

## Patients Wound and Healing

Patients are can be very vulnerable to the development of chronic wounds from a variety of reasons in the medical setting that can include elective surgery, burns, arterial ulcers, pressure ulcers, venous ulcers and diabetic foot ulcers. Many times patients have recurring infection in wounds even after months of being treated with antibiotics and antimicrobial dressings. If not treated effectively chronic wounds can lead to health complications such as even the possibility of losing a limb



## Biofilm Problem

A biofilm is a community of microorganisms that surrounds and adheres to living and non living surfaces such as a wound and produce a kind of gel type slime. This biofilm consists of 80% bacteria and creates a protective shield like barrier against outside immune cells and treatments. *“More than 90% of chronic wounds have biofilms and is involved with 60% of infections acquired in a health facility where it cannot be seen by the naked eye.”* This in turn creates a chronic inflammatory response that prolongs wound healing.” Biofilms are impenetrable by antiseptics, antibiotics and antimicrobials. Bacteria can transfer among themselves biological material such as antibiotic resistant genes.”



## Biofilm Development

Planktonic bacteria attach to the surface of the wound forming irreversible attachments within 2 to 4 hours, creating a slimy area called extracellular polymeric substance (EPS). The bacteria remain embedded in the EPS which protects them.

This layer becomes increasingly resistant to antibiotics and antiseptics within 6 to 12 hours. The biofilm quickly matures within two to three days which then releases bacteria into the environment to settle elsewhere.”

If the mature biofilm is not removed mechanically with the correct irrigation pressure it reforms within just 24 hours and will be back in full strength before the next wound dressing change

