



**Australian Government**  
**Department of Health and Ageing**



# Horizon Scanning Technology Prioritising Summary

## Human collagen based wound dressing

April 2004



**Australian  
Safety  
and Efficacy  
Register  
of New  
Interventional  
Procedures -  
Surgical**



**Royal Australasian  
College of Surgeons**

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The production of this Horizon scanning prioritising summary was overseen by the Health Policy Advisory Committee on Technology (HealthPACT), a sub-committee of the Medical Services Advisory Committee (MSAC). HealthPACT comprises representatives from health departments in all states and territories, the Australia and New Zealand governments; MSAC and ASERNIP-S. The Australian Health Ministers' Advisory Council (AHMAC) supports HealthPACT through funding.

This Horizon scanning prioritising summary was prepared by staff from the Australian safety and Efficacy Register of New Interventional Procedures – Surgical (ASERNIP-S).

**NAME OF TECHNOLOGY:**

Human collagen-based wound dressing.

**PURPOSE & TARGET GROUP:**

The genetically engineered human collagen-based wound dressing may be beneficial for injured patients, by assisting in wound healing and reducing recovery time.

**STAGE OF DEVELOPMENT (IN AUSTRALIA):**

- Experimental
- Investigational
- Nearly established
- Established
- Established but changed indication or modification of technique
- Should be taken out of use

**INTERNATIONAL UTILISATION:**

COUNTRY	LEVEL OF USE		
	Trials underway	Limited use	Widely Diffused
Israel	✓		

**IMPACT SUMMARY****Background:**

The new dressing is a bilayered cellular matrix, composed of genetically engineered human collagen in the inner layer which readily degrades into the wound tissue through enzymatic action. The products formed by this reaction may be helpful in the healing process. The outer layer of the dressing is also of biological origin and provides initial protection before release of the collagen layer.<sup>1</sup>

**Clinical need and burden of disease:**

Medical dressings are routinely used throughout the world; a dressing which encourages faster and improved healing, would be of benefit to many injured patients.

**Estimated speed, geographic and practitioner use patterns of diffusion in the health system:**

This technique was developed in 2004 by researchers at the Hebrew University, Faculty of Dental Medicine in Jerusalem; currently only animal experiments have been conducted.

**Existing comparators (containing human cells):**

- \*Orcel is used to treat donor sites in burn patients and epidermolysis bullosa (a rare skin condition in children); it is composed of human skin cells grown on a bovine collagen matrix.

- \*Transcyte is a temporary covering for burn wounds and is composed of nonviable human cells grown on a nylon mesh combined with a synthetic epidermal layer.
- \*Apilgraf (graftskin) is used for leg ulcers and diabetic foot ulcers. This is a two-layer wound dressing that contains live human cells combined with bovine collagen.
- Dermagraft is made from human cells placed on a dissolvable mesh material, the mesh is gradually absorbed when placed on wound and human cells grow and replace the damaged skin.<sup>2</sup>

\*Donor cells are obtained from circumcised infant foreskin.

Bovine collagen is incorporated into both Orcel and Apilgraf dressings. It is not clear whether the human collagen-based wound dressing contains any products of animal origin; the information states that the outer layer is made of biological material, but does not specify its exact origin.

**Estimated cost impact:**

The cost of the dressing is not available. Potential cost savings may occur if healing time was reduced.

**Efficacy and safety issues:**

Limited evidence is available on the safety and efficacy of this dressing for wound healing. The preparation of the dressing is awaiting patent approval; therefore results from the animal studies (guinea pigs and domestic pigs) are not in the public domain.

Preliminary experiments have shown that after five days, 85% closure of a full-thickness wound occurs, compared with 25%-40% closure by other methods. In addition, formation of new collagen fibres has been reported to be faster than with other methods (between 12 to 15 days) (Shoshan S, personal communication).

**Ethical issues:**

- there may be a lower risk of immunological rejection or microbiological infection with this dressing, compared to collagen derived from animal tissues.

**Cultural or religious considerations:**

- the use of genetically engineered human collagen may cause concern among certain groups.

**Other issues:**

- the types of injuries that would benefit from this dressing are not reported

**Conclusion:**

No evidence was located on the safety and efficacy of this wound dressing. Short and long-term efficacy data of controlled trials would be required before this dressing could be widely accepted.

### HealthPACT decision:

Since there is sizeable amount of information on skin substitutes (not detailed in this summary), it is recommended that this procedure should be included in an Accelerated Systematic Review on various types of artificial skin to be assessed by ASERNIP-S in the future.

### REFERENCES:

1. New dressing for wounds developed at Hebrew University.  
[http://www.eurekalert.org/pub\\_releases/2004-01/huoj-nd011904.php](http://www.eurekalert.org/pub_releases/2004-01/huoj-nd011904.php) Accessed January 2004.
2. Bren L. Helping Wounds Heal. [http://www.fda.gov/fdac/features/2002/302\\_heal.html](http://www.fda.gov/fdac/features/2002/302_heal.html) Accessed January 2004.

### SOURCES OF FURTHER INFORMATION:

None.

### SEARCH CRITERIA:

A search of MEDLINE, PubMed and Cochrane Library, Current Controlled Trials metaRegister, UK National Research Register, International Network for Agencies for Health Technology Assessments, relevant online journals and the Internet was conducted in January 2004.

Search terms used were: human collagen dressing, wound dressing, Ditekoll Ltd, human recombinant collagen, collagen wound dressing, cellular wound dressing, Hebrew University Yissum Research Development Company.