1. Please briefly describe the progress made in the implementation of your agreed workplan as WHO collaborating centre during the past 12 months (or the reporting period listed above). Please report on how each workplan activity was implemented, if any outputs have been delivered, if any results have been achieved and if any difficulties have been encountered during this time. If an activity has previously been completed, has not started yet, or been placed on hold, please indicate this.

The WHO Collaborating Centre for Sexually Transmitted Infections at the London School of Hygiene & Tropical medicine is based in the Clinical Research Department. Staff of the Department who work with WHO on STIs include Professors Rosanna Peeling, David Mabey, Philippe Mayaud and Deborah Watson-Jones; and Drs. Emma Harding-Esch, Kate Gallagher, Helen Kelly, Michael Marks and Joe Tucker. Colleagues in other departments at LSHTM who also work with WHO on STIs include Drs. Suzanna Francis and Fern Terris-Prestholt.

Activity 1

Support the STI POCTs initiative (advise on research/validation, support normative work (guidelines), training on STI POCTs in LMICs).

Description:

- Update the performance of commercially available POC STI tests
- Finalize TPPs and core protocols for evaluation of STI POC tests
- Technical advice on the road map for the evaluation and implementation of new STI POC tests
- Evaluation network for STI POC tests
- Investment cases for POC STI tests

The ongoing evaluation of STI POCTs is a common priority shared by WHO RHR and the London School. Professors Peeling and Mabey have developed protocols for laboratory and clinic-based evaluation of POCTs for a variety of STIs in the past. In collaboration with Dr Igor Toskin, Prof Peeling has adapted those protocols into 9 core protocols that can be used for the independent clinic-based and clinic-utility validation of STIs POCTs in different populations and in different use case scenarios. Prof Peeling worked with Dr Toskin and other colleagues to finalise the site-specific protocols for independent clinic-based evaluation of dual HIV/syphilis POCT and POCT to detect NG/CT and TV in 12 countries and for the clinic-utility evaluation of
dual HIV/syphilis tests in 5 countries, following feedback from the WHO ERC, and they have now been approved by the ERC.

Prof Peeling conducted a training workshop at the IUSTI meeting in Rio de Janeiro on Good Clinical Practice and Good Clinical Laboratory Practice for members of the POC STI evaluation network. Prof Peeling worked with Drs. Igor Toskin and James Kiari on the road map for the evaluation and implementation of STIs.

Profs Peeling and Mabey worked with Drs. Igor Toskin, Ian Askew and James Kiari of WHO RHR to edit and publish a supplement of the journal Sexually Transmitted Infections entitled “Advancing point of care diagnostics for STIs”, which was published in December 2017. The supplement included 12 papers reviewing the performance of POCTs for syphilis, gonorrhoea, chlamydial infection, *Trichomonas vaginalis*, *Mycoplasma genitalium* and human papillomavirus (HPV). Members of our Collaborating Centre co-authored 9 of these publications:


Members of our centre have evaluated the performance of new POCTs for gonorrhoea and chlamydial infection as well as exploring the attitudes of patients and health care providers towards the use of POCTs and their implementation in health systems.

Although the prevalence of asymptomatic STIs is high, STI-related knowledge and awareness are limited. Together with stigma and ostracism this is a major barrier to strengthening health-seeking behaviours in all countries around the world. Innovations in technology (biotechnology, information technology, m-Health) as well as innovative approaches to delivering essential STI information and services (testing, treatment, communication and counselling aiming to reduce risk taking and to facilitate access to medical services in a timely manner) could help to overcome those barriers.
We have established a new collaboration with the Applied Diagnostic Research and Evaluation Unit (ADREU) led by Dr. Tariq Sadiq at St George’s, University London through Dr. Emma Harding-Esch who was programme senior scientist in the group between 2012 to 2017, and who joined our department in 2017. The current work of the collaboration is a project assessing the impact of mass drug administration with azithromycin for trachoma elimination on antimicrobial resistance in STIs in the Solomon Islands (Harrison et al, manuscript submitted to IJE). Whilst at ADREU, together with Dr Sadiq, Dr Harding-Esch worked on many studies exploring novel strategies for STI diagnosis using novel diagnostic technologies and sampling strategies (including internet-based approaches and self-taken samples), some of which have been published in the past year (see below). The collaboration will strengthen the Centre’s work for future global health diagnostic programmes, with potential to support diagnostic and impact evaluations.

Additional Publications on POC tests and testing linked to the Centre

In addition to the 9 publications in the STI Journal supplement mentioned above, members of our centre and our collaborators also published the following papers on POC tests and testing:


Activity 2
Title: Assist WHO in activities that aim to improve STI control and prevention in key populations, mainly MSM, as well as to improve SRH services in adolescents.

Description:
- Research into social entrepreneurship and crowdsourcing approaches to enhance the uptake of STI testing in MSM
- Conduct epidemiological studies of HPV and related disease in various population groups

Social entrepreneurship and crowdsourcing

Prof Peeling and Dr. Joe Tucker have worked on organizational characteristics of HIV/syphilis testing services for men who have sex with men in South China since 2010 using social entrepreneurship and demonstrating that it is a sustainable service model. Dr. Tucker has gone onto crowdsourcing ideas and approaches to enhance the uptake of HIV and syphilis testing in MSM.

Recent Publications on Social entrepreneurship and STI:


Epidemiological studies on HPV and related diseases

Profs. Mayaud and Watson-Jones and Drs Kelly and Gallagher have completed studies on the epidemiology and prevention of HPV infection in Tanzania, Ghana, Burkina Faso and South Africa and published their results. The studied populations have included general populations of young women, HIV-negative and HIV-positive women and men.

Publications on HPV in LMICs:


Activity 3

**Title:** Assist WHO in activities that aim to improve women’s and children’s health particularly in the area of dual elimination of mother to child transmission of HIV and Syphilis (eMTCT) and prevention of cervical cancer.

**Description:**
- Update dashboard for eMTCT of HIV and Syphilis
- Update toolkit development for eMTCT of HIV and Syphilis
- (Point of care activities for eMTCT described in TOR 1 could also be included under this heading)
- Evaluate the efficacy of HPV vaccination for the prevention of cervical cancer
- Produce systematic reviews, clinical validation studies and health economic evaluations for HPV
- Conduct and support evaluation (clinical and health economics) of cervical cancer screening strategies
Prof Peeling is a member of the WHO/UNAIDS Global Validation Advisory Committee (GVAC) for the dual elimination of the Mother to Child Transmission of HIV and Syphilis. She participated in the review of dossiers submitted to GVAC from countries claiming to have achieved elimination of HIV and Syphilis. She also contributed to the revision of the dual elimination handbook. In particular, she developed diagnostic quality standards that countries need to meet when they submit data to prove that they have achieved elimination. The International Diagnostics centre has created a dashboard to help countries track their progress with dual elimination. Prof Peeling worked with WHO RHR on a systematic review of the accuracy of dual rapid HIV-syphilis syphilis test.


Studies on HPV vaccination and the prevention of cervical cancer

Profs Mayaud and Watson-Jones and colleagues published a number of papers on systematic reviews of HPV and HIV, of screening strategies for cervical cancer among women living with HIV, and on strategies for improving the uptake of HPV vaccination in LMICs.

Publications on HPV vaccination


Profs Watson-Jones and Mayaud have collaborated with WHO and others to produce the following reports:

**Publications on STI Epidemiology in LMIC and adolescent SRH**


Prof Mayaud also published with colleagues at CDC the chapter on STI in the very influential 3rd Edition of *Disease Control Priorities in Developing Countries (DCP3)*. Profs Peeling and Mabey published a chapter in the same edition on syphilis in pregnancy

**Publications on health economics of STI control**


2. **Please briefly describe your collaboration with WHO with regards to the activities of the WHO collaborating centre during the past 12 months (e.g. means of communication, frequency of contact, visits to or from WHO). Please feel free to mention any difficulties encountered (if any) and to provide suggestions for increased or improved communication (if applicable).**

Prof Peeling and Mayaud have made frequent visits to WHO in the past year to discuss our collaboration in the field of STI/SRH. Prof Mabey was a member of the committee which agreed the new WHO guidelines for the management of Sexually Transmitted Infections, and of the Scientific and Technical Advisory Group for Reproductive Health and Research until 2017. Prof Peeling is a member of the WHO/UNAIDS Global Validation Advisory Committee (GVAC) for the dual elimination of the Mother to Child. Prof Mayaud is a member of the committee reviewing the burden of STI, of the committee reviewing the management of STIs and Syndromic management guidelines. Prof Mayaud has been asked by Dr James Kiarie (WHO/RRH) to be nominated as STI experts to the International Health Regulations (IHR) Roster of Experts. Dr Harding-Esch is a member of the Public Health Applications of Chlamydia trachomatis Serology (PHACTS) group, with WHO leadership from Igor Toskin, which aims to develop Target Product Profiles for new diagnostics. In collaboration with colleagues at LSHTM and Public Health England, she is working on an ECDC-funded systematic literature review of novel testing technologies, strategies and approaches for testing high-risk populations for STIs in the EU/EEA.

3. **Please briefly describe any interactions or collaborations with other WHO collaborating centres in the context of the implementation of the above activities (if any). If you are part of a network of WHO collaborating centres, please also mention the name of the network, and describe any involvement in the network during the last 12 months.**

Prof Peeling has interacted with WHO regional offices in Europe, Africa, Western Pacific, South East Asia and South America to discuss the evaluation and implementation of improved diagnostic tests for syphilis and other STIs, including Zika virus.

**Publications resulting from these collaborations:**


Dr Natalie Broutet (WHO RHR) convened two meeting of experts in Geneva to discuss the sexual transmission of zika virus, and to develop research protocols that would lead to a better understanding of this
phenomenon; Prof Mayaud was invited to present at those meetings his work with colleagues from EU funded Horizon 2020 ZIKAlliance.

Publications on sexual transmission of Zika virus


4. Please briefly describe any type of technical, programmatic, advisory or other support received from WHO during the past 12 months for the implementation of the agreed activities listed above (if any).

Prof Mayaud has received two grants from WHO’s recent RFPs, as part of Consortia looking at estimating the burden of non-sexual HSV1-related disease (Project 1 led by University of Bristol – PI: K Looker) and modelling the interactions between HSV-2 and HIV to estimate the burden of HSV2 associated HIV infections to predict the impact of HSV2 vaccines (Project 2 led by Imperial College London - PI: MC Boily). The WHO is seeking to reinvigorate efforts in the research of HSV1 and hsV2 vaccines for global use.

Together with WHO’s Dr Sami Gottlieb and others, Prof Mayaud has been involved in a successful bid to BactiVac Consortium for Catalyst projects. This project aims to convene an expert meeting to review the progress towards a gonococcal vaccine.

Prof Mayaud was part of the WHO Expert committee reviewing the guidelines for management of rape in young children and adolescents. A WHO report has been published and academic papers are in preparation for submission.

Prof Peeling worked with the WHO HIV Department on innovations on diagnostic testing and approaches for Hepatitis and HIV with the following publications:


