Could you introduce yourselves, outlining your main areas of research and expertise?

RP: I am a medical doctor and epidemiologist with a PhD in Clinical Microbiology and Infectious Diseases. My general research interest is in the epidemiology of infectious diseases, with a particular focus on molecular epidemiology, translational research, characteristics of transmission and antimicrobial resistance. In this sense, I regard sexually transmitted infections (STIs) as intriguing and they are one of my main fields of research.

KR: I am a specialist in internal medicine and an infectious diseases subspecialist. I hold diplomas in tropical medicine and hygiene and HIV management. My general research interests regard the prevention and management of HIV and other STIs among men who have sex with men (MSM) and other key populations. In addition to my research interests, I am passionate about developing and implementing appropriate clinical services targeted at MSM in developing nations.

How did you both come to work for the Anova Health Institute?

RP: The spectrum, dynamics, determinants and impact of infectious diseases in Africa are different from those in Europe. I joined the Anova Health Institute (formerly part of the Perinatal HIV Research Unit) to gain expertise working as a clinician and researcher in a different context.

KR: Five years ago, the Western Cape Department of Health recognised the need to address high-risk subpopulations, including MSM, in its HIV response. The Department sought an NGO as a partner to develop and implement services, and the Anova Health Institute recruited me and other experts in MSM health to address this need.

Why has the rectal and pharyngeal STI burden been predominantly overlooked in sub-Saharan Africa?

Countries in sub-Saharan Africa use a syndromic approach to STI control, in which individuals with symptoms are treated empirically with antibiotics. As a result, asymptomatic infections are not treated, which is problematic as these infections are only symptomatic in a minority of cases. Furthermore, awareness of rectal and pharyngeal STIs among healthcare workers is low as they are not included in the syndromic guidelines. Discussion of safe oral and anal sex practice is often a cultural taboo and not included in prevention campaigns and most sexual health educational courses. Nevertheless, these infections are associated with morbidity, provide a microbiological reservoir, and facilitate development of drug resistance. Evidence-based interventions to reduce the disease burden of HIV and STIs among vulnerable populations are lacking and our research endeavours should assist in closing the data gap required for such health programmes. Indeed, we use information from our studies for clinical training and
**STIs in South Africa**

The Anova Health Institute in South Africa is conducting research on bacterial sexually transmitted infections, specifically targeting the country’s most vulnerable subpopulations who have the greatest need of appropriate, evidence-based health services.

**THE BURDEN OF** sexually transmitted infections (STIs) can be felt across the world; according to the World Health Organization (WHO), more than 1 million people become infected every day. Many of these STIs may lead to long-term issues such as infertility, pelvic inflammatory disease and pregnancy complications if left untreated, and can also facilitate HIV transmission. Consequently, it is extremely important that due attention is given to the spread and transmission of the full spectrum of STIs, their clinical manifestations and complications.

In South Africa, the approach to STI diagnosis and treatment is syndromic, with treatment being offered only to those who actively seek help and express particular symptoms. Although this approach enables cost-effective treatment on a large scale without the need for laboratories or the establishment of a complex clinical infrastructure, it has numerous disadvantages. In fact, asymptomatic infections are left undiagnosed, and certain drugs and antibiotics are under- and over-prescribed, thus contributing to population antimicrobial resistance. In addition, this strategy results in a lack of clinical specimens passing through state-linked laboratories, meaning that trends such as increasing antibiotic resistance within key subpopulations are not noticed. Furthermore, it does not address the specific needs of vulnerable populations – such as men who have sex with men (MSM), commercial sex workers and young women – who experience high STI prevalence, particularly regarding non-genital infections, and are often not effectively linked with South African healthcare services.

**A PIONEERING APPROACH**

Two researchers aiming to revolutionise STI service provision in South Africa through their work within the Anova Health Institute are Dr Remco Peters, a clinical programme specialist, and Dr Kevin Rebe, a specialist medical consultant. Anova is committed to improving South African public health services, particularly with respect to HIV and STIs, through scientific research and community outreach.

The STI research conducted at Anova has two core components. Firstly, epidemiological research assesses the incidence, distribution and control of STIs in sub-Saharan Africa, with a particular focus on high risk groups, clinical presentation and infection control. Such work contributes to policy making and prevention and control efforts. Secondly, microbiological studies are conducted of the organisms that cause infections. “Some of the methods applied here include characterisation of phenotypic and genotypic antimicrobial resistance, molecular typing of bacterial strains, and assessment of microbial load and coinfections,” elaborates Peters.

From a health perspective, scientists at Anova hope to broaden public understanding of STIs by evaluating both symptomatic and asymptomatic diseases. Furthermore, the two research approaches described above are among the first of their kind in Africa, as they take into consideration pharyngeal and rectal infections and target previously under-researched populations, including women and MSM.
INNOVATION

ANOVA HEALTH INSTITUTE

OBJECTIVES

The Anova Health Institute aims to improve health, with a particular focus on people infected with or affected by HIV.

PARTNERS

National Institute for Communicable Diseases, South Africa • VU University Medical Center, Netherlands • Maastricht University Medical Centre, Netherlands • Public Health Service of Amsterdam, Netherlands • Université de Bordeaux, France • Western Sydney Sexual Health Centre, Australia • Departments of Medicine and Infectious Diseases, University of Cape Town, South Africa • University of Pretoria, South Africa

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DR REMCO PETERS is a trained physician and epidemiologist. His expertise is in the epidemiology of infectious diseases, particularly sexually transmitted infections, with a focus on molecular epidemiology, translational research, the characteristics of transmission, and antimicrobial resistance.

DR KEVIN REBE is a specialist in internal medicine and a subspecialist in infectious diseases. His research interests revolve around the prevention and management of HIV and sexually transmitted infections among men who have sex with men and other key populations, particularly in developing nations.

WORK WITH WOMEN

So far, the research conducted at Anova has provided novel information on the spread of STIs in sub-Saharan Africa. For example, one recent study by Anova, which took into account rectal and pharyngeal infections, revealed the burden of chlamydial infection among African MSM and women to be much higher than was previously understood. This information helped to demonstrate how STI epidemiology and microbiology vary with geography and target population. Recent molecular typing of Chlamydia trachomatis revealed strains that are unique for South Africa, contributing to the understanding of geographic variation of C. trachomatis worldwide.

Additionally, scientists from Anova have also contributed to efforts to uncover the prevalence and macrolide resistance of Mycoplasma genitalium among South African women. Not only did they find vaginal and rectal M. genitalium to be a common infection among a cohort of 601 rural South Africa women (affecting 11 per cent overall), they also identified low levels of macrolide resistance – the first such instance of this described in sub-Saharan Africa.

SPARKING A DISCUSSION

By drawing attention to the prevalence of asymptomatic and drug-resistant STIs, collecting information on key populations that have previously been overlooked, and targeting South Africa’s most vulnerable subpopulations, researchers at Anova are contributing towards a greater understanding of the STI burden. They also hope to improve public health services through better identification and treatment of lesser represented infections. The debate about different approaches to targeting overlooked groups and diseases has already begun, and the scientists from Anova hope that these key populations will receive due attention from future health services.

CONNECTING MEN WITH CARE

Anova researchers are also focusing significant efforts on improving STI health services for MSM. One important study took place in 2012, driven by the scientists’ hypothesis that, since prior STIs are associated with increased HIV vulnerability and receptive penile-anal sex carries a greater HIV transmission risk than penile-vaginal sex, the presence of asymptomatic STIs among MSM could be a significant contributing factor to the high HIV rates in this subpopulation. The scientists therefore undertook a study to describe both symptomatic and asymptomatic STIs in a Cape Town clinical cohort of 200 MSM. The results confirmed what the researchers had suspected: of the 31 per cent of MSM found to be infected with gonorrhoea or chlamydia, more than three-quarters had asymptomatic infections. Furthermore, the anus was the most commonly infected anatomical site, followed by the pharynx and only then the urethra. Given that the majority of these infections – being asymptomatic and non-urethral – would not have been detected under current South African guidelines, these findings highlight the vast cracks in the health system through which MSM can slip.

Peters and Rebe have also turned their attention to the challenges of the South African health service to effectively identify and manage multidrug-resistant Gonococcus among MSM. At present, national guidelines preclude isolation or detection of STI pathogens or antibiotic sensitivity testing when treating gonorrhoea – in spite of the fact that developed world guidance recommends the implementation of laboratory screening and directed therapy for MSM with STIs. As such, the empiric treatment strategies currently in place have the potential to fail to identify multidrug-resistant Neisseria gonorrhoeae. Anova researchers are therefore conducting an ongoing survey of drug resistance in N. gonorrhoeae isolates in Cape Town and Johannesburg, and have already identified one out of five strains of cefalosporin and cefixime resistance in the country which pose an immediate major public health threat. Unless health systems practices respond to this by changing their practices when treating MSM with STIs, many cases could be missed in the future, adversely affecting both HIV risk and health outcome.