

Kieren Marr, MD

Johns Hopkins University School of Medicine

Two current clinical needs for diagnostic tests for invasive aspergillosis (IA) involve: 1. Detection of infection early, with the goal of employing early antifungal therapies to halt progression of disease; and 2. Aiding culture-based methods for diagnosis in the setting of already established radiographic abnormalities. A primary limitation for establishing early screening strategies for this infection is the fact that most infections now develop in patients who have been discharged from the hospital. Hence, development of "point of care" (POC) diagnostics to allow for screening in outpatients would be most beneficial. With this in mind, our preliminary studies have shown that the polysaccharide galactomannan is excreted in urine, with urine based testing using standard enzyme immunoassays providing equivalent, or better performance compared to serum based testing. We have also developed novel monoclonal antibodies that recognize galactofuronose residues of *Aspergillus* galactomannan. In preliminary studies we have successfully demonstrated proof-of-concept that a lateral flow device can detect *Aspergillus* galactomannan. We are currently optimizing this one-step POC testing device for detection of *Aspergillus* antigens, with plans to test in animal and human urine samples. This project uses novel technologies to address the most pressing problem surrounding IFI diagnostics, in developing tests that can be employed for frequent screening in the outpatient setting.