobial therapies with high specificity, transforming clinical therapy and marking the decline of a number of former remedies. Yet, the emergence of antibiotic-resistant strains of pathogens, alongside the delayed discovery of newer antibiotics, led to a need for the discovery and development of alternative treatments.

Topical antimicrobials in the current wound care practice include iodine- and silver-containing products. In the past, acetic acid, chlorhexidine, hydrogen peroxide, sodium hypochlorite, potassium permanganate and proflavine have been used. Some of these are making a comeback, and other options are being investigated and considered.

During the 1800s in the UK, natural products were being refined, leading to the development of absorbent natural products for dressings, including spun and woven cotton. During the First World War, absorbent dressings were being manufactured. Tulle gras, a paraffin gauze dressing, was developed by Lumière. Plastics were being added to cotton in the 1950s creating composite dressings, such as plasters. Throughout this timeframe, the key aim was to dry out the wound, focusing upon protection and absorption, reducing the trauma of dressing changes. There is much evidence to suggest that keeping wounds moist is more effective to letting them dry out.

Advanced wound care products were being designed in the 1970s taking advantage of this concept; nurses were using these products to successfully treat chronic wounds. Much research was undertaken in the late 1970s and 1980s.

In early 1980s, hydrocolloid, the second advanced dressing, was developed. Hydrocolloid wafers were established as first-line treatment for pressure ulcers, leading to the development of more absorbent dressings, for example, foams and alginates.

The late 1980s witnessed the introduction of other advanced wound care products:

- Open-celled foams
- Calcium alginates
- Hydrogels.

Nurses began to take the lead with wound care or tissue viability, managing and organizing outpatient wound clinics, influencing and enhancing patient care.

Product diversification and growth continued throughout the 1990s. Sustained-release antimicrobial dressings were beginning to emerge and growth factor impregnated hydrogel as well as living skin equivalents.

21st century

Product modification continued throughout the 2000s, and this will continue with the emergence of negative pressure wound therapy and merging advanced wound care products along with suction.

The future

The field of medicine is constantly evolving with advancements in wound care techniques. A number of new laboratory tools have provided us with the ability to gather an incredible amount of scientific data related to the biological events associated with healing. Much more needs to be accomplished in this field, as pieces of the jigsaw, fitting together in a way that is important for the patient, are still missing. The future is unknown, but the people requiring wound care will still need a kind of treatment that is kind and compassionate.