



International meeting on persistence of Ebola virus RNA in semen and implications for public health

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Acronyms

AD-MA	Aggregate data meta-analysis
B2M	Beta2-microglobulin
BNi	Bernhard Nocht Institute for Tropical Medicine
BSL4	Biosafety level 4
CPES	Comprehensive Programme of Services for Ebola virus disease Survivors
Ct	Cycle threshold
EVD	Ebola virus disease
ELWA	Eternal Love Winning Africa
ETU / ETC	Ebola treatment unit / Ebola Treatment Center
HIV	Human immunodeficiency virus
HPV	Human papillomavirus
INSERM	Institut national de la santé et de la recherche médicale
IPD-MA	Individual participant data meta-analysis
PFU	Plaque forming unit
RNA	Ribonucleic acid
RT-PCR	Reverse transcription polymerase chain reaction
SCID	Severe combined immunodeficiency
TB	Tuberculosis
TCID	Tissue culture infective dose
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNC	University of North Carolina at Chapel Hill
US CDC	United States Centers for Disease Control and Prevention
WHO	World Health Organization

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Introduction

Background

The 2014–2016 Ebola virus disease (EVD) outbreak in West Africa was the largest and most complex Ebola outbreak ever seen since the virus was first discovered in 1976. The outbreak caused more cases and deaths than all others combined, and has also generated a survivor community of unprecedented size. Little is known about the long-term health impacts of Ebola virus infection on survivors, as well as the persistence of Ebola virus in the body and corresponding public health consequences.

Before 2014, Ebola virus had been detected in a limited number of semen samples from male survivors up to 101 days by PCR detection of viral RNA. Though occasionally suspected after prior outbreaks, sexual transmission of Ebola virus had not been clearly documented. At the beginning of the West Africa outbreak, WHO interim advice recommended that survivors abstain from sexual intercourse or use condoms for at least three months after recovery from Ebola virus disease to prevent sexual transmission. These recommendations were revised during the outbreak as longer-term detection of Ebola virus RNA in semen and one case of suspected sexual transmission from a survivor was described.

The evidence base has rapidly evolved over the past three years. Since 2015, ongoing survivor cohort studies in the three most affected countries (Guinea, Liberia and Sierra Leone) have been investigating the persistence and consequence of Ebola virus RNA in semen and other body fluids. In parallel, national semen testing programmes have been established in each of the affected countries to provide semen testing and counselling as part of a broader package of care to survivors. These survivor cohort studies and national semen testing programmes have data and findings that are of interest for the development of public health recommendations.

Objectives

A better understanding of how long the virus remains in body fluids other than blood and which host factors determine persistence in the body fluids is essential to shape appropriate public health guidance.

To address the concerns of survivors and the research emerging from this field, in collaboration with John Snow Incorporation, and the United States National Institutes of Health, WHO convened a meeting of principal investigators, scientists and national programme officers involved in research with Ebola survivors in Guinea, Liberia and Sierra Leone from 28-30 June 2017 in Monrovia, Liberia.

The specific objectives of the meeting were to:

- review and compare findings from survivor cohorts in Guinea, Liberia and Sierra Leone and other settings;
- review and compare findings from national semen testing programmes and other non-research settings;
- discuss the revision of public health recommendations related to sexual transmission of Ebola virus disease; and

- define a research agenda to address remaining questions and to inform research responses around viral persistence in future EVD outbreaks.

Methodology

The meeting invited participants from the Ministries of Health of the three countries affected by the Ebola 2014-16 outbreak (Guinea, Liberia and Sierra Leone), staff of national semen testing programmes, principal investigators and research staff of Ebola survivor cohort studies, representatives from Ebola virus disease survivor groups, and staff from public health agencies and WHO.

The meeting was structured into plenary sessions, discussion sessions and a working-group session. Participants were also invited to attend an optional field trip to John F. Kennedy Medical Center in Monrovia – a major national public hospital used to treat cases of Ebola virus disease during the 2014-16 outbreak and currently the centre of Ebola survivor follow-up programmes and research in Liberia.

Declarations of interest and confidentiality

46 experts from related scientific and public health fields were invited to attend the meetings. In accordance with WHO rules and regulations, all experts completed and submitted a Declaration of Interest (DOI) form before participating in the meeting. DOI forms were reviewed prior to the meeting, and no conflicts of interest were identified.

Given the sensitive nature of the ongoing research discussed during the meeting, all experts and persons in attendance also signed and submitted a Confidentiality Undertaking form prior to participating.

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