**Mobile telehealth devices have:**
- Transformed the delivery of healthcare by significantly impacting and extending service to underserved areas, improving health outcomes and medical system efficiency (West, 2012); and
- Assisted community health workers in improving the quality of care provided, efficiency of services, and capacity for program monitoring (Braun, Catalani, Wimbush, Israelski, 2013); and
- With increased attention in prevention and management of chronic diseases such as diabetes, handheld glucose monitoring devices currently offer real-time electronic results, reduced pain, and increased accuracy (Clarke & Foster, 2012; Scholtes-Timmerman et al., 2014; NIH Factsheet, 2013).

**Background**

**NUNMC-IPCP:** A nurse-managed person-centered interprofessional (IP) healthcare ambulatory clinic centrally located in the Watts-Willbrook community, offers direct inexpensive on-site and home point of care (POC) health services to its underserved residents.

**NUNMC-IPCP Model:** An 8-week student-centered practicum; engages cohorts of faculty-mentored nursing and health professional students (undergrad/grad; Capstone/Internship) in collaboration with the IP healthcare team; students gain IPCP skills and competencies.

**IP teams comprising the NUNMC assess health outcomes associated with project initiatives in collaboration with community-based organizations as well as clinical affiliates of National University.**

**The NUNMC-IPCP telehealth POC model supports rapid diagnosis in remote non-clinical settings versus traditional approaches; can potentiate medical-cost savings; and bridge access disparity and inequity gaps in underserved communities like Watts-Willbrook.**

**Supporting the Watts-Willbrook initiative:**
- Tranformed the delivery of healthcare by significantly impacting and extending service to underserved areas, improving health outcomes and medical system efficiency (West, 2012); and
- Assisted community health workers in improving the quality of care provided, efficiency of services, and capacity for program monitoring (Braun, Catalani, Wimbush, Israelski, 2013); and
- With increased attention in prevention and management of chronic diseases such as diabetes, handheld glucose monitoring devices currently offer real-time electronic results, reduced pain, and increased accuracy (Clarke & Foster, 2012; Scholtes-Timmerman et al., 2014; NIH Factsheet, 2013).

**Background**

**NUNMC-IPCP:**
- A nurse-managed person-centered interprofessional (IP) healthcare ambulatory clinic centrally located in the Watts-Willbrook community, offers direct inexpensive on-site and home point of care (POC) health services to its underserved residents.
- An 8-week student-centered practicum; engages cohorts of faculty-mentored nursing and health professional students (undergrad/grad; Capstone/Internship) in collaboration with the IP healthcare team; students gain IPCP skills and competencies.
- IP teams comprising the NUNMC assess health outcomes associated with project initiatives in collaboration with community-based organizations as well as clinical affiliates of National University.
- The NUNMC-IPCP telehealth POC model supports rapid diagnosis in remote non-clinical settings versus traditional approaches; can potentiate medical-cost savings; and bridge access disparity and inequity gaps in underserved communities like Watts-Willbrook.

**Objectives**

- To perform a preliminary cost benefit analysis (CBA) of utilizing the iAssay System blood glucose- and cholesterol-testing device that frames its POC serviceability for home health providers versus conventional testing at medical facilities (labs and clinics).
- To develop a research feasibility study protocol, based on CBA results, that can assess the efficacy of the iAssay device in POC screening home health diabetic patients by in vitro diagnostics and determine its efficacy at monitoring blood glucose and cholesterol versus a device in current use.

**Methods**

We developed a CBA to determine the monetary value associated with structuring a feasibility study of the iAssay System at POC testing of 200 adult diabetic patients’ finger-prick blood samples in non-clinical settings compared to conventional methods of testing in commercial lab or clinical settings, through a literature review and interviews with the NUNMC Program Director (A. Finney) and an iAssay inventor/executive about mobile blood analysis technology and health care practices, as well as discussions regarding program budget costs in clinical versus non-clinical settings. Factors considered in developing the CBA included measuring NUNMC staffing and program costs, direct and indirect costs associated with hospital and clinical lab visits and testing, and related costs associated with using handheld devices. Benefits, defined as cost savings in contrast to project expenditures, were estimated and the ratio of benefits to costs were calculated.

**Results and Discussion**

The CBA estimated costs associated with assessing the feasibility of implementing the wireless handheld iAssay System for rapid POC testing and diagnosis of blood glucose and cholesterol from finger-prick blood samples of 200 adults in the non-clinical setting of the Watts-Willbrook community. Its proposed impact on reduced costs for lab tests, clinical visits, and treatment was also considered. The total costs for staffing, direct, indirect and overhead amounted to $302,486 (Table 1). The potential medical dollars saved (total benefits) associated with utilization of the iAssay device due to avoiding emergency room (ER) use/visits, reduced return visits and lab fees amount to a savings of $367,884 for one of 30 sites projected (Table 2). The net benefit for 30 telehealth testing sites estimated to be $10,734,334 ($11,036,820 – 302,486) (Table 3); and thus the benefit/costs ratio is $11,036,820/302,486 or 36.1.

**Conclusion**

Potential utility of the iAssay for non-clinical POC telehealth testing in remote underserved home telehealth settings may offer health care benefits including avoiding costs of routine clinical lab testing and reduced ER and clinic (re)visits, at a fraction of the cost. This CBA supports the pending NUNMC-iAssay feasibility study.

** Acknowledgments**

The authors are thankful to the NUNMC Program director and staff, and to Dr. Ricardo Parker, Patricia Humbles and Gloria McNeal for their mentorship and guided our student team the opportunity to participate in the preliminary development of this NUNMC Watts initiative.

This project is supported by the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) under grant number UD7HP28533, NEPQR-IPCP for $1,492,759, and is supplemented with 33% from non-governmental sources, including in-kind support. This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government. References available upon request.