What is advanced?

Professor Peter Vowden
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The ultimate aim of wound management is

- Rapid healing
- Restoration of normal skin function
- Minimal scarring

Advanced – what does it mean?

- Forward-thinking/looking
- Unconventional
- Cutting-edge
- Innovative
- Radical

- Progressed
- Evolved
- Developed
- Enhanced

- Superior
- Sophisticated
- Complex
- Highly developed

Pressure

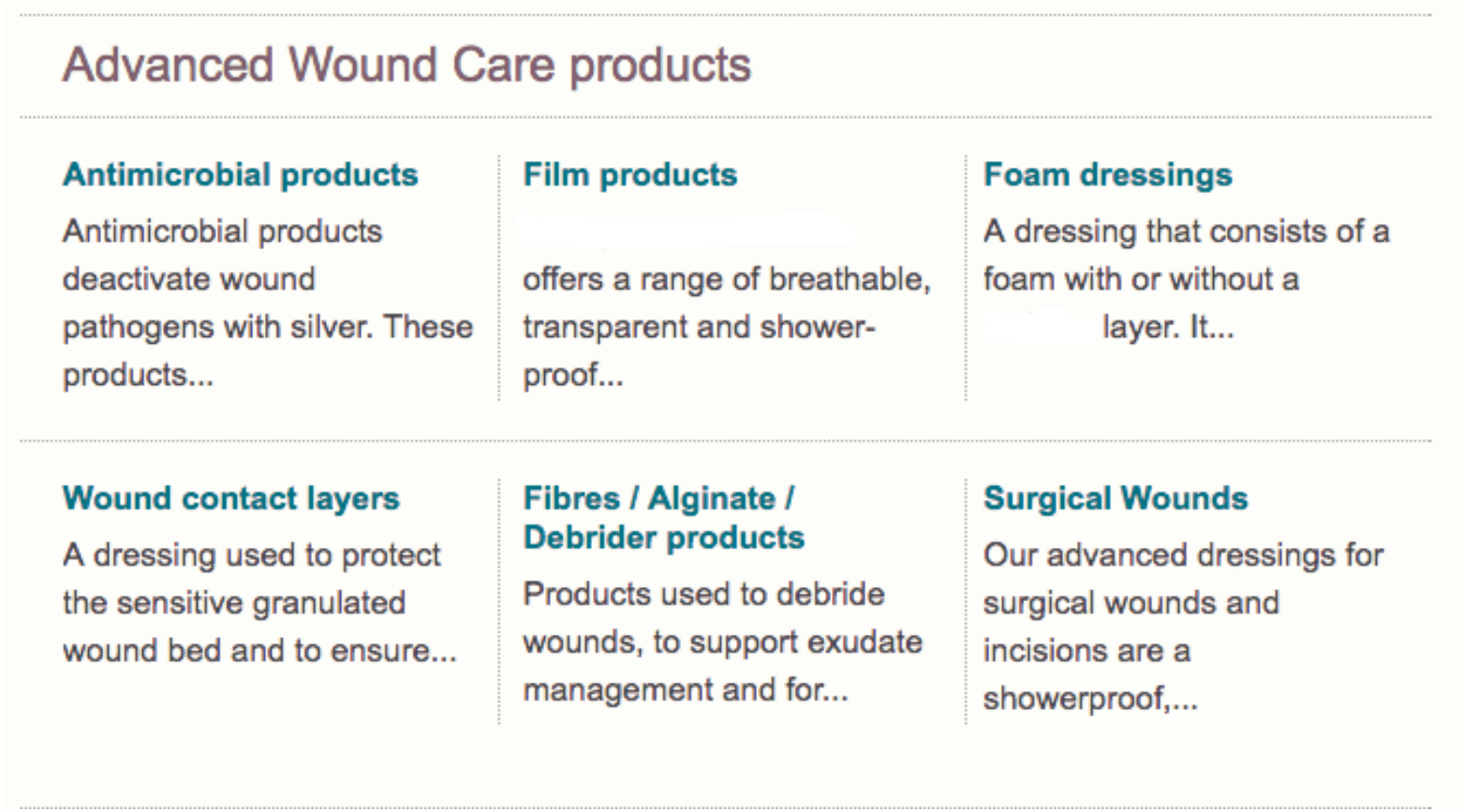
- **The best**
  - **Product**
  - **Outcome**
- **Must have**
  - **Poor care!**
- **Expensive**
  - **Restrict**

What do the companies say

- Today, Advanced Wound Management dressings including hydrocolloids, alginates, gels and foams allow healthcare professionals to manage moisture at the wound surface and reduce the frequency of dressing changes from several times a day to several times a week.

- ********* provides a broad range of cost-efficient Advanced Wound Management products that improve the quality of care for patients with painful circulatory conditions and pressure ulcers.

Company information



A brief history

- In the 20th century came the advent of modern wound healing. At the present time, there are more than 5,000 wound care products. Most modern dressings contain materials that are highly absorbent, such as alginates, foam, or carboxymethylcellulose. There are occlusive dressings and semiocclusive dressings. There are growth factors, advanced honey-based dressings, and hypochlorous acid–based cleansers. Bioengineered tissue, negative pressure therapy, and hyperbaric oxygen therapy have changed the way we treat a lot of chronic wounds today.

Shah. The History of Wound Care 2011

Evolution of Wound Therapies

70's 80's 90's '00 '10

Improved Outcomes

PASSIVE

TRADITIONAL
- Gauze
- Sponges

70 + Years - First Wave

ENVIRONMENT

MOIST WOUND HEALING
- Hydropolymers
- Hydrocolloids
- Collagen dressings
- Gels
- Saline wet gauze

15+ Years - Second Wave

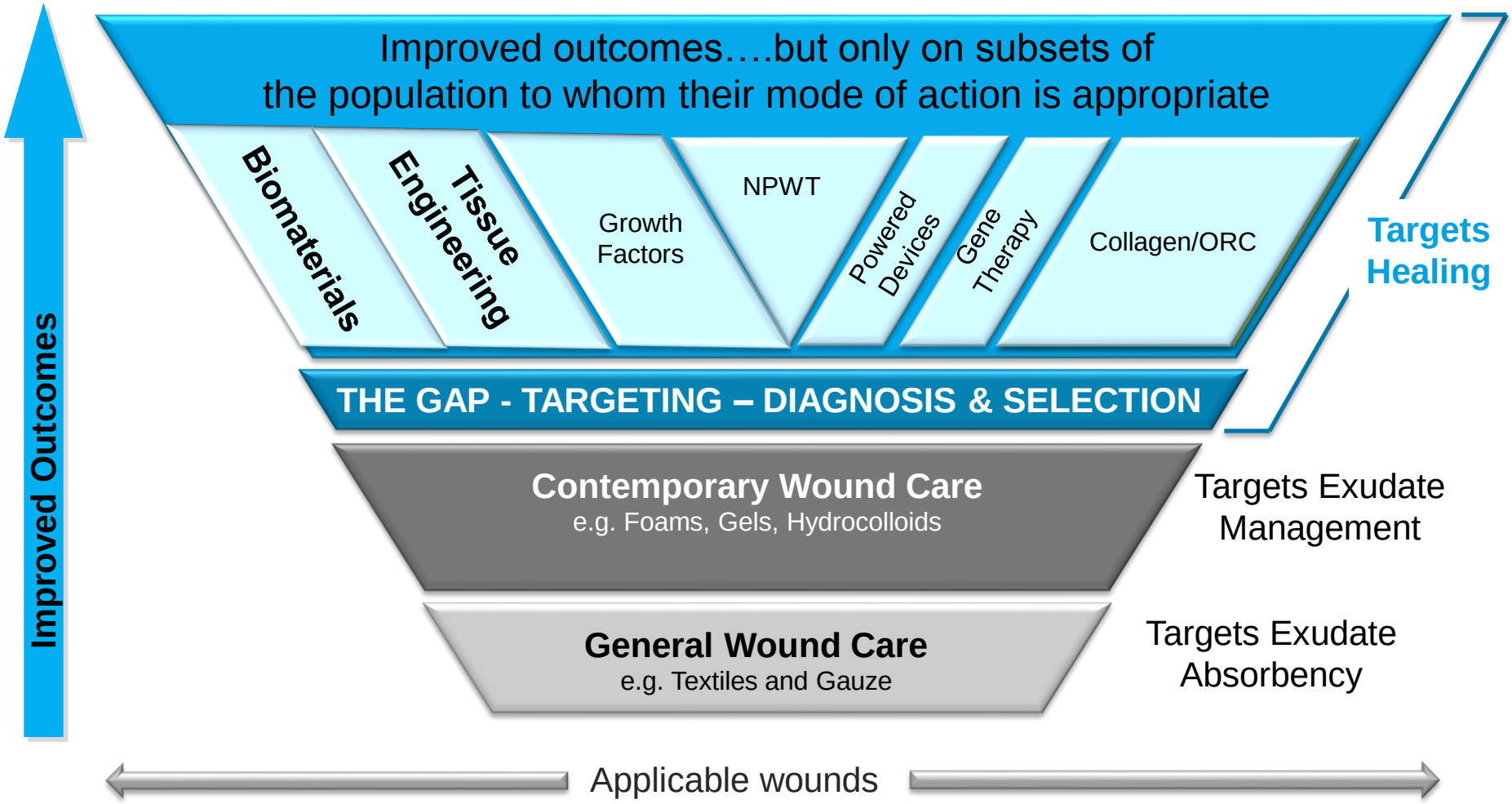
MWH + INTERACTIVE

PROMOTES HEALING
- Collagen/ORC dressings
- Growth factors
- Interactive Biopolymers
- GF/Device combinations
- Pharmaceuticals
- Tissue Engineering
- "Devices" NPWT, HBO etc

Third Wave

Deals with Symptoms:
Effective on large patient cohorts

The need for Diagnostics



Passive and Active Wound Management

Passive Wound Management

Management Based on Visible Wound Bed Characteristics:
Color, Depth and Exudate Levels

Dry Wound →	Hydrogels
Wet Wound →	Exudate Absorber: Alginate, Foam
Reduce Microbial Burden →	Silver / Antimicrobial

Active Wound Management

Integrated management Based on Delayed Healing Characteristics:
↑Inflammation, ↑Proteases, ↓Growth Factors, ↓Cell Numbers

Reduce Microbial Burden →	Silver Collagen/ORC Silver
Reduction / Removal of Protease Activity →	Collagen/ORC Dressing
Maintain Moist Wound Environment →	Advanced Dressings that Maintain Moist Environment

Carrie Sussman, Barbara Bates-Jensen. "Wound Care A Collaborative Practice Manual for Health Professionals. Baltimore, MD, 2007. 246-47 Print.
Falanga V. The Chronic Wound: Impaired Healing and Solutions in the Context of Wound Bed Preparation. Blood Cells and Diseases, 2004;32:88-94.

Biomaterial

Any substance that has been engineered to interact with biological systems for a medical purpose

May be either

- Therapeutic
  - Treat, augment, repair or replace a tissue or function within the body

or

- Diagnostic

- Natural or Synthetic
  - Polysaccharide based
  - Protein based
  - Nanofibre based
  - Marine based
- 2D or 3D constructs
  - Tissue engineering

Why eggshell membrane?

- Long historical and scientific evidence of its efficacy

EGG MEMBRANE FOR WOUNDS.

Dr. Amat of Paris Finds It Possesses Valuable Healing Qualities.

Special to The New York Times.

WASHINGTON, July 24.—A Consular report received here relates that at a recent session of the Therapeutical Association of Paris, Dr. Amat lectured on the use of the membrane of eggs in the treatment of wounds. He has observed for some time the good results of placing these membranes upon the surface of wounds, and reports two new cases, that of a young girl suffering from a burn on her foot, and a man, forty years old, with a large ulcer on his leg. Both wounds were in process of healing and were covered with healthy granulations.

The surgeon overspread them with six or eight pieces of the membrane of eggs, which was covered with tin foil and fastened with dry antiseptic bandages. After four days the bandages and tin foil were removed, and it was shown that the membrane of the egg had partly grown into the tissues and had caused the growing of a good skin. That the egg membrane had contributed much to the healing process was demonstrated in the further course of treatment. It seeems, however, that the membrane does not always adhere.

The process of cicatrization is not only hastened, but the wound heals exceptionally well and leaves but few perceptible traces.

The New York Times
Published: July 1, 1905

An experience of hen-egg membrane as a biological dressing

Karo Maeda and Yoshiro Sasaki

Divisions of Plastic Surgery and Pathology, Kanagawa Childrens' Medical Centre, Japan

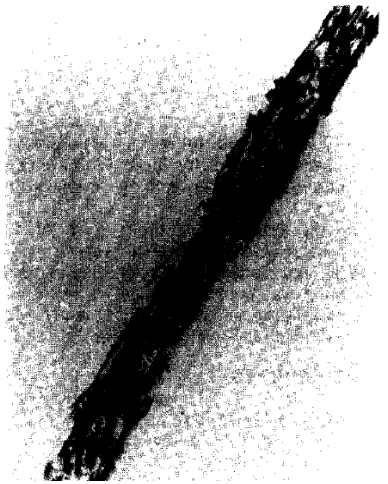
Summary

The use of the hen-egg membrane as a biological dressing is reported here. The results are satisfactory compared with the other kinds of biological dressing materials. It is worthwhile to emphasize that this membrane is inexpensive and easily obtained upon requirement.

There are several study reports regarding effects of biological dressing for burn wounds: the first of xeno-skin graft by Reverdin in 1869, and allo-skin graft from corpse by Girdner in 1881.

On the other hand, since Bromberg et al. pointed out the uses of porcine skin in 1965, fresh porcine skin and lyophilized porcine skin have been used in the United States.

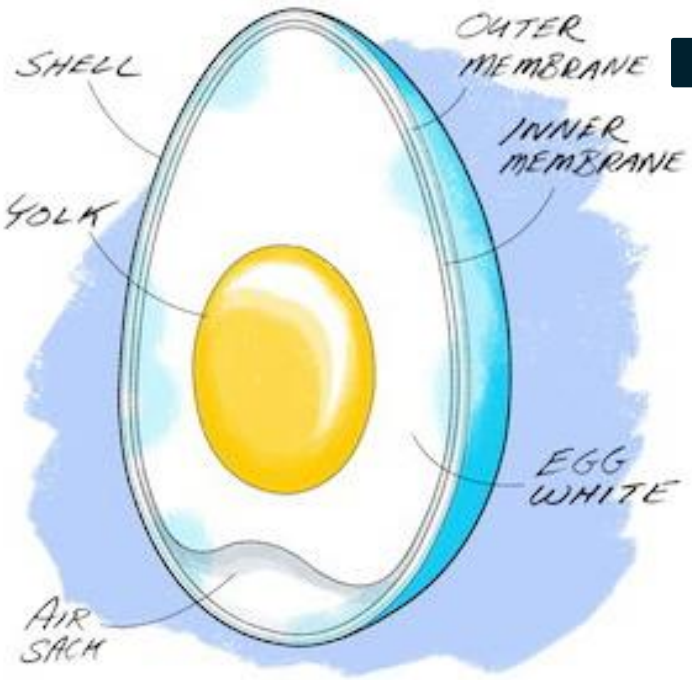
In the past few years, the author has used lyophilized porcine skin (Chang, 1973; Hackett and Bowen, 1974), fresh human amniotic membrane (Kubani, 1948; Douglas, 1952; Sterling, 1955; Pigeon, 1960; Kirschbaum and Haro Hernandez, 1963), and collagen membrane (Maeda and Miyata, 1979) to cover burn wounds. On the other hand, the author tried to use hen-egg membrane for the purpose of covering the burn wounds and de-epithelized donor area.



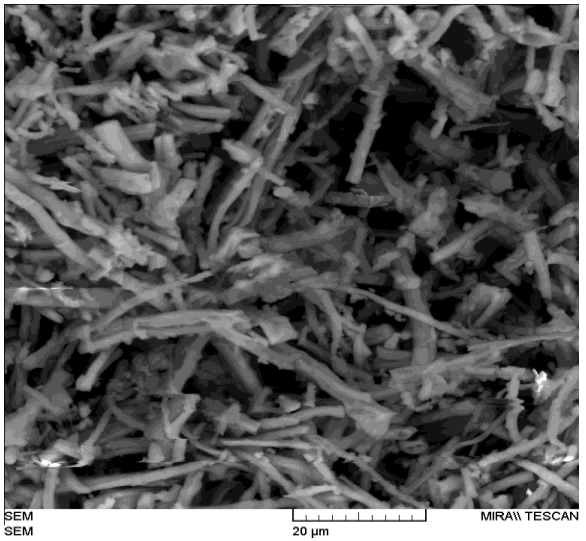
Advanced?

Eggshell membrane as active component

- An ideal biomaterial to both treat and prevent chronic wounds

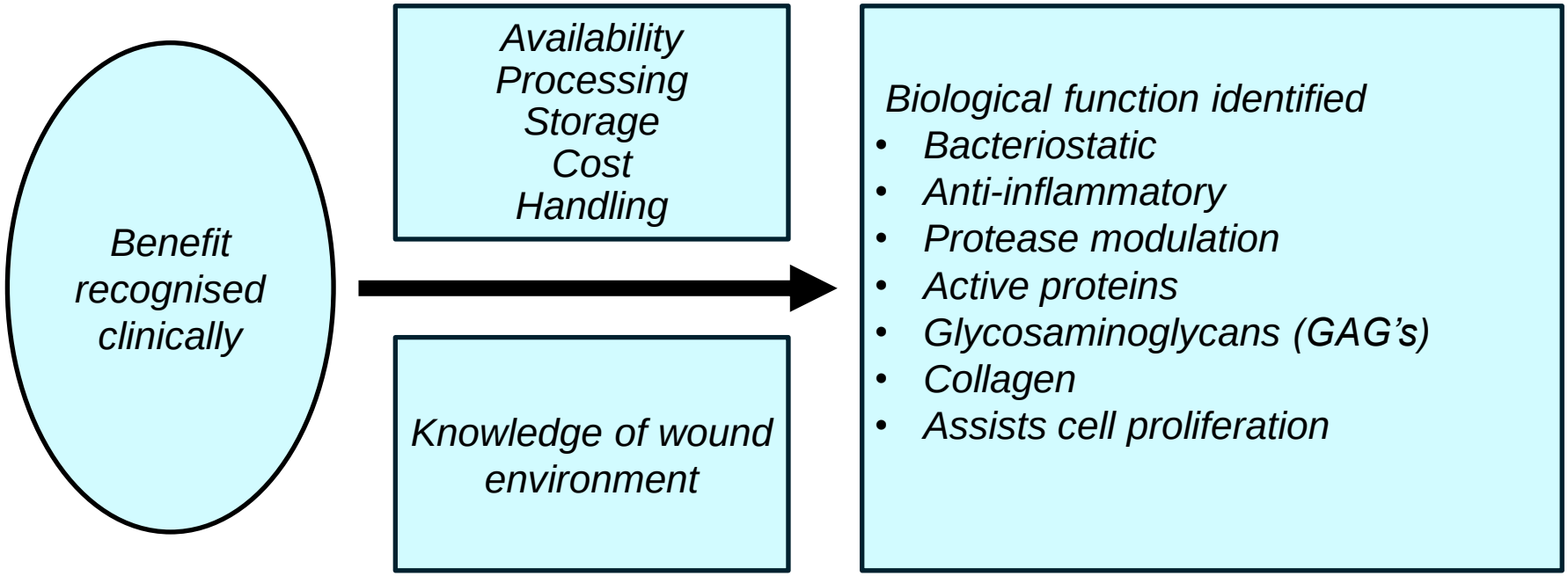


Raw eggshell membrane



A scanning electron microscope (SEM) image of the, ready-to-use, processed eggshell membrane after treatment

What has changed?



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