







	INJURY	HEMOSTASIS	INFLAMMATORY	PROLIFERATION	EPITHELIZATION	MATURATION
Stages of Wound Healing	<p><i>0-15 Minutes</i></p> <p>Full-thickness wound ± moderate to heavy bleeding; sutures are not required to repair deep structures or close wound.</p> 	<p><i>0-3 Days</i></p> <p>Initial healing and natural wound cleaning starts. Exudate—dead nutrafls and other debris [pus]—forms.</p> 	<p><i>3-24 Days</i></p> <p>Beginning of reconstruction & repair. Granulation tissue fills the wound from the bottom up.</p> 	<p><i>3-24 Days</i></p> <p>Delicate new skin [epithelial cells] migrate from the wound edges and covers granulation tissue.</p> 	<p><i>24+ Days</i></p> <p>The wound is closed but not fully healed.</p> 	
	<ul style="list-style-type: none"> • STOP bleeding • Wound is clean • Bleeding has stopped [blood has clotted and formed a platelet plug] 	<ul style="list-style-type: none"> • Surrounding skin is typically red, warm > hot, and swollen • White/yellow exudate forms • Minimal/moderate exudate 	<ul style="list-style-type: none"> • Red granulation tissue forms in the wound bed • As the wound fills with granulation tissue, pink/white epithelial tissue migrates from the wound edges • Minimal or no exudate 	<ul style="list-style-type: none"> • Pink/white epithelial tissue forms and covers the wound • Very delicate • No exudate • No slough 	<ul style="list-style-type: none"> • The skin is still delicate and there is a risk of reopening of the scar. 	
Treatment Objectives	<ul style="list-style-type: none"> • Clean • Cover & protect • Consider closing <i>shallow</i> full-thickness wounds with wound closure strips • Absorb any remaining blood • Absorb excess exudate • Moist wound healing 	<ul style="list-style-type: none"> • Cover & protect • Manage exudate • Manage bacteria • Aid removal of dead tissue • Moist wound healing 	<ul style="list-style-type: none"> • Cover & protect new tissue • Absorb exudate • Moist wound healing • Remove slough as necessary 	<ul style="list-style-type: none"> • Cover & protect if there is a risk of new damage 	<ul style="list-style-type: none"> • Cover & protect if there is a risk of new damage 	
Recommended Dressing Options	<ul style="list-style-type: none"> • Transparent film dressing ± Vaseline-impregnated gauze • Vaseline-impregnated gauze & flexible medical tape or a self-adhering bandage • Tincture of Benzoin may be used to protect undamaged skin and enhance fixation 	<ul style="list-style-type: none"> • Foam dressing, Vaseline-impregnated gauze, or non-adherent gauze pad & flexible medical tape or transparent film dressing • Vaseline-impregnated gauze, or non-adherent gauze pad & flexible medical tape, transparent film dressing, or a self-adhering bandage • If the wound is at risk of infection: wash wound bed with < 1% povidone iodine • Consider medical honey • Consider using tincture of benzoin to protect undamaged skin and enhance fixation 	<ul style="list-style-type: none"> • If slough is present, use a foam dressing & flexible medical tape or transparent film dressing • Consider Vaseline-impregnated gauze, or non-adherent gauze pad & flexible medical tape or transparent film dressing if there is minimal exudate and no slough. • If the wound is at risk of infection or slough is present: wash wound bed with < 1% povidone iodine • Consider medical honey • Consider using tincture of benzoin to protect undamaged skin and enhance fixation • Evacuate if wound is not healing or becomes infected 	<ul style="list-style-type: none"> • Non-adherent gauze pad ± secondary dry gauze for additional padding & flexible medical tape or transparent film dressing • Consider using tincture of benzoin to protect undamaged skin and enhance fixation 	<ul style="list-style-type: none"> • Non-adherent gauze pad ± secondary dry gauze for additional padding & flexible medical tape or transparent film dressing • Consider using tincture of benzoin to protect undamaged skin and enhance fixation 	
Timing of Dressing Change	<ul style="list-style-type: none"> • Monitor healing daily: Reclean wound & reevaluate. Change dressing if exudate increases after 24 hrs; add foam, non-adherent pad, or antimicrobial as necessary. 	<ul style="list-style-type: none"> • Monitor, reclean and change dressing based on exudate and risk of infection. 	<ul style="list-style-type: none"> • Reclean and change dressing every 5-7 days 	<ul style="list-style-type: none"> • Reevaluate wound when dressing starts to fall off. 	<ul style="list-style-type: none"> • Reevaluate wound and the on-going need for protection when dressing starts to fall off. 	
Wet expedition environment [rain, water sports, etc.]	<ul style="list-style-type: none"> • Transparent film dressing ± foam dressing, Vaseline-impregnated gauze, or non-adherent gauze pad 	<ul style="list-style-type: none"> • Transparent film dressing ± foam dressing, Vaseline-impregnated gauze, or non-adherent gauze pad 	<ul style="list-style-type: none"> • Transparent film dressing + foam dressing 	<ul style="list-style-type: none"> • Transparent film dressing with non-adherent gauze pad ± secondary dry gauze for additional padding 	<ul style="list-style-type: none"> • Transparent film dressing with non-adherent gauze pad ± secondary dry gauze for additional padding 	
High Risk Wound	<p>STOP bleeding</p> <p>Clean within two hours:</p> <ol style="list-style-type: none"> 1. Remove debris 2. Clean skin around the wound with 10% povidone iodine solution 3. Flush with clean water 4. Flush < 1% povidone iodine solution 5. Pack wound with gauze soaked in < 1% povidone iodine solution 6. Cover with Vaseline-impregnated gauze & self-adhering bandage 7. Splint if over a joint 8. Consider evacuation 	<ul style="list-style-type: none"> • Clean & repack 2-4 times/day • Consider using tincture of benzoin to protect undamaged skin and enhance fixation • Evacuate if wound becomes infected 	<ul style="list-style-type: none"> • Wash wound bed with < 1% povidone iodine • Fill wound with medical honey • Cover with a foam dressing & flexible medical tape or transparent film dressing • Consider using tincture of benzoin to protect undamaged skin and enhance fixation • Monitor and reclean as necessary to control exudate • Evacuate if wound is not healing or becomes infected 	<ul style="list-style-type: none"> • Non-adherent gauze pad ± secondary dry gauze for additional padding & flexible medical tape or transparent film dressing • Consider using tincture of benzoin to protect undamaged skin and enhance fixation 	<ul style="list-style-type: none"> • Non-adherent gauze pad ± secondary dry gauze for additional padding & flexible medical tape or transparent film dressing • Consider using tincture of benzoin to protect undamaged skin and enhance fixation 	
Problems that Delay Healing	<ul style="list-style-type: none"> • High risk wound [deep, ragged edges, dirty, contains organic material] 	<ul style="list-style-type: none"> • Scab [eschar] formation • Local infection may lead to a systemic infection; oral Rx antibiotics are typically required • Use of cytotoxic antimicrobials — chlorhexidine or povidone iodine — requires a risk/benefit analysis. Consider reducing the toxicity of a 10% PI solution by diluting it with water to < 1%. 	<ul style="list-style-type: none"> • Continued or increased exudate production • Continued or increased slough production • Biofilm develops and covers wound surface • Use of cytotoxic antimicrobials 	<ul style="list-style-type: none"> • New Damage 	<ul style="list-style-type: none"> • New Damage 	