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Singapore develops wound infection sensor based on DNA hydrogel

November 22, 2021 | News

Wound infections represent a major clinical challenge in which timely detection is critical for effective interventions



A team of researchers in Singapore has reported a flexible, wireless, and battery-free sensor that provides smartphone-based detection of wound infection using a bacteria-responsive DNA hydrogel.

The engineered DNA hydrogels respond selectively to deoxyribonucleases associated with pathogenic bacteria through tunable dielectric changes, which can be wirelessly detected using near-field communication.

In a mouse acute wound model, the researchers have demonstrated that the wireless sensor can detect physiologically relevant amounts of *Staphylococcus aureus* even before visible manifestation of infection.

These results demonstrate strategies for continuous infection monitoring, which may facilitate improved management of surgical or chronic wounds.

Clinically, the sensor could be embedded in wound dressing to enable patients to monitor their wounds between clinical assessments and seek appropriate intervention in the event that infection is detected. Future work will focus on technological developments to provide additional capabilities for wound care.

In addition to detecting infection, quantitative assessment of infection severity could be valuable in helping to determine the appropriate treatment at the point of care.