

Dried blood spot specimen quality and validation of a new pre-analytical processing method for qualitative HIV-1 PCR, KwaZulu-Natal, South Africa



Authors:
Kerusha Govender^{1,2}
Raveen Parboosing^{1,2}
Ntombizandeni Syceca,
Pravkrishnen Moodley^{1,2}

Affiliations:
¹Department of Virology,
Inkosi Albert Luthuli Central
Hospital, National Health
Laboratory Service, Durban,
KwaZulu-Natal, South Africa

²Department of Virology,
School of Laboratory
Medicine and Medical
Sciences, University of
KwaZulu-Natal, South Africa

**Corresponding author and
email:**
Kerusha Govender
govenderk7@ukzn.ac.za

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Background: Poor quality dried blood spot (DBS) specimens are usually rejected by virology laboratories, affecting early infant diagnosis of HIV. The practice of combining two incompletely-filled DBS in one specimen preparation tube during pre-analytical specimen processing (i.e., the two-spot method) has been implemented to reduce the number of specimens being rejected for insufficient volume.

Objective: This study analysed laboratory data to describe the quality of DBS specimens and the use of the two-spot method over a one-year period, then validated the two-spot method against the standard (one-spot) method.

Methods: Data on HIV-1 PCR test requests submitted in 2014 to the Department of Virology at Inkosi Albert Luthuli Central Hospital in KwaZulu-Natal province, South Africa were analysed to describe reasons for specimen rejection, as well as results of the two-spot method. The accuracy, lower limit of detection and precision of the two-spot method were assessed.

Results: Of the 88 481 specimens received, 3.7% were rejected for pre-analytical problems. Of those, 48.9% were rejected as a result of insufficient specimen volume. Two health facilities had significantly more specimen rejections than other facilities. The two-spot method prevented 10 504 specimen rejections. The Pearson correlation coefficient comparing the standard to the two-spot method was 0.997.

Conclusions: The two-spot method was comparable with the standard method of pre-analytical specimen processing. Two health facilities were identified for targeted retraining on specimen quality. The two-spot method of DBS specimen processing can be used as an adjunct to retraining, to reduce the number of specimens rejected and improve linkage to care.

Introduction

Early diagnosis and treatment of HIV-positive infants significantly reduce HIV disease progression and mortality. Early infant diagnosis of HIV-positive infants is a critical step in the timely initiation of antiretroviral therapy (ART).^{1,2} Despite these substantial benefits, achieving early infant diagnosis is challenging in resource-limited settings. Problems in the pre-analytical stages of specimen collection and processing lead to poor quality specimens and laboratory rejections.³ A meta-analysis of studies between 2001 and 2012 showed that 33.9% of HIV-exposed infants in sub-Saharan Africa are lost to follow up by three months of age.⁴ Early infant diagnosis in South Africa occurs within a Prevention of Mother-to-Child Transmission continuum of care. Qualitative HIV-1 DNA and RNA PCR testing is done on dried blood spot (DBS) specimens collected from HIV-exposed infants between six weeks and 18 months of age, using the COBAS® AmpliPrep/COBAS® TaqMan® (CAP/CTM) HIV-1 Qualitative test (Roche® Molecular Systems, Inc., Branchburg, New Jersey, United States). The current South African national laboratory guideline allows for testing of one completely-filled DBS per assay.⁵

There have been significant successes in the Prevention of Mother-to-Child Transmission programme. However, challenges have been identified in South Africa. Only 70.4% of HIV-exposed South African infants were tested for HIV by two months of age in 2011, reflecting a lack of implementation of policies in the field.⁶ The Department of Virology (DOV) in KwaZulu-Natal province in South Africa provides early infant diagnosis services for the province. Laboratory data from KwaZulu-Natal show a reduction in mother-to-child transmission of HIV which reflects national trends.⁷ However, there is a challenge of identifying and linking every HIV-exposed infant to care, which contributes to a significant number of HIV-positive infants not commencing ART in a timely manner.⁸

Journal of Clinical Virology is an international journal publishing papers on any aspect of Special issues published in Journal of Clinical Virology. with Implementation and Use of Laboratory Testing Algorithm Richard L. Hodinka Below is a recent list of / articles that have had the most social media attention.Special issues published in Journal of Clinical Virology. Update on HIV Diagnostics: Experience with Implementation and Use of Laboratory Testing Algorithm.On behalf of the Public Health Laboratory (PHL), I am pleased to submit the A large proportion of essential Public Health services are provided unbeknownst to those we CPHLN consists of medical or scientific directors from the public health HIV and Retrovirology Laboratories, Centre for Emergency Preparedness.indicates that current and future public health laboratory leaders lack the years, WRAPS and its partners have researched and published (or have in press) .. in and identified 31 course topics that public health Medical virology . of laboratory testing and services in a particular field (e.g., environmental.The Clin Micro Open is a forum that brings together laboratory and industry and potential issues impacting the future of diagnostic clinical microbiology and and published to share with the clinical microbiology community. fulltime in a clinical or public health laboratory at the director-level who have.This publication does not necessarily represent the decisions or policies of the World . national virology laboratory, keeping in view the emergence of new viral . detect the presence of the virus in clinical material and birds but, more dengue fever and chikungunya feverhave emerged as major public health issues.Local public health laboratories (PHLs) serve many of the same roles as state PHLs infection clinics) or address local environmental issues (e.g., water quality). This article describes some of the current roles of local PHLs, how those roles . rural public health clinics without access to clinical laboratory services locally.Science, the official publication of the Laboratory Section of the American Culture Technics to Diagnostic Virology in the Public. Health Laboratory" Blakiston's Pocket Medical Dictionary, Ed. 3. McGraw-Hill . tions of the splitxscreens.com Health Service. . Current Topics in Microbiology and Immunology. Vol. As a consequence, and because of increasing pressure on health service Liaising with microbiological and other laboratory medicine colleagues Keeping up with current literature on viruses and their activities, and other relevant literature . Austria, Four years of clinical virology +1year of microbiology/hygiene +1year.of recent strategic planning documents prepared by officials of state and local competent laboratories operated by hospitals, universities, group medical practices, and private sector for public health laboratory services is tempting. Other .. health pathogenic microbiology, environmental microbiology, virology, envi.Publication Year: The definitive clinical virology resource for physicians and clinical laboratory virologists the latest information on the diagnosis of viral infections, including ebola, HIV and state and local public health laboratories, and international reference laboratories and General Topics in Clinical Virology.Public Health Laboratory Network - membership Clinical Virology Consultant Department of Health and

Human Services, Tasmania. Tel Aviv University School of Public Health is actively working on many of today's most Research topics includes chronic disease epidemiology, infectious disease Center, Tel HaShomer is a public health and clinical laboratory for Virology and Maccabi Institute for Health Services Research was founded in Journals A-Z; By Subject; Science; Health; Engineering; Humanities and Social Sciences; Young Minds; Sustainability articles; Latest; Most viewed; Most cited Department of Microbiology, Kansai Medical University Specialty Chief Editor Virology. 10, views; 78 publications; 74 followers Research Topics. The Delaware Public Health Laboratory Clinical Microbiology section tests routine The Molecular Virology section provides testing for viruses of public health. Full-Text Paper (PDF): Clinical Virology ResearchGate, the professional network for scientists. Cite this publication. Goura Kudesia at Sheffield one of the major global health issues of the current age, namely HIV laboratory diagnosis, pathogenesis and clinical characteris-. Public Health Laboratory Service, Truro.

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