

# Training Module 1

## Introduction to Wounds

PartnerFirst™ 

# Upon completion of this Training Module you will be able to:

Describe the structure and functions of major layers of the skin and underlying structures

Distinguish between partial and full thickness wounds

Describe the four phases of wound healing

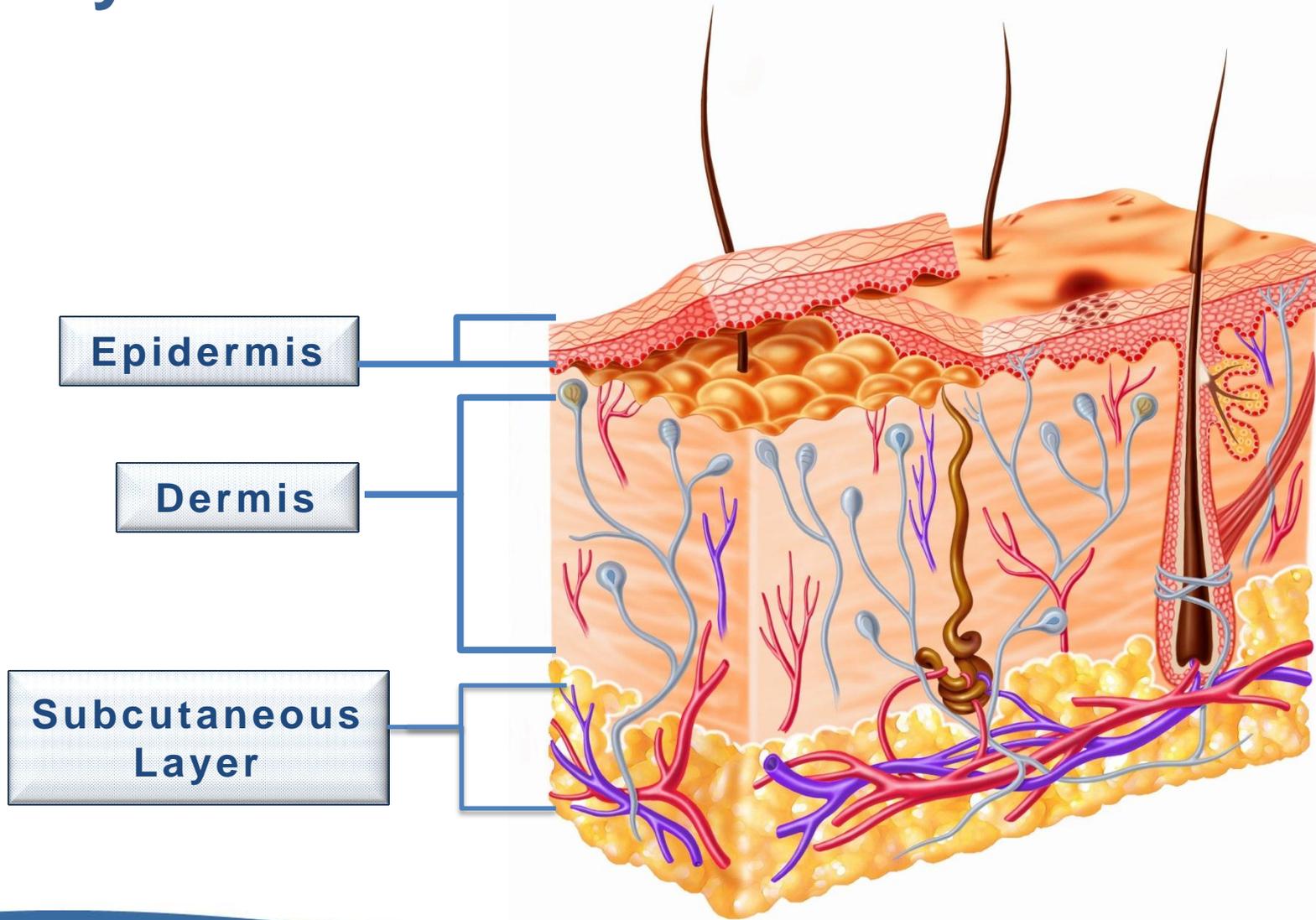
State the difference between acute and chronic wound healing

# What is a Wound?



An open wound is one in which the protective body surface (the skin or mucous membranes) has been broken, permitting the entry of foreign material into the tissues. <sup>1</sup>

# Layers of the Skin



# Layers of the Skin

## Epidermis

Avascular outer layer of the skin

Provides a protective barrier

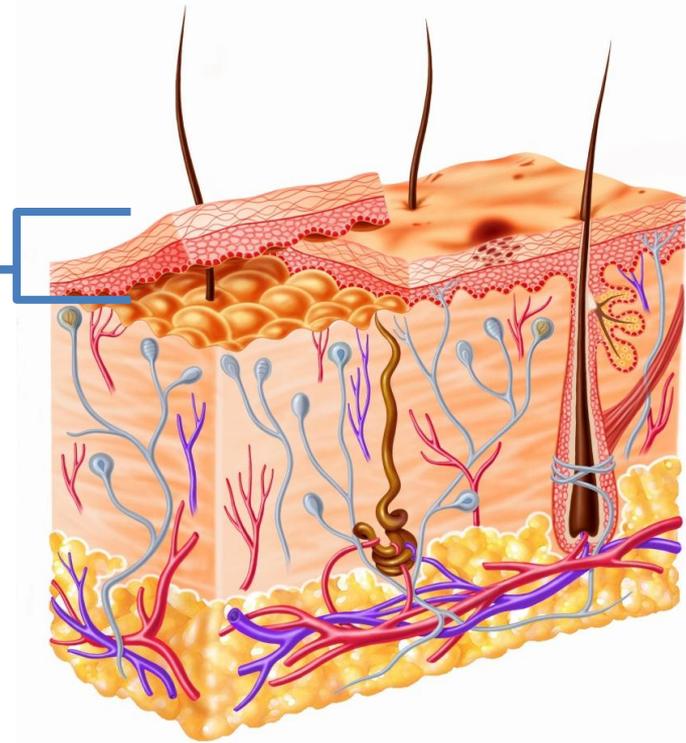
Protects from fluid and electrolyte loss

Synthesizes vitamin D

Contains the skin pigmentation

Consists of five layer

Repairs and regenerates every 28 to 42 days



(Baranoski, 2004)

# Layers of the Skin

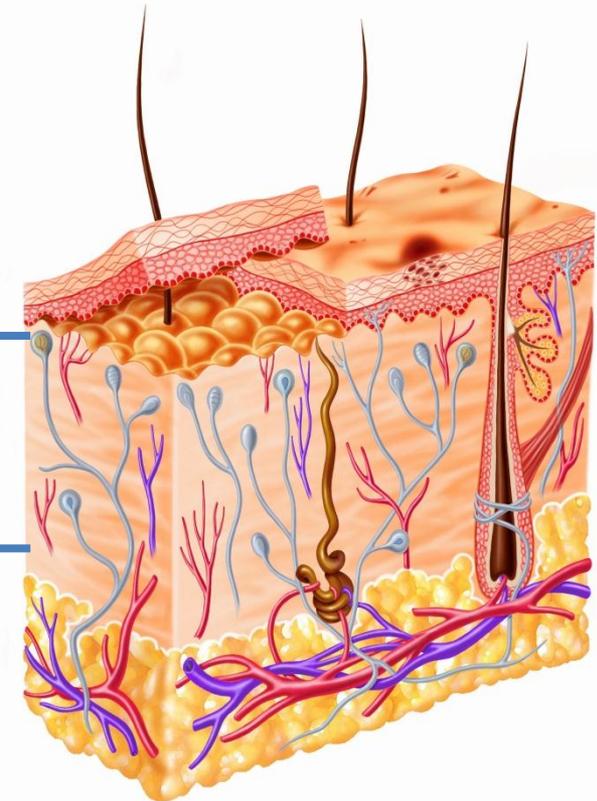
Vascular and the thickest layer of the skin

Contains a network of nerve endings, blood vessels, lymphatics, capillaries, sweat and sebaceous glands, and hair follicles

Provide tensile strength, a support structure, moisture retention and supply blood and oxygen to the skin

The dermal blood supply functions to provide nutritional support, immune surveillance, wound healing, thermal regulation, hemostasis, and the inflammatory response

The major proteins found in the dermis are collagen and elastin



**Dermis**

(Baranoski, 2004)

# Layers of the Skin

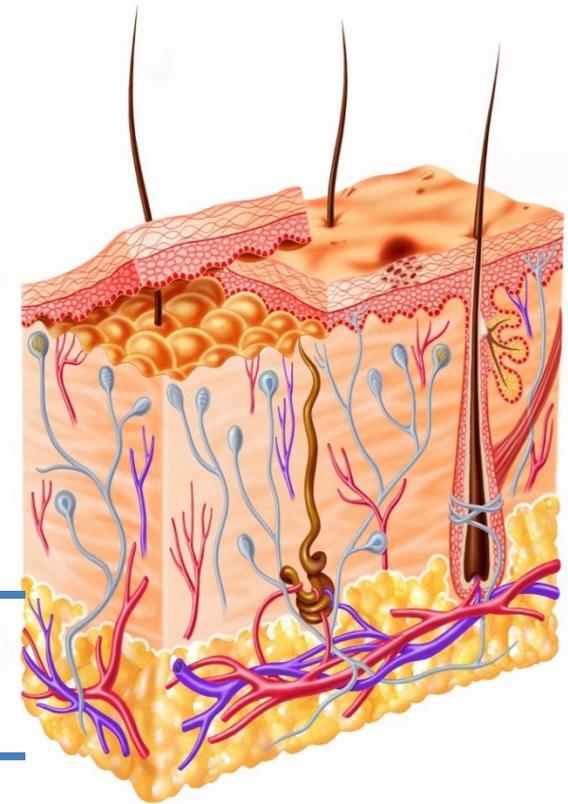
Composed of connective tissue and fat

Connects the dermis to underlying structures

Contains major blood vessels, nerves and lymphatic vessels

Provides blood supply to the dermis

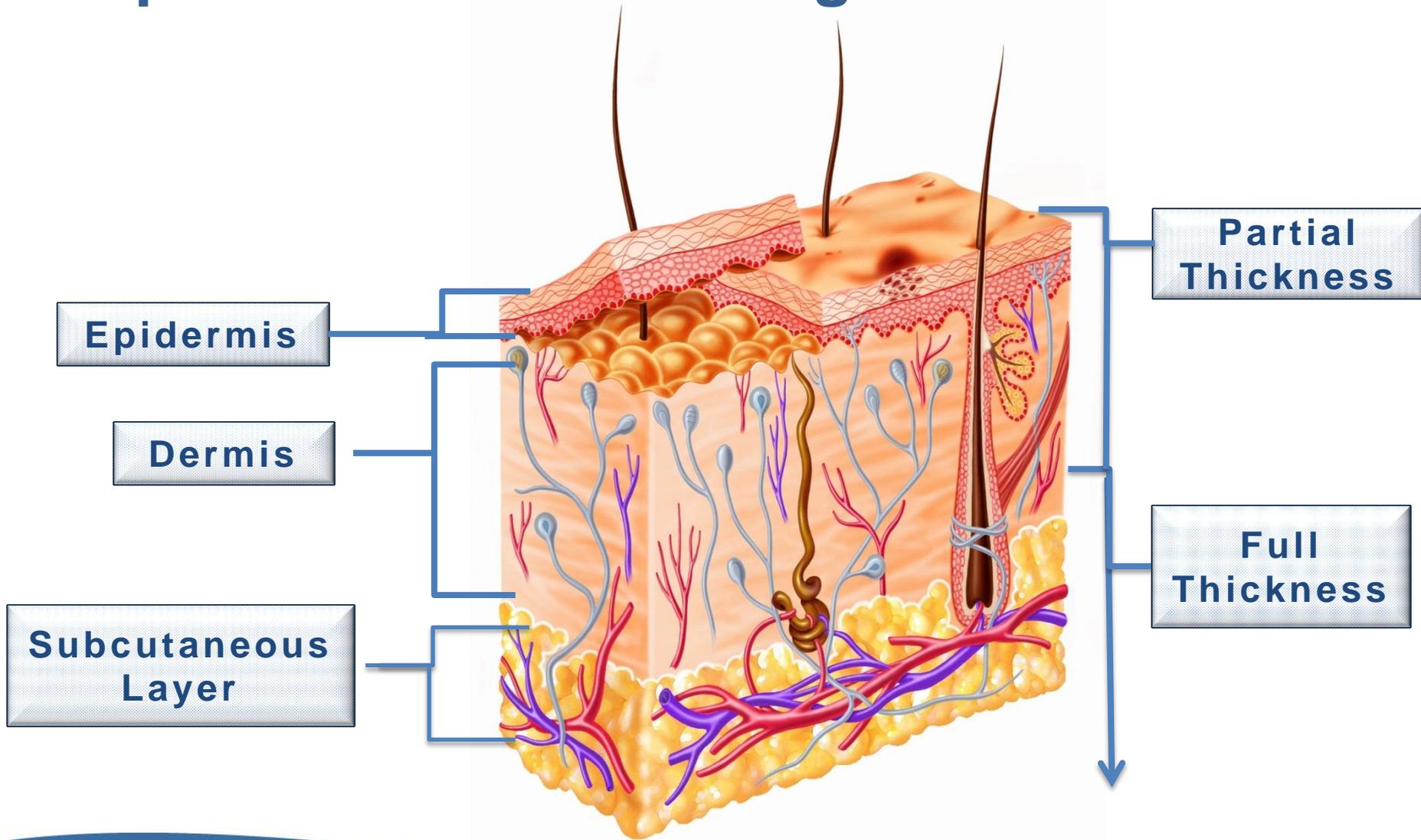
Provides cushioning between skin layer, muscles, and bones



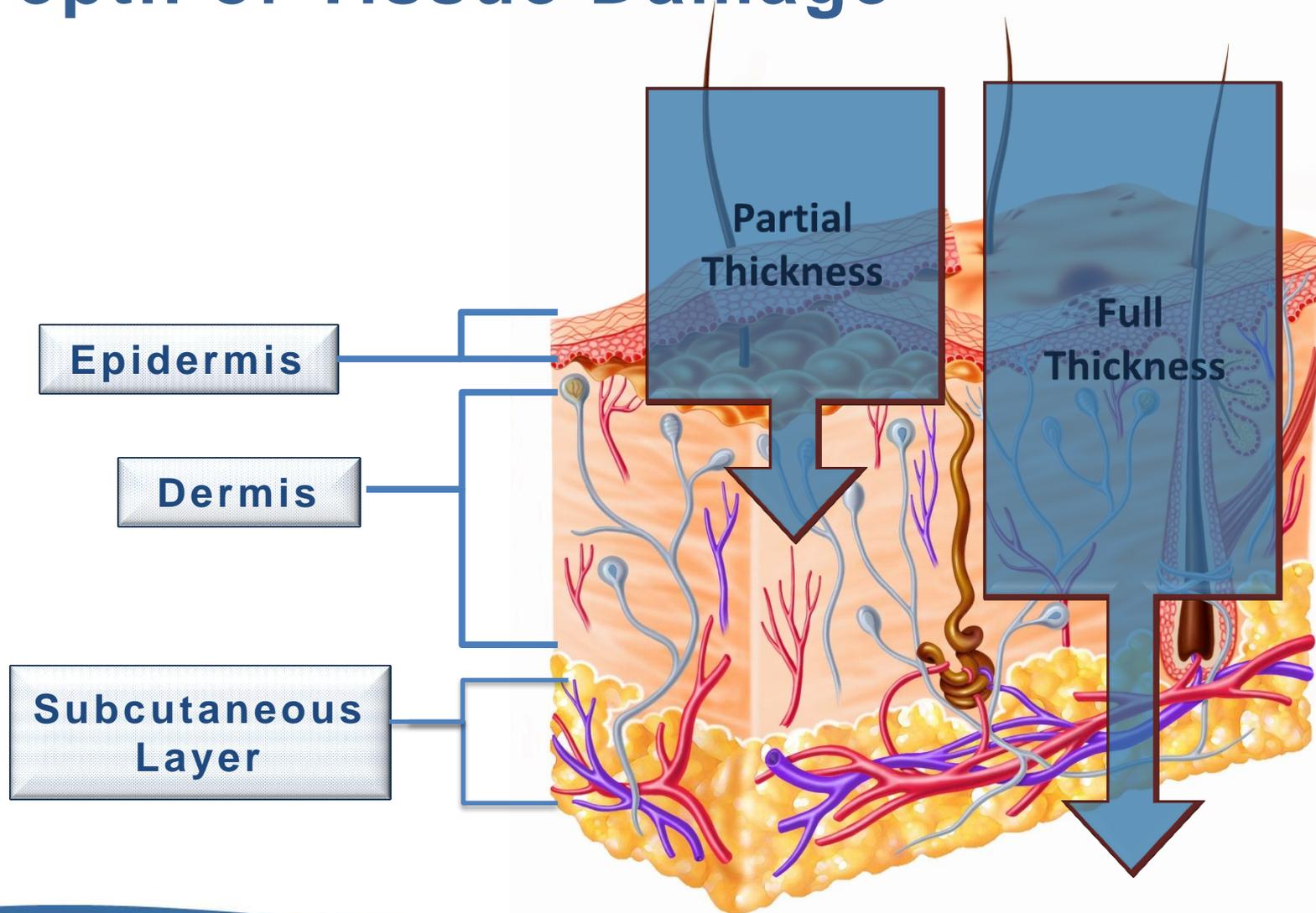
**Subcutaneous Layer**

(Baranoski, 2004)

# Depth of Tissue Damage



# Depth of Tissue Damage



# Partial Thickness

Tissue Damage



Loss of epidermis  
and possible  
partial loss of  
dermis

Healing



Heal by  
epithelialization

Healing Time



Within 2 to 4  
weeks<sup>3</sup>

# Full Thickness

## Tissue Damage



Through the epidermis and dermis to involve subcutaneous layer and possibly muscle, tendon, or bone

## Healing



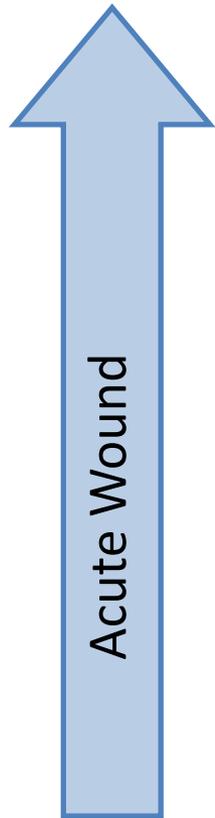
Heal by filling in of defect with granulation/scar tissue, wound contraction and epithelialization<sup>3</sup>

## Healing Time

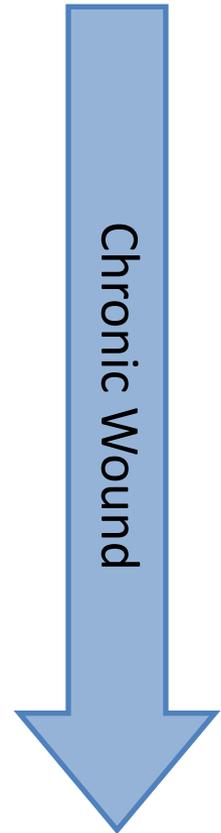


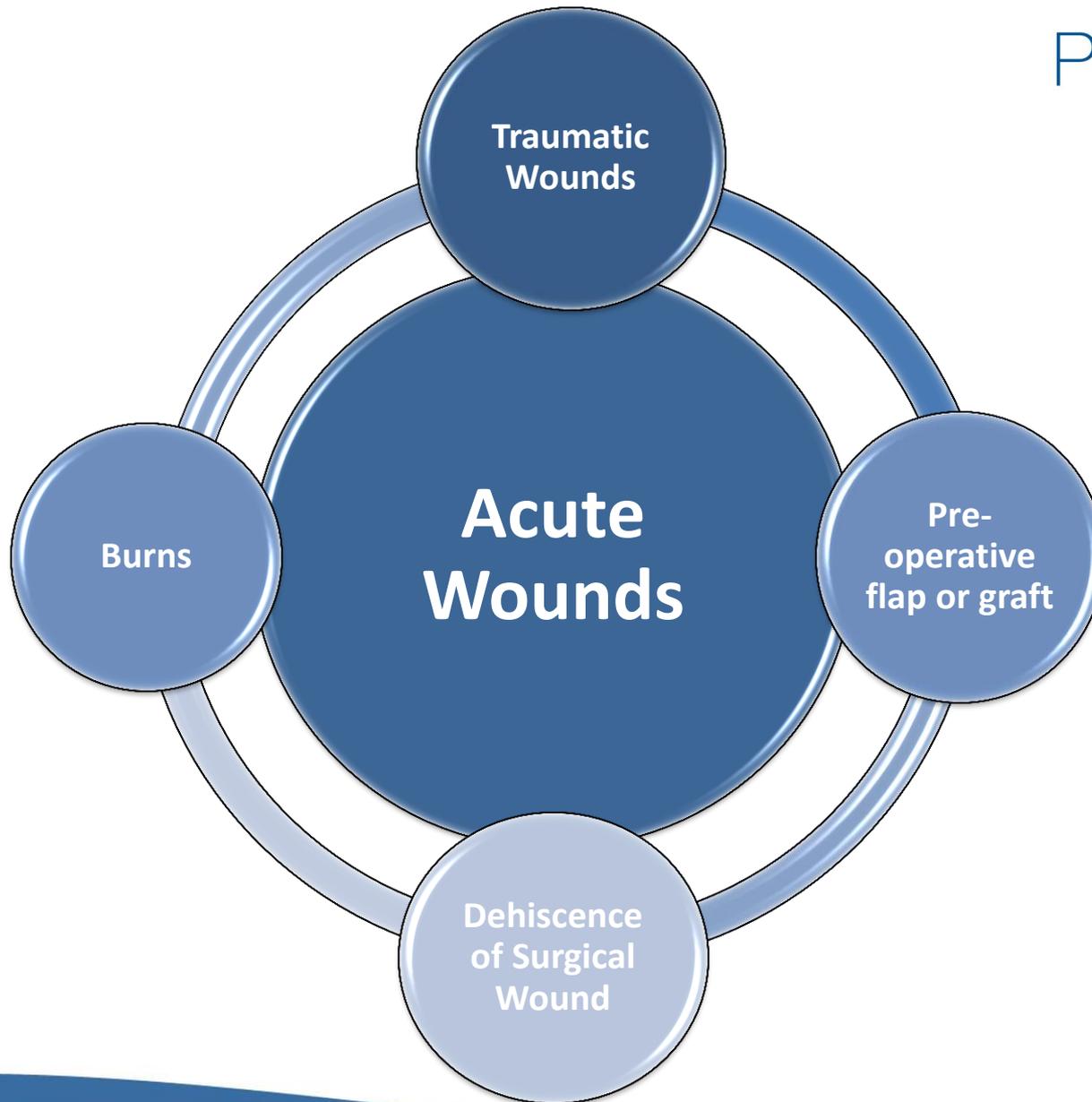
May be greater than 6 weeks.

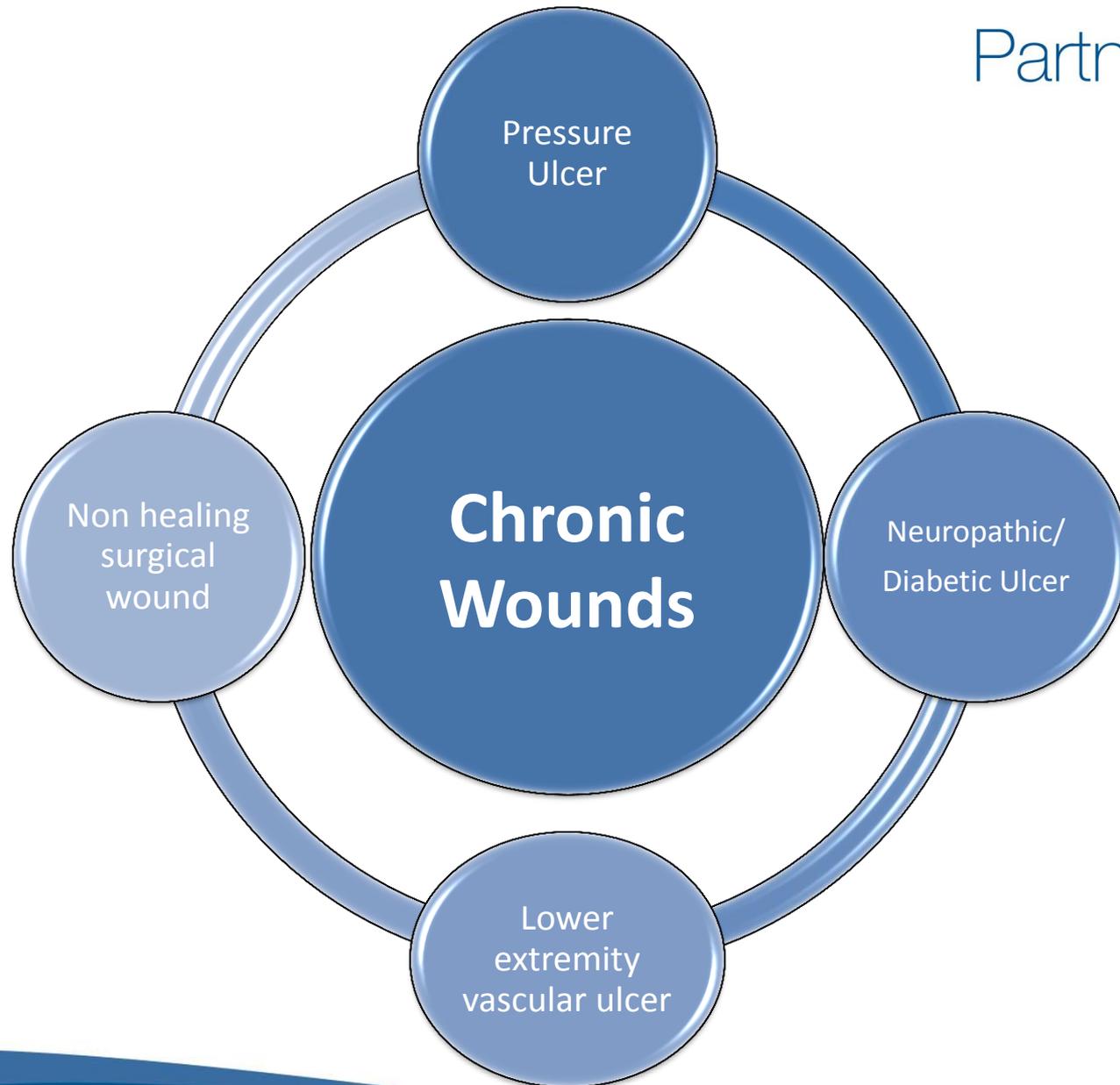
# Acute or Chronic Wound?



- Typically traumatic or surgical in origin
- Move rapidly through the wound healing process
- Result in durable closure of wound <sup>3</sup>
- Causes include vascular compromise, chronic inflammation, or repetitive insults to the tissue
- Fail to proceed normally through the repair process
- Fail to close in a timely manner or to result in durable closure <sup>3</sup>







# Types of Surgical Closure

## Primary Intention



- Skin and wound edges are brought together with sutures, staples, adhesives, tape strips or glue<sup>2</sup>
- Wound edges are approximated from deep tissue to epidermis<sup>3</sup>

## Secondary Intention

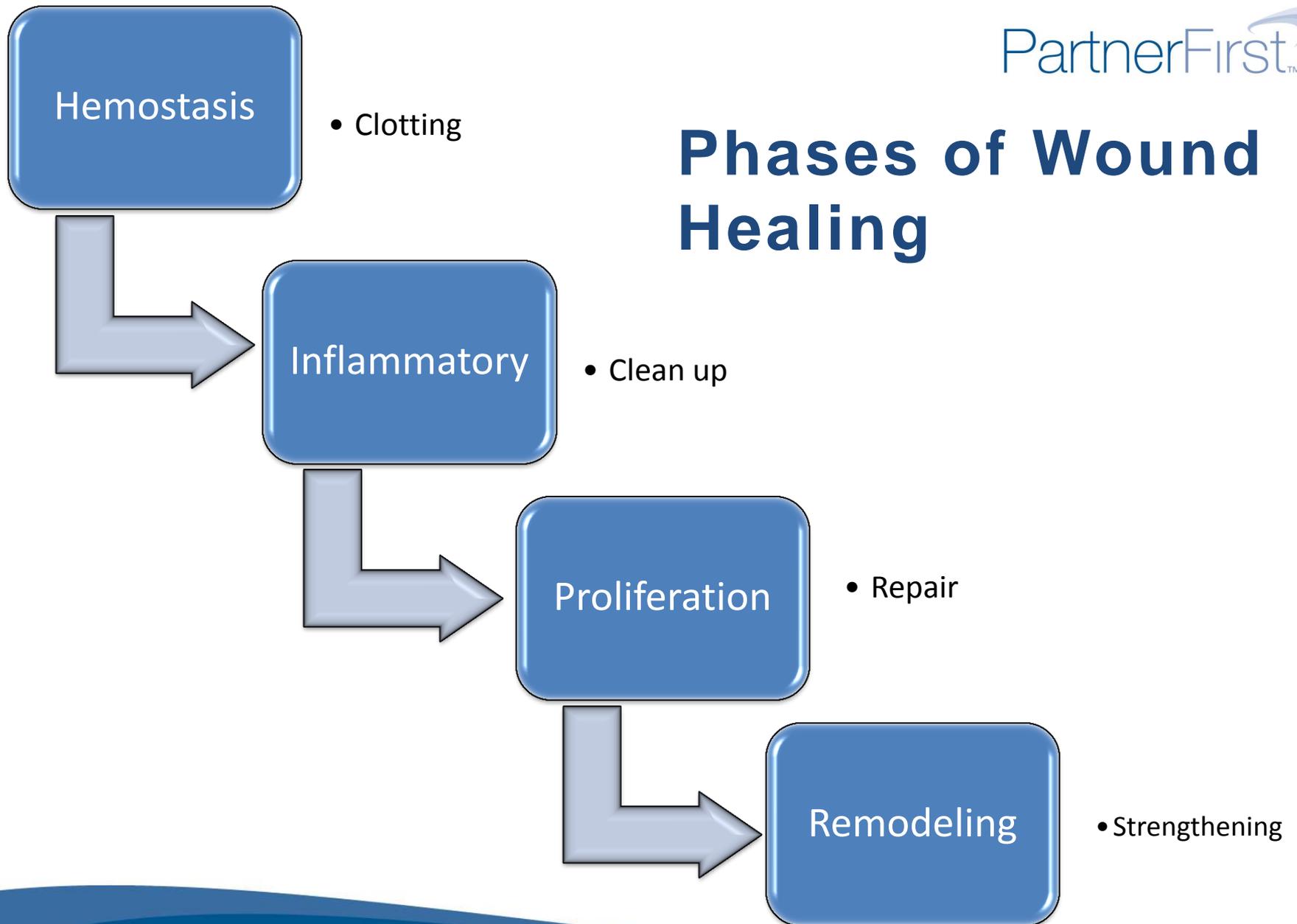


- The wound is left open for a length of time
- The body fills in the defect with new tissue, then covers it with skin<sup>3</sup>

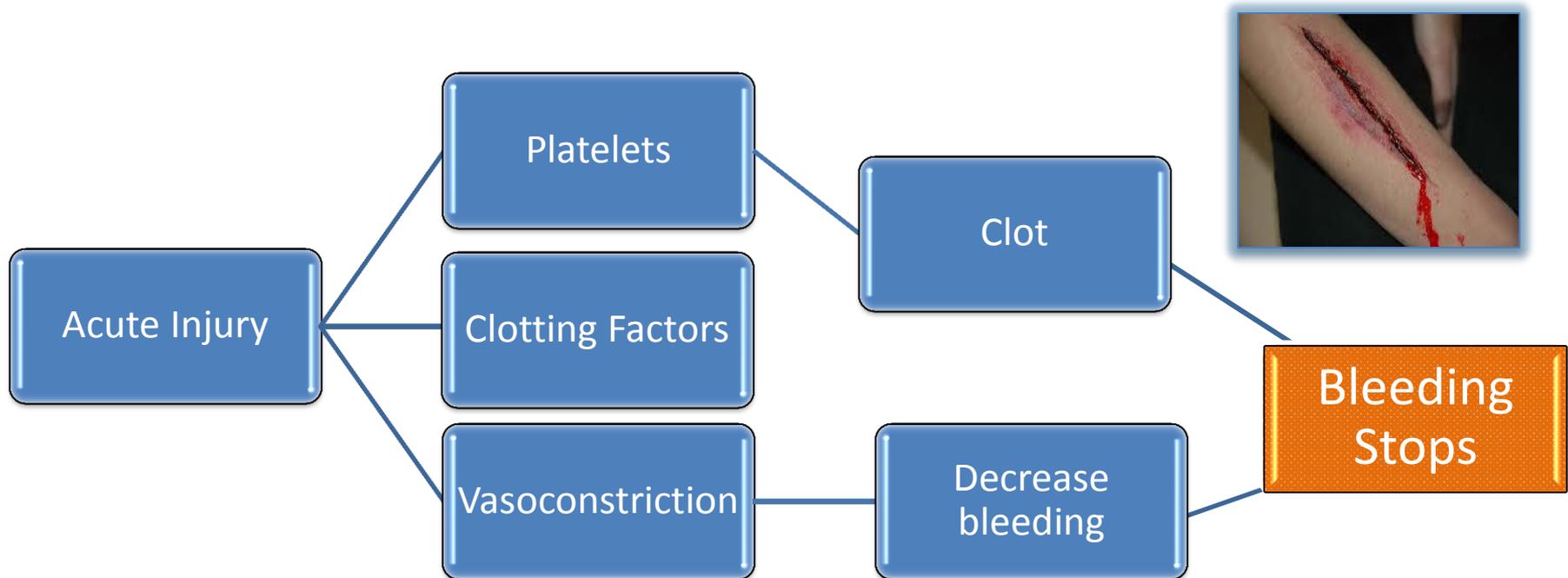
## Tertiary Closure



- The wound is purposely left open for a period of time
- Then, the wound is closed and healed by primary intention or by reconstruction with skin grafts or flaps.<sup>4</sup>



# Hemostasis

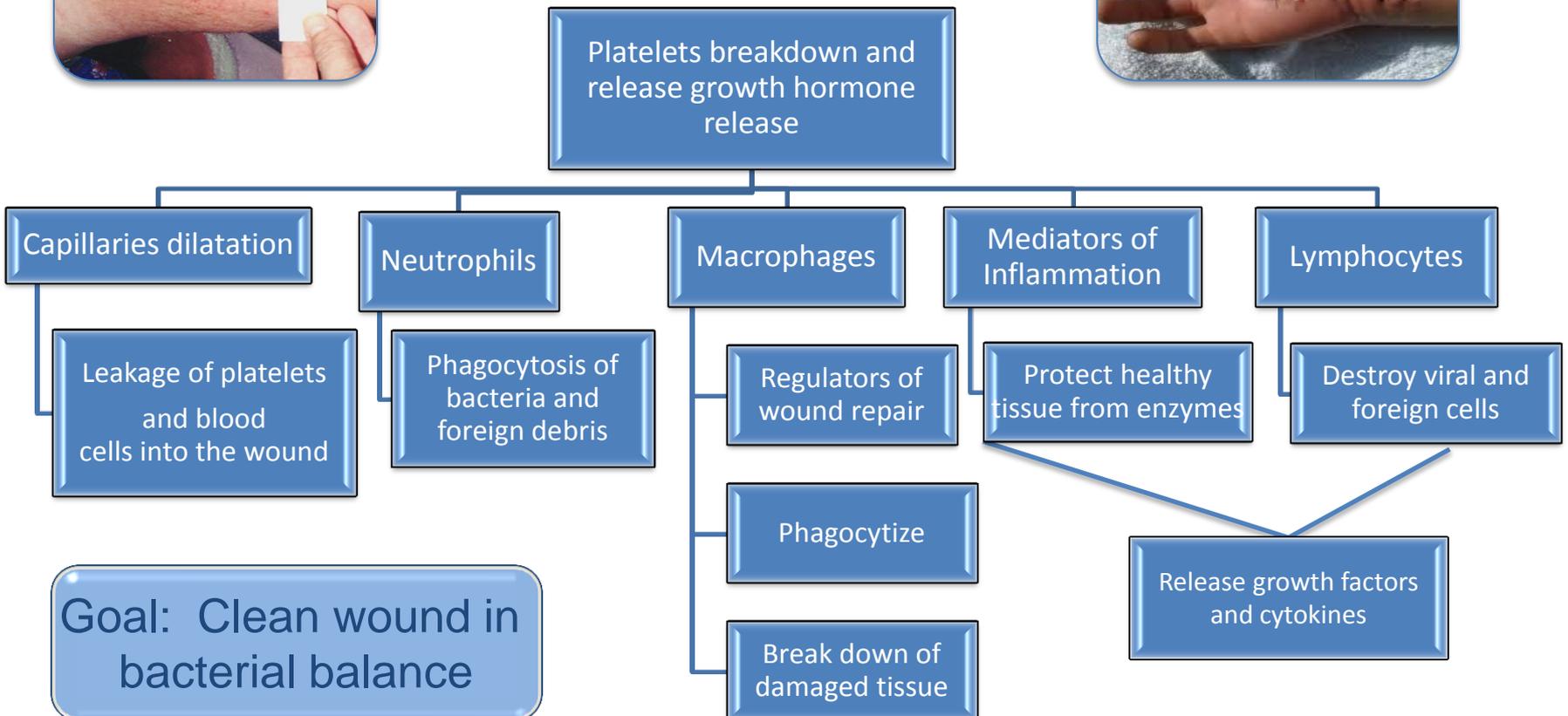


Goal: Restore to “normal” by stopping bleeding

Note: Hemostasis does not occur in chronic wounds or wounds healing by secondary intention.

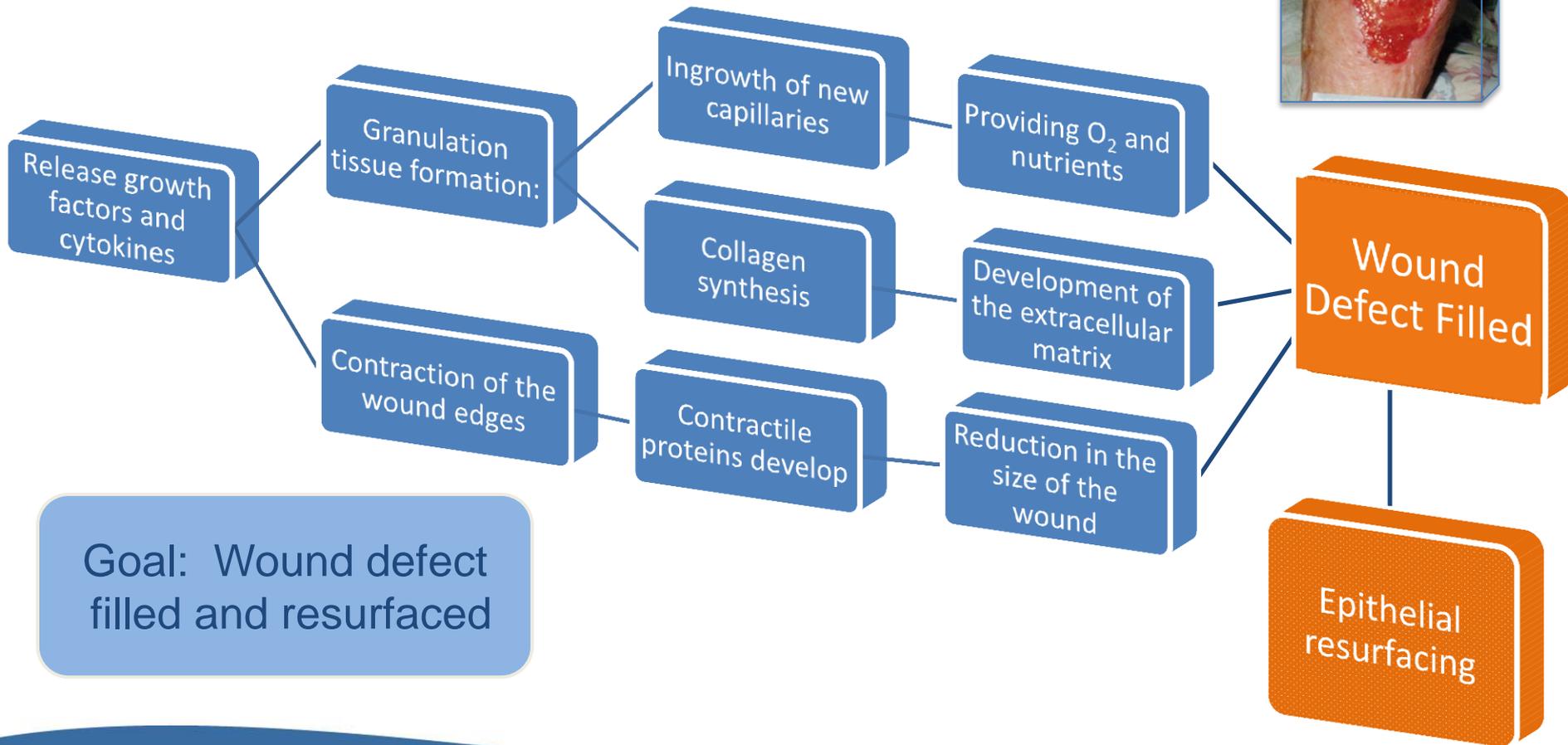
(Doughty, 2007)

# Inflammatory Phase



(Doughty, 2007)

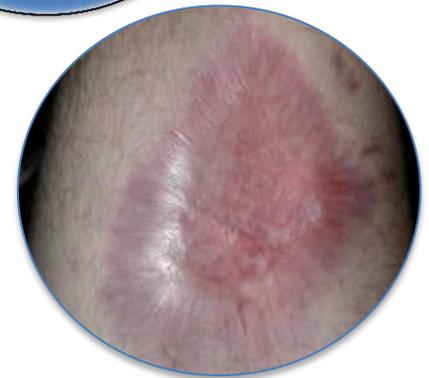
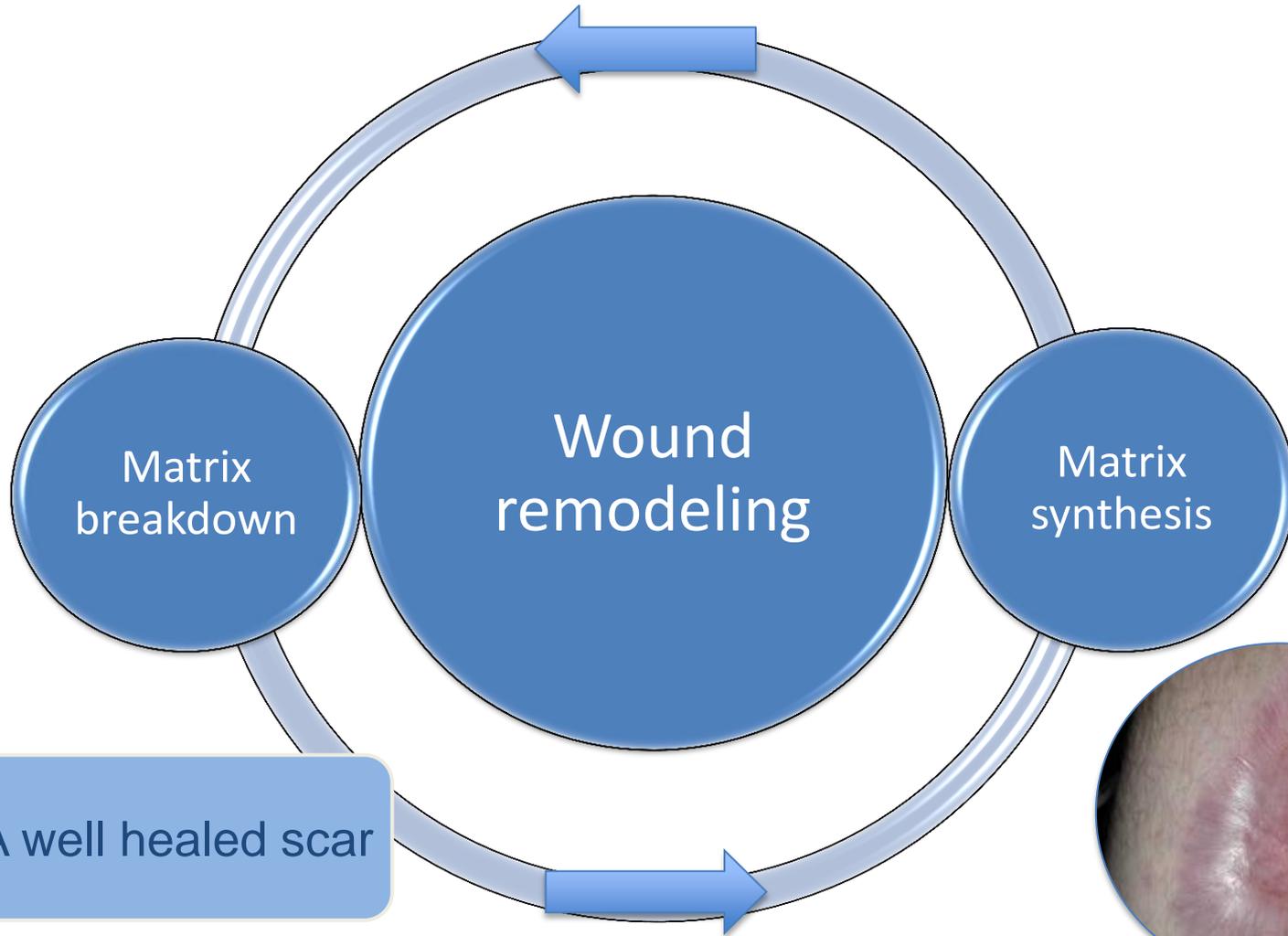
# Proliferative Phase



Goal: Wound defect filled and resurfaced

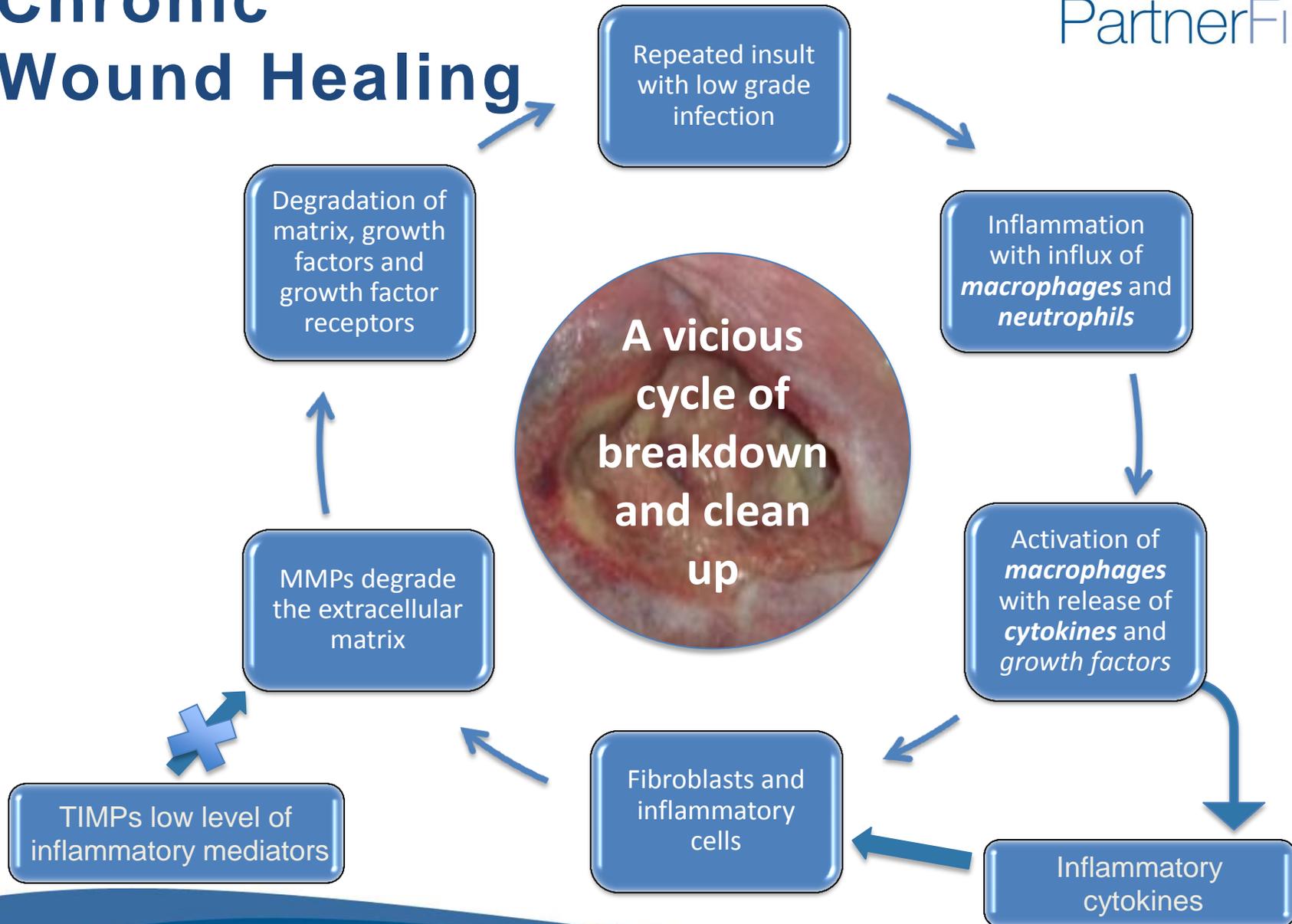
(Doughty, 2007)

# Remodeling Phase

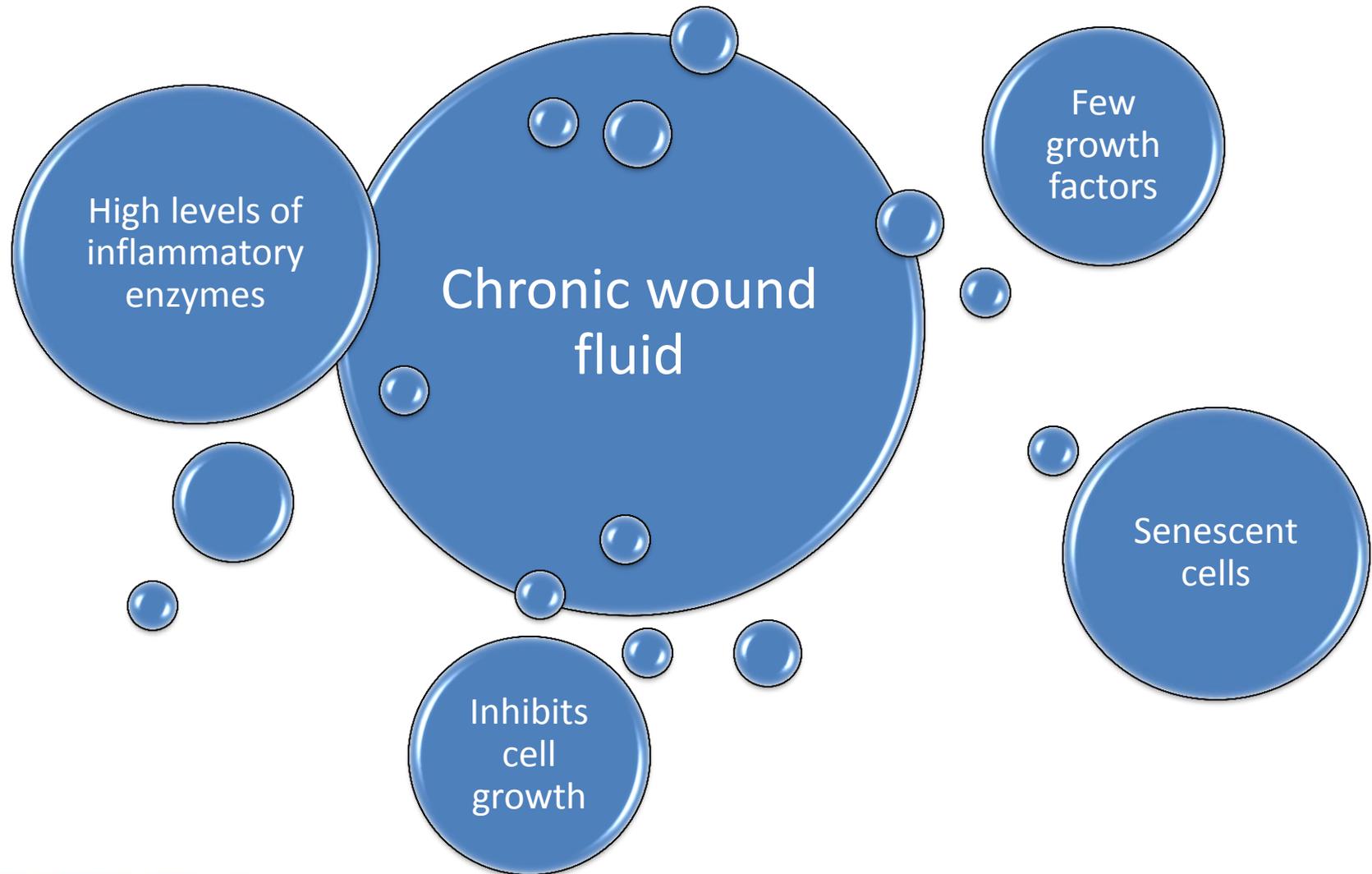


(Doughty 2007)

# Chronic Wound Healing

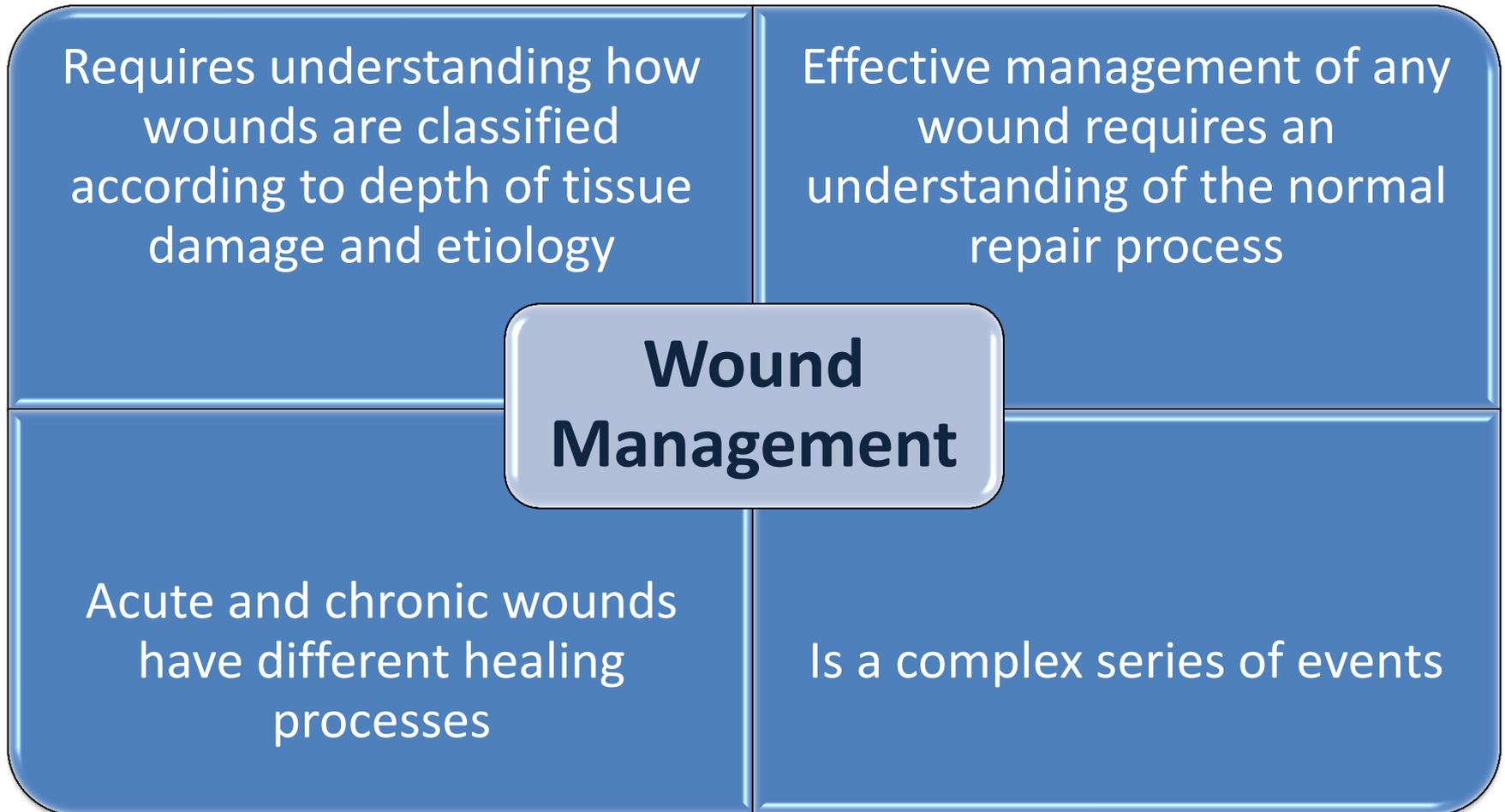


(Doughty, 2007)



(Doughty, 2007)

# Summary



# References

1. *Encyclopædia Britannica Online*, s. v. "wound", accessed September 05, 2012,  
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2. Baranoski S, Ayello EA. Skin: An essential organ. In: Baranoski S, Ayello EA. *Wound Care Essentials, Practice Principles*. Springhouse, Pa: Lippincott Williams & Wilkins; 2004:47-58.
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4. Milne CT, Corbett LQ. Mechanisms of wound healing. In: Milne CT, Corbett LQ, Debuc DL., eds. *Wound , Ostomy, and Continence Nursing Secrets*. Philadelphia, PA: Hanley & Belfus, Inc. 2003:15-20.