Society for Applied Microbiology

Point-of-care diagnostic testing for infectious diseases in low-resource settings

Thursday 7 June 2018

Room B308–B309

ASM Microbe | Georgia World Congress Center | Atlanta
We welcome you to join us as we explore point-of-care (POC) diagnostic testing for infectious diseases in low-resource settings

About the Society for Applied Microbiology (SfAM)

SfAM is the oldest microbiology society in the UK, serving microbiologists around the world. As the voice of applied microbiology, SfAM works to advance, for the benefit of the public, the science of microbiology in its application to the environment, human and animal health, agriculture and industry.

We work in collaboration with other organizations to ensure evidence-based policymaking and, in partnership with Wiley Blackwell, publish five internationally acclaimed journals.

Point-of-care diagnostic testing

POC diagnostic testing is essential for disease diagnosis, management, control and surveillance. POC testing can improve access to healthcare especially where infrastructure is weak and access to high quality and timely medical care is a challenge. Improving the accessibility and efficiency of POC diagnostics in resource-limited settings will, we hope, be the route to improved healthcare outcomes. The aim of this meeting is to address the role of POC diagnostics for infectious diseases in low-resource settings and consider the challenges related to the implementation of POC tests.
# Programme

## Point-of-care diagnostic testing for infectious diseases in low-resource settings

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<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30 – 11:00</td>
<td>Registration and refreshments</td>
</tr>
<tr>
<td>11.00 – 11.10</td>
<td>Introduction</td>
</tr>
<tr>
<td>11.10 – 11.45</td>
<td>Integration of point-of-care systems in overarching laboratory services provided in low- and middle-income countries</td>
</tr>
</tbody>
</table>

*Daniel Orozco*  
Director of Laboratory Service  
Partners in Health, Boston, Massachusetts, USA
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
</table>
| 11:45 – 12.20 | Towards mobile point-of-care molecular diagnostics  
*Changchun Liu*  
Research Associate Professor  
University of Pennsylvania, Philadelphia, USA |
| 12.20 – 13:30 | Networking lunch                                                        |
| 13.30 – 14.05 | Assuring quality point-of-care testing in low- and middle-income countries  
*Anne Whalen*  
Director of Clinical and Regulatory Assurance  
T2 Biosystems, Lexington, Massachusetts, USA |
| 14.05 – 14.40 | Point-of-care device specifications and the need for pathogen detection in emergencies, epidemics and disasters  
*Gerald J. Kost*  
Director  
Point-of-Care Testing Center for Teaching and Research™ (POCT•CTR) School of Medicine, UC Davis, California, USA |
| 14.40 – 15.15 | Point-of-need testing for enteric infections in resource-limited settings and remote settings  
*David Goldfarb*  
Clinical Associate Professor  
Department of Pathology and Laboratory Medicine, British Columbia Children’s Hospital and University of British Columbia, Vancouver, Canada |
| 15:15 | Close of meeting |
11:10 – 11:45
Integration of point-of-care systems in overarching laboratory services provided in low- and middle-income countries

Daniel Orozco
Director of Laboratory Service
Partners in Health, Boston, Massachusetts, USA

A well-functioning laboratory system constitutes the backbone of a public health system and is critical to the prevention, diagnosis, treatment and ongoing surveillance of disease.

Moving beyond providing only ‘basic’ services in healthcare to identifying and striving to meet essential patient needs allows for more effective and comprehensive responses to local burdens of disease.

Staff, stuff, space and systems are central to the equitable delivery of high quality diagnostic services and clinical care and the integration of point-of-care systems needs to take this into consideration to strengthen diagnostics capacity in settings of poverty, with measurable impact.

11:45 – 12:20
Towards mobile point-of-care molecular diagnostics

Changchun Liu
Research Associate Professor
University of Pennsylvania, Philadelphia, USA

In the context of precision medicine, precision diagnostics are crucial to achieving rapid and accurate diagnostics, providing the patient with the best treatment strategy. Today, cell phone technology has a growing and pervasive influence on our daily life. Especially, with the rapid development of microfluidics technology, the incorporation of microfluidics technology into cell phone technology will create a new paradigm shift towards affordable, mobile, personalized health monitoring. In this talk, I will introduce our superhydrophobic plasma separator, molecular diagnostic chip, nuclemeter technology and smart connected cup (SCC), and their applications in disease diagnostics (i.e. HIV, ZIKV, HPV) at the point of care.
13:30 – 14:05
Assuring quality point-of-care in low- and middle-income countries
Anne Whalen
Director of Clinical and Regulatory Assurance
T2 Biosystems, Lexington, Massachusetts, USA

US hospitals that admitted Ebola virus disease (EVD) patients mitigated risk by using point-of-care testing (POCT) for critical care support in isolation units. Success unequivocally proved the need for POCT. Despite technical progress since the 2014–16 epidemic, molecular diagnostics fall short of handheld solutions, but nonetheless have been used at or near the site of care for diagnosis, triage, de-risking, monitoring, tracking and stopping new outbreaks. We will review technical strengths, shortcomings and specifications.

Epidemics incur huge economic penalties. POCT helps avoid these through early detection and accurate diagnosis, while preventing needless suffering, unnecessary human losses and decimation of culture. Impactful medical outcomes plus significant return on investment warrant anticipatory planning, training, funding and development of POC Coordinators in limited-resource countries. These are the basic needs abroad.

POC Coordinators oversee molecular and POC rapid response diagnostics. To anticipate future threats, limited-resource countries should generate national policies and guidelines with customized modules so that POC molecular diagnosis is financially supported, performed by these experts and cleverly adapted to cultural expectations. We will review recent GAO reports and critiques of CDC and FDA actions regarding pathogen detection.

14:05 – 14:40
Point-of-care device specifications and the need for pathogen detection in emergencies, epidemics and disasters
Gerald J. Kost
Director
Point-of-Care Testing Center for Teaching and Research™ (POCT•CTR)
School of Medicine, UC Davis, California, USA

Speakers’ abstracts
The US is not prepared for highly infectious diseases, whether EVD, Zika virus or new threats – 2018 funding cutbacks do not help. Individual community preparedness and resilience are lacking. Readiness must be established, not via mechanisms and diagnostic testing distant but, instead, at points of need worldwide. We will see how public health practitioners can help all nations become prepared.

14:40 – 15:15

Point-of-need testing for enteric infections in resource-limited settings and remote settings

David Goldfarb
Clinical Associate Professor
Department of Pathology and Laboratory Medicine, British Columbia Children’s Hospital and University of British Columbia, Vancouver, Canada

Enteric infections are a leading cause of global morbidity and mortality, particularly among young children. Although rapid diagnostics for enteric infections in resource-limited settings have traditionally been deemed unnecessary and/or unattainable, recent large-scale molecular diagnostic studies have revealed that a large and previously under-recognized proportion of these infections are due to treatable pathogens such as *Shigella* spp. and that detection of these pathogens is associated with increased risk of mortality. Advances in sample collection and detection technologies have also made the widespread implementation of enteric diagnostics much more realistic. This presentation will review this diagnostic landscape as well as efforts to implement and evaluate enteric infection diagnostics in these settings.
Point-of-care diagnostic testing

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Point-of-care diagnostic testing

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