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Paperfluidic Diagnostics to Improve Healthcare Delivery

Abstract: Point of Care (POC) testing and/or monitoring can drive down costs by eliminating return appointments, enabling informed treatment decisions and empowering patients to seek care earlier in the course of disease. The POC can be a home, primary care office, clinic, or other location, provided that the technology enables task shifting from a more to a less sophisticated setting. Examples of tools and technologies that could achieve these goals include mobile and online health solutions, wearable devices for diagnosis and monitoring of diseases, portable diagnostic and screening devices, management and analysis methods for large data sets, methods to protect patient privacy, and studies of the interplay between clinical decision-making and test development.

In the past 5 years we have watched the coming of age of young people who view health information differently than their parents and grandparents. Young adults are more likely to use retail health clinics, are more likely to act on health information they get from the internet, are more likely to delay or avoid medical care due to concerns over cost and are more likely to use wearable health sensors in conjunction to with online apps. Younger adults are primed to seek healthcare in minute clinics and to trust POC tests they purchase at the pharmacy and take and interpret at home. An on-demand healthcare market is emerging. POC tests and associated technologies are poised to fill this demand.

In the Klapperich Laboratory, we develop new technologies to fill these needs and emerging demands in the healthcare marketplace. We have largely focused our efforts on sexually transmitted infections (STI), including HIV. In this talk, I will discuss current work in the lab on tests to diagnose STIs, screen for cervical cancer and monitor patients on pre-exposure prophylaxis for HIV (PrEP). I will also invite the audience to think about how POC tests integrate into the current healthcare landscape. Questions include how can we increase access so that more people will benefit from these new treatments and medicines? How can we improve healthcare delivery to impact the most patients? What actions can we take in early development to ensure that these new technologies do not worsen health disparities?