


# When the fungus is among us: does colonization portend later invasive fungal infection?

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Sepsis remains the primary threat to life for critically ill burn patients surviving initial resuscitation. Open wounds, invasive devices, and immunosuppression contribute frequent infections requiring topical and systemic treatment. Repeated use of antibacterial agents has given rise to increasing rates of fungal colonization and invasive infection with associated high morbidity and mortality.<sup>1</sup> Multiple species have been implicated, with variable sensitivity to the available pharmacologic armamentarium. Culture data and histopathology contribute to optimal diagnostic approaches, although correlation between these modalities appears inconsistent.<sup>2</sup>

Recent International Society for Burn Injuries guidelines support superficial wound swab culturing if wound appearance is concerning for infection.<sup>3</sup> No guidance is provided, however, regarding subsequent therapy unless patients are found to be septic (in which case consideration of empiric antifungal therapy is recommended for those with significant risk factors). Interestingly, documented fungal colonization is counted among the listed risk factors for sepsis.

With their retrospective study of burn patients in the intensive care unit (ICU), Gur and colleagues identify significantly higher rates of invasive fungal infection, candidemia, and higher in-ICU mortality in those with proven colonization.<sup>4</sup> The authors themselves acknowledge that while colonization may be an early marker for subsequent infection, it is unclear from this work whether pre-emptive treatment is warranted. This is consistent with previous literature.<sup>5 6</sup> However, as treatment of invasive infection consists of aggressive and often debilitating debridement along with topical and systemic antifungal agents, linkage between colonization and subsequent invasive disease needs further exploration.

A high index of clinical suspicion for fungal infection coupled with expedient and careful physical examination are diagnostic cornerstones. Yet, translation of experienced visual wound inspection into reproducible data-driven practice remains challenging. In this era of rigid infection control practices and cost-conscious care, large-scale culturing practices must be justified. Determination of useful biomarkers is highly desirable to aid in earlier detection, but clear clinical correlation remains elusive.<sup>7</sup>

We are intrigued by this work and find that it raises many questions regarding applicability to our practice as a community of burn specialists. Transparency regarding institutional protocols aids the conversation and informs generalizability. Do we globally need to increase surveillance? Should we be prescreening patients at admission?

What would surveillance data do to a field already stressed by shortages and discontinuation of traditionally available topical agents? Further prospective, multicenter study must firmly establish the risk engendered by colonization and establish appropriate treatment guidelines.

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