Tissue Repair and Wound Healing Cheat Sheet

by happyfeet2020 via cheatography.com/144934/cs/31292/

Three Phases of Wound Healing

1) Inflammatory Phase	Immediate to 2-5 days; hemostasis and inflammation
	Starts with clot formation and the migration of phagocytic wbc in the wound site. First cells to arrive are neutrophils which ingest and remove bacteria and cellular debris. After 24 hours, macrophages come and ingest cellular debris and play a role in production of growth factors for proliferative phase
	Granulation tissue fills any void. Collagen present but oriented vertically. Proliferation of epithelial cells continue leading to thicker epithelial layer
2) Proliferative Phase	2 days to 3 weeks; granulation, contraction, epithelialization
	Focus is to build new tissue to fill the wound space.Proliferation of fibroblasts and vascular endothelial cells to form granulation tissue which fills the wound space.
	Fibroblasts synthesizes and secretes the collage, proteoglycans, and glycoproteins needed for wound healing. They also produce growth factors that induce angiogenesis and endothelial cell proliferation and migration.
	Epithelialization is the final component where epithelial cells at the wound edges proliferate to form a new surface layer. Requires a moist vascular wound.
3) Remodelling Phase	3 weeks to 1 year; collagen formation, increase in tensile strength
	Development of the fibrous scar. There is a decrease in vascularity and continued remodelling of scar tissue by simultaneous synthesis of collagen by fibroblasts and lysis by collagenase enzymes. These two processes lead to the scar becoming reoriented to increase its tensile strength.

*Granulation tissue is formed from the proliferation of fibroblasts and vascular endothelial cells. It contains capillaries, fibroblasts and residual inflammatory cells.
*At Day 4-5 of wound healing, the epidermis resumes normal thickness and begins keratinization process.
*Excessive granulation tissue- when it continues to reproduce itself and forms and extends above the border and prevent proper epithelialization. Therefore, the wound cannot heal.

Types of Wound Healing

Primary Intention Healing	Healing by a non-infected and uninterrupted surgical incision
	Typically held by sutures or other physical support
	Not as much cell death or tissue loss, very predictable healing
Second Intention Healing	Requires removal of necrotic tissue due to increased cell death
	Much slower healing process, leads to scar tissue

Wound Healing in short

Factors Influencing Wound Healing (cont)

Macrophages

-Critical cells because they secrete AGF	-Produce a host of cytokines and growth factors and act as chemoattractants to the other cells needed for tissue repair
-Convert macromolecules to amino acid and sugars necessary for wound healing	-Bring in contractual cells to encourage wound contraction

Vascular Response	hemostasis - Goal is to control bleeding
Inflam-matory Response	Inflammation- Goal is to clean debris/bacteria and prevent infection
Prolif-erative Phase	granulation, epithelialization (the active growth phase). Goal is reconstruction/scar tissue formation
Maturation Phase	reconstructive phase- goal is to remodel

Factors Influencing Wound Healing	
Diabetes	Poor circulation which slows down the blood which makes it harder to deliver nutrients to wound.
	Decreased production of new blood vessels growth and healing hormones
	Glucose in blood and urine is energy source for bacteria (leads to infections)
	Depression of the antioxidant system and humoral immunity (leads to infections)
	Neuropathy. They cannot feel pain so they won't know if a wound is getting worse/infected.
	Elevated glucose levels decrease the functioning of red blood cells carrying nutrients to the injured area and limit the effectiveness of white blood cells fighting infect-ions.
	The inflammation stage frequently lasts too long and the wound can become chronic. In chronic wounds, the balance between producing and degrading collagen is lost and the wounds don't heal.
Nutrition, perfusion, immune status, infection, age	
Wound Enviro-nment	wound type, size, location, type, depth

Wounds	
Definition	A wound is a break in the continuity of soft tissues
	Caused by a chemical, physical or biological insult
Types of Wounds	Incised, lacerated, penetrated, perforating, punctured, gunshot, abrasion, avulsion, bite, ulcerating, granulating, septic/aseptic, closed

Aseptic = clean wound
septic = infected wound

By **happyfeet2020**

cheatography.com/happyfeet2020/

Published 11th April, 2022.
Last updated 13th April, 2022.