

**Prevalence and concordance of HPV, HIV, and HSV-2 in heterosexual couples in Kigali, Rwanda.**

[Sex Transm Dis.](#) 2012 Feb;39(2):128-35.

[Veldhuijzen NJ](#), [Dhont N](#), [Vyankandondera J](#), [Gasarabwe A](#), [Busasa R](#), [Crucitti T](#), [van de Wijgert JH](#).

**Source**

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**Abstract**

*Background*

In the absence of prospectively collected transmission data, the transmission potential of a sexually transmissible infection (STI) can be estimated by its proxy of concordance in sexual partners. Here we report concordance data of 3 viral STIs: human papillomavirus (HPV), HIV, and herpes simplex virus type 2 (HSV-2) among heterosexual couples in Kigali, Rwanda.

*Methods*

Cervical and penile HPV typing was performed among 166 community-sampled fertile couples in Kigali, Rwanda (median sampling interval 10 days (interquartile range: 5-36)). HIV and HSV-2 serostatus, curable STIs, and sociobehavioral and clinical characteristics were also assessed.

*Results*

Concordance rates for all 3 viral STIs were higher than expected by chance alone. Positive concordance among couples was 25% for HSV-2, 15.7% for any HPV, 8.4% for high-risk (HR)-HPV, and 6% for HIV. HR-HPV prevalence among women and men was 19.9% and 26.5%, respectively. Partner's HIV status was more strongly associated with HR-HPV detection in men (OR: 8.5; confidence interval: 2.9-24.6) than in women (OR: 1.9; confidence interval 0.5-6.7).

*Conclusion*

More than half of the couples were discordant for HIV, HPV, and/or HSV-2, indicating that prevention strategies directed to infected cases are important to protect their uninfected sexual partners.

**Chlamydia trachomatis infection in fertile and subfertile women in Rwanda: prevalence and diagnostic significance of IgG and IgA antibodies testing.**

[Hum Reprod.](#) 2011 Dec;26(12):3319-26.

[Muvunyi CM](#), [Dhont N](#), [Verhelst R](#), [Temmerman M](#), [Claeys G](#), [Padalko E](#).

**Source**

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**Abstract**

*Background*

In many developing countries, little is known about the prevalence of genital Chlamydia trachomatis infections and complications, such as infertility, thus preventing any policy from being formulated regarding screening for C. trachomatis of patients at risk for infertility. The

objective of the present study was to determine the prevalence of *C. trachomatis* and evaluate the diagnostic utility of serological markers namely anti-*C. trachomatis* IgG and IgA antibodies in women attending an infertility clinic.

#### *Methods*

Serum and vaginal swab specimens of 303 women presenting with infertility to the infertility clinic of the Kigali University Teaching Hospital and 312 fertile controls who recently delivered were investigated. Two commercial species-specific ELISA were used to determine serum IgG and IgA antibodies to *C. trachomatis* and vaginal swabs specimens were tested by PCR. Hysterosalpingography (HSG) was performed in subfertile women.

#### *Results*

The PCR prevalence of *C. trachomatis* infection was relatively low and did not differ significantly among subfertile and fertile women (3.3 versus 3.8%). Similarly, no significant differences in overall prevalence rates of *C. trachomatis* IgG and IgA among both groups were observed. The only factor associated with *C. trachomatis* infection in our study population was age <25 years. The seroprevalence of IgG in both assays (86.4% for ANILabsystems and 90.9% for Vircell) was significantly higher in the group of PCR *C. trachomatis*-positive women compared with that of PCR-negative women. Evidence of tubal pathology identified by HSG was found in 185 patients in the subfertile group (67.8%). All the serological markers measured in this study had very low sensitivities and negative predictive values in predicting tubal pathology. The specificities for ANILabsystems IgG, Vircell IgG, Anilabsystem IgA and positive *C. trachomatis* DNA to predict tubal pathology were 84, 86, 95 and 98%, respectively, whereas their respective positive predictive values were 73, 76, 81 and 80%.

#### *Conclusions*

The prevalence of *C. trachomatis* in our study population in Rwanda appears to be low and women aged <25 years are more likely to have genital infection with *C. trachomatis*. Since serological testing for Chlamydia shows an excellent negative predictive value for lower genital tract infection, specific peptide-based serological assays may be of use for screening in low prevalence settings. Our data suggest that *C. trachomatis* is not the primary pathogen responsible for tubal pathology in Rwandan women.

### **Evaluation of a new multiplex polymerase chain reaction assay STDFinder for the simultaneous detection of 7 sexually transmitted disease pathogens.**

[Diagn Microbiol Infect Dis.](#) 2011 Sep;71(1):29-37.

[Muvunyi CM](#), [Dhont N](#), [Verhelst R](#), [Crucitti T](#), [Reijans M](#), [Mulders B](#), [Simons G](#), [Temmerman M](#), [Claeys G](#), [Padalko E](#).

#### **Source**

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#### **Abstract**

We evaluated a new multiplex polymerase chain reaction (mPCR), "STDFinder assay", a novel multiplex ligation-dependent probe amplification (MLPA) assay for the simultaneous detection of 7 clinically relevant pathogens of STDs, i.e., *Neisseria gonorrhoeae*, Chlamydia

trachomatis, *Trichomonas vaginalis*, *Mycoplasma genitalium*, *Treponema pallidum*, and herpes simplex virus type 1 and 2 (HSV-1 and HSV-2). An internal amplification control was included in the mPCR reaction. The limits of detection for the STDFinder assay varied among the 7 target organisms from 1 to 20 copies per MLPA assay. There were no cross-reactions among any of the probes. Two hundred and forty-two vaginal swabs and an additional 80 specimens with known results for *N. gonorrhoeae* and *C. trachomatis*, obtained from infertile women seen at an infertility research clinic at the Kigali Teaching Hospital in Rwanda, were tested by STDFinder assay and the results were confirmed by single real-time PCR using different species-specific targets. Compared to the reference standard, the STDFinder assay showed specificities and sensitivities of 100% and 100%, respectively, for *N. gonorrhoeae*, *C. trachomatis*, and *M. genitalium*; 90.2% and 100%, respectively, for *Trichomonas vaginalis*; and 96.1% and 100%, respectively, for HSV-2. No specimen was found to be positive for HSV-1 by either the STDFinder assay or the comparator method. Similarly, the sensitivity for *Treponema pallidum* could not be calculated due to the absence of any *Treponema pallidum*-positive samples. In conclusion, the STDFinder assays have comparable clinical sensitivity to the conventional mono and duplex real-time PCR assay and are suitable for the routine detection of a broad spectrum of these STDs at relatively low cost due to multiplexing.

### **The risk factor profile of women with secondary infertility: an unmatched case-control study in Kigali, Rwanda.**

[BMC Womens Health](#). 2011 Jun 24;11:32.

[Dhont N](#), [Luchters S](#), [Muvunyi C](#), [Vyankandondera J](#), [De Naeyer L](#), [Temmerman M](#), [van de Wijgert J](#).

#### **Source**

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#### **Abstract**

##### *Background*

Secondary infertility is a common, preventable but neglected reproductive health problem in resource-poor countries. This study examines the association of past sexually transmitted infections (STIs) including HIV, bacterial vaginosis (BV) and factors in the obstetric history with secondary infertility and their relative contributions to secondary infertility.

##### *Methods*

Between November 2007 and May 2009 a research infertility clinic was set up at the Kigali University Teaching Hospital in Rwanda. Cases were defined as sexually-active women aged 21-45 years presenting with secondary infertility (n = 177), and controls as multiparous women in the same age groups who recently delivered (n = 219). Participants were interviewed about socio-demographic characteristics and obstetric history using structured questionnaires, and were tested for HIV and reproductive tract infections (RTIs).

##### *Results*

Risk factors in the obstetric history for secondary infertility were lack of prenatal care in the last pregnancy, the first pregnancy before the age of 21 years, a history of unwanted pregnancy, a pregnancy with other than current partner, an adverse pregnancy outcome, stillbirth, postpartum infection and curettage. Presence of HIV, herpes simplex virus type 2 (HSV-2), or *Treponema pallidum* antibodies, and bacterial vaginosis (BV), were significantly

more common in women in secondary infertile relationships than those in fertile relationships. The population attributable fractions (PAF%) for obstetric events, HIV, other (STIs), and BV were 25%, 30%, 27%, and 14% respectively.

#### *Conclusions*

The main finding of this study is that obstetric events, HIV and other STIs contribute approximately equally to secondary infertility in Rwanda. Scaling up of HIV/STI prevention, increased access to family planning services, improvement of prenatal and obstetric care and reduction of stillbirth and infant mortality rates are all likely to decrease secondary infertility in sub-Saharan Africa.

### **Results of infertility investigations and follow-up among 312 infertile women and their partners in Kigali, Rwanda.**

[Trop Doct.](#) 2011 Apr;41(2):96-101.

[Dhont N](#), [van de Wijgert J](#), [Vyankandondera J](#), [Busasa R](#), [Gasarabwe A](#), [Temmerman M](#).

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#### **Erratum in**

[Trop Doct.](#) 2011 Jul;41(3):192.

#### **Abstract**

The objectives of this study were to assess the outcome of infertility investigations and an 18-month follow-up of 312 infertile women and their partners in Rwanda. Between November 2007 and May 2009, an infertility research clinic was opened. Infertile couples received basic infertility investigations, the available treatment was provided and couples were followed up over an 18-month period. The infertility remained unexplained in 3%, was due to a female factor in 31%, due to a male factor in 16% or due to a combination of male and female causes in 50% of fully investigated couples (n = 224). A tubal factor was found in 69% of women, a male factor in 64% of men. Predictors for tubal infertility in women included a history of high-risk sexual behaviour, HIV infection and a history of sexually transmitted infection (STI) symptoms in the male partner. After 12-18 months of follow-up, 40 pregnancies (16%) had occurred in 244 women. Our study shows high rates of tubal and male factor infertility in Rwanda. Pregnancy rates were low after conventional therapy. In order to provide effective and affordable treatment for infertility in resource-poor countries the development of low-cost assisted reproductive technologies are needed.

### **'Mama and papa nothing': living with infertility among an urban population in Kigali, Rwanda.**

[Hum Reprod.](#) 2011 Mar;26(3):623-9.

[Dhont N](#), [van de Wijgert J](#), [Coene G](#), [Gasarabwe A](#), [Temmerman M](#).

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#### **Abstract**

*Background*

Not being able to procreate has severe social and economic repercussions in resource-poor countries. The purpose of this research was to explore the consequences of female and/or male factor infertility for men and women in Rwanda.

#### *Methods*

Both quantitative and qualitative methods were used. Couples presenting with female and/or male factor infertility problems at the infertility clinic of the Kigali University Teaching Hospital (n = 312), and fertile controls who recently delivered (n = 312), were surveyed about domestic violence, current and past relationships and sexual functioning. In addition, five focus group discussions were held with a subsample of survey participants, who were either patients diagnosed with female- or male-factor fertility or their partners.

#### *Results*

Domestic violence, union dissolutions and sexual dysfunction were reported more frequently in the survey by infertile than fertile couples. The psycho-social consequences suffered by infertile couples in Rwanda are severe and similar to those reported in other resource-poor countries. Although women carry the largest burden of suffering, the negative repercussions of infertility for men, especially at the level of the community, are considerable. Whether the infertility was caused by a female factor or male factor was an important determinant for the type of psycho-social consequences suffered.

#### *Conclusions*

In Rwanda, as in other resource-poor countries, infertility causes severe suffering. There is an urgent need to recognize infertility as a serious reproductive health problem and to put infertility care on the public health agenda.

### **HIV infection and sexual behaviour in primary and secondary infertile relationships: a case-control study in Kigali, Rwanda.**

[Sex Transm Infect.](#) 2011 Feb;87(1):28-34.

[Dhont N](#), [Muvunyi C](#), [Luchters S](#), [Vyankandondera J](#), [De Naeyer L](#), [Temmerman M](#), [van de Wijgert J](#).

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#### **Abstract**

##### *Objective*

To compare the prevalence of sexually transmitted infections (STIs) (including HIV) and of high-risk sexual behaviour in the following three groups: primary infertile relationships, secondary infertile relationships and fertile relationships. Primary infertility is here defined as never having conceived before, secondary infertility as infertility subsequent to having conceived at least once.

##### *Design*

Unmatched case-control study.

##### *Methods*

Sexually active infertile women aged 21-45 years presenting at an infertility clinic of the Kigali Teaching Hospital, Rwanda and their male partners were invited to participate. Fertile controls who had recently delivered were recruited from the community. In a face-to-face interview, participants were asked about sociodemographic characteristics and their sexual behaviours, and tested for HIV and STIs.

##### *Results*

Between November 2007 and May 2009, 312 women and 254 partners in infertile

relationships and 312 women and 189 partners in fertile relationships were enrolled. Involvement in a secondary infertile relationship was associated with HIV infection after adjusting for sociodemographic covariates for women (adjusted OR (AOR) = 4.03, 95% CI 2.4 to 6.7) and for men (AOR = 3.3, 95% CI 1.8 to 6.4). Involvement in a primary infertile relationship, however, was not. Secondary infertile women were more likely to have engaged in risky sexual behaviour during their lifetime compared with primary infertile and fertile women. Men in primary and secondary infertile relationships more often reported multiple partners in the past year (AOR = 5.4, 95% CI 2.2 to 12.7; AOR = 7.1, 95% CI 3.2 to 15.8, respectively).

#### *Conclusions*

Increased HIV prevalence and risky sexual behaviour among infertile couples is driven by secondary infertility. Infertile couples, and especially those with secondary infertility, should be targeted for HIV prevention programmes and their fertility problems should be addressed.

### **Sexual violence, HSV-2 and HIV are important predictors for infertility in Rwanda.**

[Hum Reprod.](#) 2010 Oct;25(10):2507-15.

[Dhont N](#), [van de Wijgert J](#), [Luchters S](#), [Muvunyi C](#), [Vyankandondera J](#), [Temmerman M](#).

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#### **Abstract**

##### *Background*

In order to formulate cost-effective health interventions aimed at preventing infertility it is necessary to identify modifiable risk factors for infertility in sub-Saharan Africa. This case-control study examined potential predictors and their population attributable fraction (PAF%) for various infertility types including lifestyle factors, sexual behaviour and reproductive tract infections (RTIs).

##### *Methods*

Sexually active women aged 21-45 year presenting with infertility problems at the infertility clinic of the Kigali University Teaching Hospital (n = 312), and fertile controls who recently delivered (n = 283) were surveyed together with their male partners. Participants were interviewed about socio-demographic characteristics, sexual behaviours and lifestyle factors, and were tested for HIV and RTIs.

##### *Results*

Variables significantly associated with tubal infertility were history of sexual violence [adjusted odds ratio (AOR) 2.41; 95% CI 1.36-4.25]; positive HIV (AOR 2.41; 95% CI 1.36-4.25), herpes simplex virus type 2 (HSV-2; AOR 1.67; 95% CI 1.03-2.71) and Chlamydia trachomatis serology (AOR 1.78; 95% CI 0.99-3.21), and current bacterial vaginosis by Amsel criteria (AOR 1.97; 95% CI 1.12-3.47). Among men, male factor infertility was associated with positive HIV (AOR 2.43; 95% CI 1.31-5.23) and HSV-2 serology (AOR 1.71; 95% CI 1.02-2.87) and current urologic abnormalities (AOR 2.38; 95% CI 1.01-5.31). Positive HSV-2 serostatus carried the greatest PAF% (26%) for tubal infertility, followed by positive HIV serostatus (20%) and history of sexual violence (17%).

### *Conclusions*

Although temporal relationships are difficult to ascertain, history of sexual violence, HSV-2 infection and HIV infection are important predictors of infertility in Rwanda.

### **Gender differences and factors associated with treatment-seeking behaviour for infertility in Rwanda.**

[Hum Reprod.](#) 2010 Aug;25(8):2024-30.

[Dhont N](#), [Luchters S](#), [Ombelet W](#), [Vyankandondera J](#), [Gasarabwe A](#), [van de Wijgert J](#), [Temmerman M](#).

#### **Source**

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#### **Abstract**

##### **Background**

This study examines perceptions of infertility causes, treatment-seeking behaviour and factors associated with seeking medical care in an urban infertile population in Rwanda, as well as the response of health providers.

##### *Methods*

Between November 2007 and May 2009 a hospital based survey was conducted among 312 women and 254 male partners in an infertile relationship.

##### *Results*

Infertility causes based on a medical diagnosis were mentioned by 24% of women and 17% of men. Male infertility awareness was low in both sexes with 28% of men and 10% of women reporting male-related causes. Seventy-four per cent of women and 22% of men had sought care for their infertility in the past. Seeking treatment in the formal medical sector was associated with higher income, being married and infertility duration of more than 5 years in both sexes. In women, higher education and being nulliparous and in men blaming oneself for the infertility was also associated with seeking formal medical care. Participants reported a wide array of treatments they received in the past, often including ineffective or even harmful interventions.

##### *Conclusion*

Health authorities should invest in improving information, education and counselling on issues pertaining to causes and treatments of infertility, and in drawing up guidelines for the management of infertility at all levels of health care.

### **Improved access increases postpartum uptake of contraceptive implants among HIV-positive women in Rwanda.**

[Eur J Contracept Reprod Health Care.](#) 2009 Dec;14(6):420-5.

[Dhont N](#), [Ndayisaba GF](#), [Peltier CA](#), [Nzabonimpa A](#), [Temmerman M](#), [van de Wijgert J](#).

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## **Abstract**

### *Background*

Long-acting reversible contraceptives (LARCs) and sterilisation are the most cost-effective methods of contraception but are rarely used in sub-Saharan Africa partly due to limited access.

### *Study design*

HIV-positive pregnant women attending two urban clinics in Rwanda were followed prospectively in a perinatal HIV transmission cohort study. Women attending one clinic were referred to public family planning (FP) services for all contraceptive methods (Site A) and women attending the other clinic (Site B) were offered implants and intrauterine devices (IUDs) on-site.

### *Results*

Fifty three percent of the pregnant women reported an intention to use a LARC or to be sterilised after delivery. The uptake of implants was significantly higher at Site B (38%) than at Site A (6%). The IUD uptake was extremely low at both sites (2%). Twenty-eight of the 39 women at Site B who had intended to start using a LARC actually did so as compared to only one of 23 at Site A.

### *Conclusion*

When access to LARC was provided, a substantial number of HIV-positive women started using hormonal implants, but not IUDs, in the postpartum period. HIV and FP services should consider improving access to implants to reduce the number of unintended pregnancies.

## **Expulsion of the fetus into the broad ligament as a complication of midtrimester termination of pregnancy.**

[J Obstet Gynaecol.](#) 2002 May;22(3):326-7.

[Dhont N](#), [Jacquemyn Y](#), [Claessen K](#).

### **Source**

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