



“Over the decade I have used MicroGenDX NGS

I have saved the lives of patients with unknown fungal infections, explained non-healing wounds, refined the diagnosis of chronic osteomyelitis, and determined when an infection was not yet controlled.”

— Caroline Fife, MD, FFAFP, CWS
www.carolinefifemd.com



Next-gen DNA sequencing for wounds | Case study by Dr. Caroline Fife

NGS finds fungus that culture missed to resolve life-threatening wound

A young woman with type I diabetes who had lost her kidney transplant a year previously was hospitalized twice over six months with sepsis — the source of which remained a mystery. A large transplant surgery abdominal wound had been open for months, as had a heel pressure sore complicated by peripheral arterial disease, but both improved with better nutrition and regular wound care.

The patient then presented with sudden left leg pain, swelling, and the rapidly-ascending erythema characteristic of necrotizing infection.

Fasciotomies of her lower leg were performed, and her left medial thigh was opened to drain what appeared to be an abscess. The muscle was perfectly pink and only clear, odorless fluid was found. This fluid then showed no growth on culture. Although wounds improved initially with NPWT, the patient didn't look or feel better, and within a week the leg wound had grey/black tissue that appeared to be necrotic.

The same fluid was sent to MicroGenDX for DNA analysis (full report on next page), **which detected *Rhizopus* — one of several fungal species that cause mucormycosis**, a serious but rare fungal infection with a mortality rate of 50%. Early detection and treatment are critical for an optimal outcome, and the transplant team was notified immediately.



Young dialysis patient with mysterious sepsis developed a leg ulcer. Fluid drained from abscess was sent to MicroGenDX.



A rare but deadly mucormycosis fungal infection caused by *Rhizopus* was detected by MicroGenDX NGS



Mucormycosis fungal infection caused by Rhizopus detected by MicroGenDX NGS

RESISTANCE GENES DETECTED			ANTIMICROBIALS FOR CONSIDERATION														
None			Gram Stain	Respiration	Aminoglycosides+ Aminopenicillins e.g. Ampicillin/Gentamicin	Ampicillin/Amoxicillin	Extended spectrum penicillins/Beta-lactamase inhibitors e.g. Augmentin	Fluoroquinolones e.g. Levofloxacin	Fosfomycin	Glycopeptides e.g. Vancomycin	Linezolid (Zyvox)	Lipopeptides e.g. Cubicin	Nitrofurantoin e.g. Macrobid	Penicillins e.g. Penicillin	Polynes e.g. Amphotericin B	Triazoles e.g. Diflucan	Triazoles+Echinocandins e.g. Diflucan/Mycamine
COMPLETE (NGS & PCR RESULTS)	DNA copies (N/A)	NGS %															
BACTERIAL LOAD	Low	%															
Enterococcus faecalis	NGS	94%	+	FAn	√	√	√	√	√	√	√	√	√	√			
FUNGI DETECTED																	
Rhizopus oryzae		93%	N												√	√	
Aspergillus flavus		5%	N	Unk											√	√	√

MicroGenDX is ideal for diagnosis of recalcitrant wounds

- 24–48 hour turnaround time to identify 8 common pathogens and 17 antimicrobial resistance genes using qPCR
- 3.5 days turnaround for complete NGS identification of pathogens to the species level, referencing a curated database of over 50,000 microbes
- More than 500,000 qPCR+NGS samples processed to date
- The most (35+) published studies of any molecular lab
- 11 years CAP proficiency testing with results showing 99.2% accuracy¹
- Covered by insurance

Add qPCR+NGS to your diagnostic lineup

MicroGenDX qPCR+NGS offers a more complete understanding of wound microbiota, leading to informed treatment strategies and better patient outcomes. In this instance, NGS diagnostics helped the transplant team save a limb — and quite possibly the patient’s life.

1. College of American Pathology proficiency results, 2009–2019

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