



# Safer Conception: Assisted reproduction options for people living with HIV

<b>Introduction .....</b>	<b>2</b>
<b>1. Demand for assisted conception services by people living with HIV.....</b>	<b>4</b>
i) Conception rates .....	4
ii) Ethical considerations.....	6
<b>2. Current forms of assisted conception .....</b>	<b>7</b>
i) Self-insemination.....	7
ii) Donor sperm.....	8
iii) Sperm-washing (IUI, IVF/ICSI).....	8
<b>3. Access to assisted conception .....</b>	<b>10</b>
i) Self-insemination.....	10
ii) Donor Sperm .....	10
iii) Sperm-washing, IUI, IVF and ISCI .....	10
<b>4. Treatment as Prevention (TAP): A plausible alternative? .....</b>	<b>13</b>
i) Reconsidering natural conception .....	13
ii) Impact on demand for assisted conception.....	14
iii) Is TAP advisable? .....	14
<b>Appendix .....</b>	<b>16</b>

## Introduction

More than half of people in the UK living with HIV are of an age when they may be considering having a family.<sup>1</sup> Of particular concern for people with HIV who wish to conceive is serodiscordancy in their relationship: that is, when one partner is HIV positive and the other HIV negative. The standard recommendation for such couples is to practice safer sex to prevent HIV transmission from one partner to the other—naturally, this most often also prevents pregnancy.

However, there are a range of options available to assist couples to conceive safely, including self-insemination, donor sperm and sperm-washing. These assisted reproduction techniques can help achieve safer, successful conception for sero-discordant and -concordant couples alike.

However, not all assisted conception options are widely available to people living with HIV across the UK, and in many cases will be prohibitively expensive. Financial and other barriers to access to these methods mean that despite the existence of safer, assisted means of conception, some couples will still attempt conception through unprotected intercourse.

In addition to accessibility issues around assisted conception, there is a growing body of scientific evidence that unprotected sex is not always a high-risk option for serodiscordant couples. A range of published studies has found that effective antiretroviral (ARV) therapy may reduce the amount of virus in the body in a way which drastically lowers the risk of onward transmission. Anecdotal reports suggest that a notable number of couples, encouraged by such findings, are already taking this option rather than seeking assisted conception. There are still unresolved questions around the efficacy of 'treatment as prevention' (TAP), though, and in the meantime it is important that couples who do choose to attempt conception in this way are receiving the best possible advice about reducing the risk of transmission.

This scoping paper outlines current trends in terms of demand for assisted conception by people living with HIV, the forms of assistance available, and how accessible these methods are in the UK. The arguments for and against TAP and possible implications of TAP for conception by people living with HIV and their future demand for assisted conception are then discussed. The paper concludes with recommendations for future action.

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<sup>1</sup> Ohl et al (2003), 'Assisted reproduction techniques for HIV serodiscordant couples: 18 months of experience', *Human Reproduction*, Vol.18, No.6 pp.1244-1249, p.1246

## **Current Best Practice**

The overview of assisted conception options available to people living with HIV in this paper draws chiefly upon two sets of guidance for clinical best practice around HIV & Fertility

- **British Association of HIV (BHIVA) and Children's HIV Association (CHIVA) Guidelines for the Management of HIV in Pregnant Women 2008.**

BHIVA is the leading UK professional association for people working in HIV care. BHIVA guidelines are considered best practice for UK clinicians.

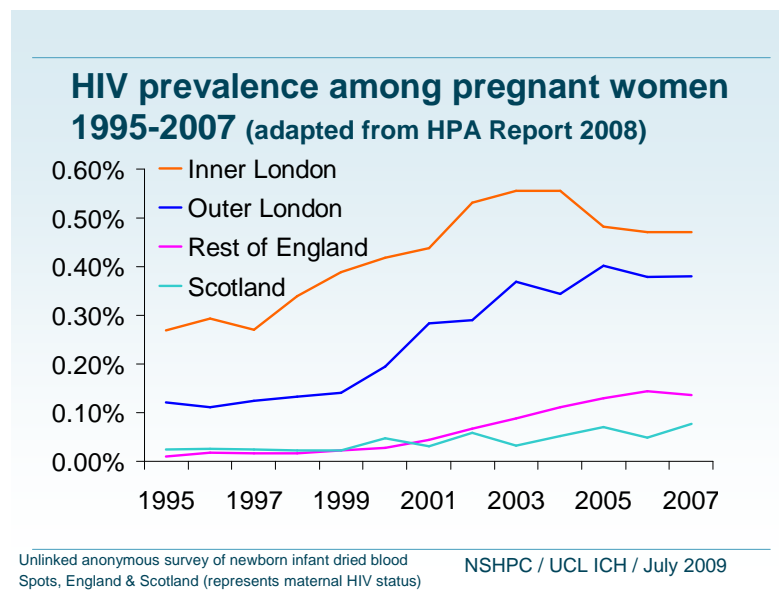
- **National Institute for Clinical Excellence (NICE) Clinical Guidance 11-Fertility: assessment and treatment for people with fertility problems 2004.**

NICE is an independent organisation responsible for providing national guidance on promoting good health and preventing and treating ill health. The NICE fertility guidelines have information relevant to the treatment of people diagnosed with HIV.

# 1. Demand for assisted conception services by people living with HIV

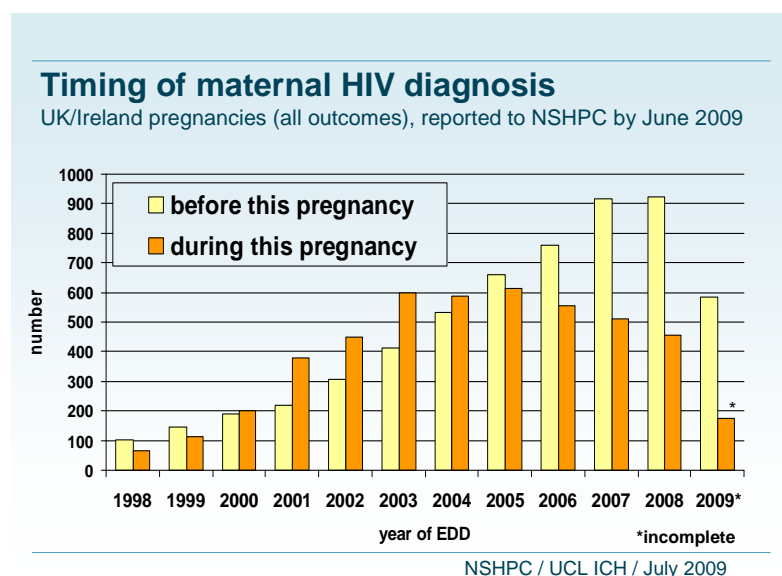
## i) Conception rates

As treatment has improved to the point that HIV is best considered a manageable chronic condition, conception rates among HIV positive parents have increased. The National Study of HIV in Pregnancy and Childhood found an upswing in HIV prevalence among pregnant women in England and Scotland (especially inner London), beginning around 1997.



This increase can be linked to a number of causes such as improved surveillance, or increased diagnosis of HIV amongst heterosexual women in the UK. However, it also appears to reflect an increased desire to have children among people living with HIV.

Another notable turning-point is 2000, when routine opt-out antenatal screening was introduced. For a few years after this point, women with HIV who conceived not knowing their HIV status outnumbered those who did. However, since 2005 the proportion has shifted significantly back to women who conceived knowing their status. This may suggest that demand for children among couples where one partner has diagnosed HIV may have become more widespread (presuming the pregnancies are planned).



NSHPC (2009),

Obstetric and paediatric HIV surveillance data from the UK and Ireland,  
[www.nshpc.ucl.ac.uk](http://www.nshpc.ucl.ac.uk)

In his 2003 paper, Jeffrey Klein cites a survey of 1,421 adults living with HIV adults in the USA in which approximately 28-29% of patients expressed a desire to have children at some point.<sup>2</sup> Another survey of 1,200 HIV positive people of reproductive age in France cited by Pablo Barreiro and his team in 2007 revealed a similar level of demand:

### Percentage of people with HIV who wish to have a baby

	Men	Women
Already parents	30%	45%
Expecting a baby	1%	3%
Seeking a pregnancy	6%	6%
Desire for future pregnancy	20%	32%
Greater desire to have children if w/out kids	1.9 times	2.6 times
Part of serodiscordant couples (i.e. other = -ve)	62%	76%

Barreiro et al (2007), 'Is natural conception a valid option for HIV-serodiscordant couples?', Human Reproduction, Vol.22, No.9, pp.2353-4

<sup>2</sup> Klein et al (2003), 'Understanding the Motivations, Concerns, and Desires of Human Immunodeficiency Virus 1-Serodiscordant Couples Wanting to Have Children Through Assisted Reproduction', Obstetrics & Gynecology, Vol.101, No. 5, p.991

Moreover, these couples are interested in **assisted** conception. Likewise, the British HIV Association (BHIVA), which represents HIV healthcare professionals in the UK, reports that an increasing number of couples affected by HIV are requesting assistance with conception, and that 16% of men and 4% of women attending HIV specialist clinics had enquired about fertility treatment.<sup>3</sup>

Assuming that the level of demand among serodiscordant couples in Britain is comparable to that in the USA and France, the number of UK patients requesting help at HIV clinics appears anomalously small. However, it is also likely that UK couples may seek fertility advice elsewhere than at their HIV clinic- chiefly, with a fertility specialist. On the other hand, it might indicate a more common tendency to try other, simpler methods (see *Section 4*), or a lack of understanding of the options available.

It should be kept in mind that there are proportionately very few people living with HIV in the UK; even a higher demand for assisted conception among them is liable to be small as an absolute number. For example, a UK study showed that among patients seeking infertility treatment at an IVF clinic, only 0.06% were HIV positive.<sup>4</sup> Therefore, while a statistically significant number of people living with HIV may want children, this population may be easily overlooked in broader public health provisions (see *Section 3*).

## ii) Ethical considerations

The availability of HAART has changed clinical and ethical views about the advisability of men and women living with HIV having a family.<sup>5</sup> A 2003 French study noted that with more effective treatment and increased life-expectancy, the desire of people living with HIV to parent is "legitimate and any other conclusion would discriminate against these patients."<sup>6</sup> Reluctance on ethical grounds to help HIV positive parents conceive has diminished over the last decade. In 2003, Jeffrey Klein called fertility treatment of HIV positive patients "one of the most difficult medical and ethical dilemmas facing the reproductive specialist," but today such hand-wringing seems misplaced.<sup>7</sup>

Barreiro's 2007 study drew a very interesting comparison between the ethical issues around the potential for HIV perinatal infection and that of couples carrying autosomal recessive diseases such as Tay-Sachs disease, sickle-cell anaemia and cystic fibrosis. When an HIV positive mother and her newborn receive adequate care, the risk of vertical transmission can be less than 2%, whereas the risk of inheriting one of the recessive conditions may be as high as 25% among the general population.<sup>8</sup> Even with the best care, children with Tay-Sachs disease die by age 4, while HIV can be treated and lived with.<sup>9</sup> Comparisons such as these put into perspective the actual risk which HIV poses to the expected life outcomes of a child,

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<sup>3</sup> BHIVA, BASHH and FSRH (2008) 'Guidelines for the management of the sexual and reproductive health of people living with HIV infection 2008', [www.bhiva.org](http://www.bhiva.org) pp.685, 689, 694

<sup>4</sup> NICE (2004), *Fertility: Assessment and treatment for people with fertility problems - Clinical Guideline*, [www.nice.org.uk](http://www.nice.org.uk), p.99

<sup>5</sup> BHIVA, BASHH and FSRH (2008), p.702

<sup>6</sup> Ohl et al (2003), 'Assisted reproduction techniques for HIV serodiscordant couples: 18 months of experience', *Human Reproduction*, Vol.18, No.6 p.1246.

<sup>7</sup> Klein et al (2003), p.993

<sup>8</sup> Barreiro et al (2007), 'Is natural conception a valid option for HIV-serodiscordant couples?', *Human Reproduction*, Vol.22, No.9 pp.2356-7

<sup>9</sup> National Institute of Neurological Disorders and Stroke (2007)

and show why assisted conception for people living with HIV should no longer be classed as a fundamental ethical dilemma.

### **Lingering ignorance about conception and HIV**

According to a 2009 study of 59 heterosexual men and women living with HIV in Birmingham:

- 5 believed it was not possible for HIV positive women to have HIV-negative children, and 8 thought that HIV positive women could not become pregnant without passing on HIV to their male partner.
- Only 13 were aware that with medical intervention, the risk of transmitting HIV to the baby was 'very low'.
- 15 thought HIV positive men could transmit HIV directly to their baby.
- 28 thought if a woman started ARV therapy during pregnancy, the treatment would be lifelong.
- Only 25 knew a caesarean section is not mandatory.
- Only 29 knew breastfeeding is not recommended.

*Pebody, R. (2009), "UK women with HIV need more conception and contraception advice", [www.aidsmap.com](http://www.aidsmap.com)*

## **2. Current forms of assisted conception**

At present, serodiscordant couples who wish to conceive may consider one of three methods of assisted conception: self-insemination, donor sperm, and sperm-washing (coupled with IUI, IVF or ISCI).

### **i) Self-insemination**

This is a safer alternative to unprotected intercourse for couples where only the female partner is living with HIV. Also colloquially known as the 'turkey-baster' method, self-insemination of the male partner's sperm protects against transmission and can be easily done at home. BHIVA further suggests that if pregnancy hasn't been achieved after 6-12 months of self-insemination (or sooner in women over 35 or those with a history of tubal disease), fertility investigations should be initiated.<sup>10</sup>

Keep in mind that while this method makes conception safe for the male partner, the risk of mother to child transmission (MTCT) still needs to be mitigated with correct treatment. Available interventions against MTCT are highly effective.

A 2000-2006 study of 5,151 diagnosed women in the UK and Ireland found an overall MTCT rate of 1.2%, and only 0.8% in women who received at least 14 days of ARV treatment. Among women on treatment, the MTCT rate was 0.7% both among the 2,286 who had planned c-sections and the 559 who had planned vaginal deliveries. For the 2,117 women with a viral load of less than 50 copies/ml, there were only 3 transmissions recorded, representing 0.1% of the group.<sup>11</sup>

<sup>10</sup> BHIVA (2008), 'British HIV Association and Children's HIV Association guidelines for the management of HIV infection in pregnant women 2008', [www.bhiva.org](http://www.bhiva.org), p.461

<sup>11</sup> NSHPC (2009), 'Obstetric and paediatric HIV surveillance data from the UK and Ireland', [www.nshpc.ucl.ac.uk](http://www.nshpc.ucl.ac.uk)

For women with undetectable viraemia, planned vaginal delivery has become a plausible option. Any woman living with HIV considering conception should speak to her HIV consultant about how best to protect her child from transmission.

## ii) Donor sperm

Where only the male partner is living with HIV, the use of sperm from a screened donor eliminates the risk of transmission during conception. In doing so, the male partner inevitably surrenders a genetic link with his child. Both BHIVA and NICE guidelines recommend this method as a safe and effective option.<sup>12</sup>

## iii) Sperm-washing (IUI, IVF/ICSI)

Another option for couples in which the male partner is living with HIV is sperm-washing. This is a process by which sperm is centrifuged to separate spermatozoa from seminal fluid and non-sperm cells. While seminal plasma and germinal cells might carry HIV, the virus is incapable of attaching itself to the live sperm.<sup>13</sup> The most encouraging statistic, cited throughout the literature, is that in over 3,000 cycles of sperm-washing combined with insemination methods, there were no reported cases of HIV infection of the female partner when carried out following published protocols.<sup>14</sup> Sperm-washing may also be of interest to couples where both partners are living with HIV, but wish to avoid cross-infection. This precaution is recommended by BHIVA, although they concede that the cost involved may make it untenable for many concordant couples.<sup>15</sup>

Following sperm-washing, conception can be aided through intra-uterine insemination (IUI), in-vitro fertilization (IVF) or intracytoplasmic sperm injection (ICSI):

**IUI:** A sample of washed sperm is placed inside the womb

**IVF:** The egg is removed and placed in a culture, where it is fertilised by washed sperm and then placed back into the womb.

**ICSI:** Sperm washed as above, but the egg is injected with a single spermatozoa before re-implantation in the womb.

IUI would be attempted in the first instance, unless fertility issues had been identified. Research has found a range of specific fertility-related issues for people living with HIV. For women, there is increasing evidence that HIV can cause reduced ovarian reserve and tubal damage. Women living with HIV have also been found to be ten times more likely to experience upper genital tract infections, which may compromise fertility.<sup>16</sup> For men living with HIV, recent research has shown that ARV drugs may

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<sup>12</sup> BHIVA (2008), 'British HIV Association and Children's HIV Association guidelines for the management of HIV infection in pregnant women 2008', [www.bhiva.org](http://www.bhiva.org), p.460; NICE (2004), 'Fertility: Assessment and treatment for people with fertility problems - Clinical Guideline', [www.nice.org.uk](http://www.nice.org.uk), p.19

<sup>13</sup> BHIVA, BASHH and FSRH (2008). 'Guidelines for the management of the sexual and reproductive health of people living with HIV infection 2008', [www.bhiva.org](http://www.bhiva.org), p.691

<sup>14</sup> Klein et al (2003), 'Understanding the Motivations, Concerns, and Desires of Human Immunodeficiency Virus 1-Serodiscordant Couples Wishing to Have Children Through Assisted Reproduction', *Obstetrics & Gynecology*, Vol.101, No.5, p.993; BHIVA, BASHH and FSRH (2008), p.691; BHIVA (2008), p.461

<sup>15</sup> BHIVA (2008).

<sup>16</sup> Ohl et al (2003), 'Assisted reproduction techniques for HIV serodiscordant couples: 18 months of experience', *Human Reproduction*, Vol.18, No.6 pp.1244-1249, p.1247

impact upon sperm motility (the 'quality' of the sperm or their ability to move towards the egg). Any of these issues may present a need for IVF or ICSI.

A 2000 European study of over 2,000 inseminations with washed and tested sperm resulted in a 14% pregnancy rate per insemination. A French study the following year followed 174 cycles of IUI in 54 couples, which led to 31 pregnancies and an 18% pregnancy rate per cycle.<sup>17</sup>

BHIVA recommends that a couple completes between three and six cycles of IUI before they are offered IVF.<sup>18</sup> In cases of reduced sperm motility, ICSI may be used.

Success rates for IVF/ICS among couples affected by HIV are comparable to those experienced by the general population. Other key obstetric markers such as gestational age and birth weight and numbers of complications in delivery were also in line with those expected from the broader population of couples accessing assisted conception.

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<sup>17</sup> Ohl et al (2003). p.1248

<sup>18</sup> BHIVA, BASHH and FSRH (2008). 'Guidelines for the management of the sexual and reproductive health of people living with HIV infection 2008', [www.bhiva.org](http://www.bhiva.org), p.692

### 3. Access to assisted conception

#### i) Self-insemination

Special apparatus, such as quills, syringes and sterile containers, are needed. The process is not eligible for NHS funding, but is still an inexpensive option.

#### ii) Donor Sperm

There is widespread shortage of donor sperm in the UK.<sup>19</sup> Also, the need to prevent transmission of STIs by donor insemination means mandatory quarantine of donor sperm for six months by cryopreservation prior to use in the UK- frozen sperm tends to be less effective in achieving pregnancy.<sup>20</sup>

#### iii) Sperm-washing, IUI, IVF and ISCI

Access issues around sperm-washing occur at two levels: access to sperm-washing, and access to insemination technologies (IUI/IVF/ICSI) used after the centrifugation process. There are issues of availability and cost for both stages.

##### *Sperm washing*

Following NICE's support for sperm-washing in its 2004 guidelines, an increased number of PCTs have shown willingness to fund up to three cycles of sperm-washing as a means of risk reduction (as reported by BHIVA).<sup>21</sup> However, BHIVA notes that sperm-washing remains patient-funded in over 50% of cases.<sup>22</sup> A letter of recommendation from the genitourinary physician to the patient's Health Authority is usually required to access funding.<sup>23</sup>

Indicative prices for sperm-washing (from Chelsea and Westminster Hospital Assisted Conception Unit, London) are £670 for sperm washing only, and £980 for sperm washing and one years' freezing.<sup>24</sup>

##### *IUI, IVF and ISCI*

According to BHIVA, "it is now well accepted that HIV-infected men and women should not be denied access to fertility treatment".<sup>25</sup> However, NICE fertility treatment guidelines continue to provide advice to clinicians around "considering the decision to provide", implying ongoing discretion in practice.<sup>26</sup> A key consideration in providing access to assisted conception would be the 1990 Human Fertilisation and Embryology Authority (HFEA) Act (1990) which requires fertility treatment centres to take into account the health of both parents, maternal prognosis, commitment to

<sup>19</sup> BHIVA, BASHH and FSRH (2008). 'Guidelines for the management of the sexual and reproductive health of people living with HIV infection 2008', [www.bhiva.org](http://www.bhiva.org), p.691

<sup>20</sup> NICE (2004), *Fertility: Assessment and treatment for people with fertility problems - Clinical Guideline*, [www.nice.org.uk](http://www.nice.org.uk), p.121

<sup>21</sup> NICE (2004),, p.100; BHIVA (2008), 'British HIV Association and Child'ren's HIV Association guidelines for the management of HIV infection in pregnant women 2008, [www.bhiva.org](http://www.bhiva.org), p.460-1

<sup>22</sup> BHIVA (2008), 'British HIV Association and Children's HIV Association guidelines for the management of HIV infection in pregnant women 2008', [www.bhiva.org](http://www.bhiva.org) p.455

<sup>23</sup> BHIVA (2008), p.461

<sup>24</sup> Prices valid 1 April 2009-31 March 2010

<sup>25</sup> BHIVA (2008), p.461

<sup>26</sup> NICE (2004), p.101

comply with interventions and social circumstances with respect to the welfare of any child.

Even with a willing clinician's referral, access to assisted conception for people with HIV is highly limited in the UK. In addition to the access issues faced by the general population, including cost and the 'postcode lottery' of IVF services varying by PCT<sup>27</sup>, HIV presents additional complications in the provision of assisted conception, further limiting the availability of suitable services. For example, HFEA rules state that sperm samples and eggs from patients with infectious diseases must be kept separate from other patients' samples to prevent cross-contamination. This requires separate lab and cryostorage facilities - an expensive commitment few centres can meet.<sup>28</sup>

A list of all fertility clinics in the UK (private and public) provided by the HFEA substantiates this: of around 126 clinics in England, Scotland and Wales, only 26 have facilities for infectious diseases - which may or may not include HIV (see *appendix*). There are none listed for Wales, Northern Ireland or the South East of England (excluding London), and only one in the South West region. Aside from London, the South appears to be poorly-served. In London, centres run by Chelsea and Westminster Hospital and King's and University Colleges offer sperm-washing to HIV positive men, but health workers at those centres were unsure as to exactly where else in the country the same treatments were offered.

BHIVA reports that many patients arrange to have all reproductive counselling, investigation and monitoring in local centres, and only travel to specialist services for IVF or sperm-washing, to minimize costs and travelling.<sup>29</sup> Notwithstanding such economising, the above geographical distribution of services contributes to a bias of access in favour of couples of a higher socioeconomic status, who are more likely to have the time to research their options, the means to travel distances to receive treatment, and can afford to pay for the procedures themselves.<sup>30</sup> The cost of assisted reproduction is considerable, regardless of HIV status. Prices differ according to the clinic offering treatment, but the figures below are an example of the range any patient (HIV positive or otherwise) might expect to pay if funding the procedures themselves (not including mandatory HFEA fees). This is a sample of price lists from the London Fertility Centre and Homerton University Hospital:

Procedure	London Fertility Centre	Homerton
IUI (partner sperm)	£750	£350
IUI (donor sperm)	£750	£400 (excl. sperm)
IVF (per cycle)	£2,950	£2,100
ICSI (per instance)	£1,100	£2,500
Embryo freezing	£2,550	£200
Embryo storage	£300 per annum	£200 (1 yr incl. above)
Sperm freezing	£300 (incl. assessment)	£150
Sperm storage	£300 (1 yr incl. above)	£150 (1 yr incl. above)

<sup>27</sup> See for example BBC (2009) "IVF couples in postcode lottery". 6 August 2009.

<http://news.bbc.co.uk/1/hi/health/8185753.stm>

<sup>28</sup> BHIVA, BASHH and FSRH (2008). 'Guidelines for the management of the sexual and reproductive health of people living with HIV infection 2008', [www.bhiva.org](http://www.bhiva.org), pp.689, 693-4; Barreiro et al (2007), 'Is natural conception a valid option for HIV-serodiscordant couples?', *Human Reproduction*, Vol.22, No.9, p.2354

<sup>29</sup> BHIVA, BASHH and FSRH (2008). p.694

<sup>30</sup> Klein et al (2003), 'Understanding the Motivations, Concerns, and Desires of Human Immunodeficiency Virus 1-Serodiscordant Couples Wishing to Have Children Through Assisted Reproduction', *Obstetrics & Gynecology*, Vol.101, No.5, p.992

Both of those examples are in London, but prices for regional centres are comparable, as illustrated by the below price lists for Isis Fertility Centre (Colchester - private with some NHS funding) and the Clarendon Wing, Leeds Reproductive Medicine Unit (NHS with some self-funding):

<b>Procedure</b>	<b>Isis Fertility Centre</b>	<b>Clarendon Wing</b>
IUI (partner sperm)	£600	£460
IUI (donor sperm)	£600 (excl. sperm)	£460 (excl. sperm)
IVF (per cycle)	£2,775	£2,560
ICSI (per instance)	£850 (supplement)	£725 (supplement)
Embryo freezing	£400	£275
Embryo storage	£175 (1 yr incl. above)	£275 (1 yr incl. above)
Sperm freezing	£300	£270 (excl. analysis)
Sperm storage	£175 (1 yr incl. above)	£270 (1 yr incl. above)

Usually more than one procedure is needed, and there are myriad supplementary costs associated with all procedures. The system of funding for assisted conception is complicated, as each PCT has its own rules and criteria and there is little consistency around how many cycles of treatment may be funded, despite the NICE guidelines calling for PCTs to cover the cost of three cycles. Factors such as the woman's age and any previous children can seriously count against an application. However, anecdotally at least, it appears HIV status is not considered a negative factor in such decisions. Serodiscordant couples are treated like any other, or in some PCTs may be considered a priority based on a risk-reduction argument.

IUI, the first technique attempted in couples with no underlying fertility problems, is unfunded in all PCTs. However, it is less expensive than other assisted conception techniques. If it is felt IVF is required to prevent serotransference, a patient will be referred to an exceptional treatment committee run by the PCT to make their case for funding - anecdotally, these applications are often successful.

As with fertility treatments generally, it is difficult to effectively and thoroughly map the availability of assisted conception for HIV positive patients across PCTs. However, it is known that Lambeth, Southwark and Lewisham PCTs, all of which are high HIV-prevalence areas, fulfil the NICE recommendation for funding three cycles: one fresh and two frozen.

### **Recommendations**

There needs to be consistent commissioning across PCTs of fertility services which have an important role in preventing HIV transmission.

All PCTs should:

- Offer funding for three cycles of IVF, in line with NICE guidelines
- Take the particular needs of couples affected by HIV into account in service specifications for fertility services.
- This may include funding for sperm-washing services, and IUI/IVF/ICSI services, and, where not locally available, referral to other PCTs who may offer the services.

## 4. Treatment as Prevention (TAP): A plausible alternative?

### i) Reconsidering natural conception

Given the access issues discussed above, safe conception through assisted means may be out of the reach of many serodiscordant couples.<sup>31</sup> Some of these couples will still attempt natural conception in spite of advice against unprotected sex. As well as being free and much easier than assisted conception, the appeal of natural conception for serodiscordant couples may have increased in view of recent research into the plausibility of 'treatment as prevention' (TAP) as a safe conception option.

TAP makes two propositions. The fundamental hypothesis is that if effective treatment has reduced the HIV positive partners' viral load sufficiently, unprotected intercourse is a much less risky option than it was previously thought to be. The corollary to this is that people living with HIV who are not yet on ARV therapy and wish to conceive may commence treatment early for purely prophylactic reasons.

Most research has focused on the first, fundamental question of the safety of natural conception among serodiscordant couples. One such study followed 393 serodiscordant couples attempting natural conception over a 14-year period, and found no HIV transmission when the infected partner was on ARV therapy. In another trial, 22 couples in which the male partner had a fully suppressed viral load (less than 50 copies/ml) tried timed unprotected intercourse in combination with pre-exposure prophylaxis. With 50% of women conceiving after three cycles, the conception rate was higher than with artificial conception techniques, and all of the women tested negative three months after their last exposure.<sup>32</sup> A Spanish study of natural pregnancies in serodiscordant couples saw 62 couples achieve natural pregnancies (in 22 the female partner was HIV positive, and in 40 the male).<sup>33</sup>

Based on the growing body of evidence, in 2008 Swiss researchers asserted that "the residual risk of HIV-transmission during sex without a condom in the context of a completely suppressed viral load is much lower than 1:100,000."<sup>34</sup> (1:100,000 is the standard mathematically-derived HIV transmission risk per act of intercourse). The same researchers have also made the most definitive statement to date in support of TAP. The so-called 'Swiss Statement', released in January 2008 by the Swiss Federal Commission for HIV/AIDS, declares that, "an HIV-infected person on antiretroviral therapy with completely suppressed viraemia is not sexually infectious, i.e. cannot transmit HIV through sexual contact". This is the case as long as the individual:

- complies with ARV therapy
- has had an undetectable viral load for at least 6 months
- does not have any other STIs.<sup>35</sup>

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<sup>31</sup> Barreiro et al (2007), 'Is natural conception a valid option for HIV-serodiscordant couples?', *Human Reproduction*, Vol.22, No.9, p.2357

<sup>32</sup> BHIVA, BASHH and FSRH (2008). 'Guidelines for the management of the sexual and reproductive health of people living with HIV infection 2008', [www.bhiva.org](http://www.bhiva.org), p.706

<sup>33</sup> Barreiro et al (2007).

<sup>34</sup> Vernazza et al (2008), 'HIV-positive individuals not suffering from any other STD and adhering to an effective antiretroviral treatment do not transmit HIV sexually' ['The Swiss Statement'], *Bulletin des médecins suisses*, Vol.89:5, p.167

<sup>35</sup> Vernazza et al (2008), p.165

This has potentially far-reaching implications for serodiscordant couples who wish to conceive but for whom assisted conception is inaccessible. Around two-thirds of people living with HIV on ARV treatment in the UK have an undetectable viral load.<sup>36</sup>

## ii) Impact on demand for assisted conception

The propositions of TAP are likely to significantly change attitudes among HIV affected couples around the safety of natural conception, and, indeed, may have done so already. For example, a study from the United States with data dating before and during the very early years of ART found that only 2% of couples who had sought and were denied IVF/ICSI intended to attempt natural conception.<sup>37</sup> In contrast, BHIVA reports that up to one-third of couples on waiting lists for fertility clinics do not attend, and that, anecdotally, a significant number of these conceive naturally.<sup>38</sup> This latter claim also suggests how changed attitudes around the risk of unprotected intercourse may impact upon the demand for assisted conception among serodiscordant couples.

There is no means of accurately estimating the extent to which changed attitudes may affect levels of demand for assisted conception across the UK. Anecdotal reports from fertility clinics suggests that serodiscordant couples are more commonly conceiving through unprotected intercourse than by assisted methods. This could represent an increase in response to recent research into TAP, or it could be that natural conception was already quite prevalent among serodiscordant couples, but with the increased support for TAP they are more willing to discuss this with clinicians.

A typical clinician response in such circumstances is to inform the couple that the clinic does not promote TAP, but then let them know about the latest research and advise them to visit a family planning nurse to know when is best to attempt conception. Electronic fertility predictors available over-the-counter can help minimise risk as well, by helping the couple to restrict unprotected intercourse to times when the woman is most fertile.

## iii) Is TAP advisable?

There is obvious appeal in the propositions of TAP, and, anecdotally at least, an increase in the popularity of natural conception for serodiscordant couples. However, is TAP an advisable alternative to assisted conception?

Despite the highly promising research findings discussed above, there is a greater-than-zero risk of transmission of HIV from unprotected intercourse between serodiscordant partners, even where the HIV positive partner is on effective treatment.<sup>39</sup> Concerns around viral shedding in semen still exist: A study of 551 semen samples from men undergoing sperm washing found 15 cases of detectable HIV in semen from men with long-term undetectable viral loads (resulting from ARV

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<sup>36</sup> BHIVA, BASHH and FSRH (2008). 'Guidelines for the management of the sexual and reproductive health of people living with HIV infection 2008', [www.bhiva.org](http://www.bhiva.org), p.705

<sup>37</sup> Klein et al (2003), 'Understanding the Motivations, Concerns, and Desires of Human Immunodeficiency Virus 1-Serodiscordant Couples Wanting to Have Children Through Assisted Reproduction', *Obstetrics & Gynecology*, Vol.101, No.5, p.993

<sup>38</sup> BHIVA, BASHH and FSRH (2008), p.706

<sup>39</sup> BHIVA, BASHH and FSRH (2008)

therapy).<sup>40</sup> Some trials also suggest that a detectable viral load may be found in semen (200 copies/ml) even when the viral load in blood plasma had remained under the detection limit for over six months (40 copies/ml)<sup>41</sup>.

There is always a risk of HIV transmission which should be minimised, including but not limited to the conditions outlined by the Swiss Statement. For example, before attempting natural conception, the couple needs to be sure there are no underlying fertility problems. Likewise, couples should restrict unprotected sexual intercourse to a woman's fertile days to minimise unnecessary exposure while maximising pregnancy chances.<sup>42</sup> It should also be remembered that sero-same partners also face a risk of acquiring a resistant strain of the virus through cross-infection.<sup>43</sup>

With the first definitive scientific statement of support for TAP (The Swiss Statement) not yet two years old, the HIV clinical community is some way from consensus around the plausibility of TAP. European organisations such as Deutsche AIDS-Hilfe and Conseil National du SIDA (CNS) have openly declared their belief that TAP is plausible and ARV treatment may be begun for purely preventative reasons.<sup>44</sup> Interestingly, the original Swiss Statement takes the more conservative line that starting treatment purely for preventative reasons is not advisable, due to the additional costs involved, and the question of individuals' commitment to follow long-term therapies.<sup>45</sup> In the UK, BHIVA acknowledges the potential for ARV therapy to greatly reduce the risks associated with natural conception, but still advises couples to use assisted conception and avoid unprotected intercourse in all cases.<sup>46</sup> So for the present, TAP is not considered 'advisable' for people in the UK who are living with HIV.

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<sup>40</sup> BHIVA, BASHH and FSRH (2008). 'Guidelines for the management of the sexual and reproductive health of people living with HIV infection 2008', [www.bhiva.org](http://www.bhiva.org), p.690

<sup>41</sup> Deutsche AIDS-Hilfe (2009), 'HIV therapy and prevention position paper', [www.aidshilfe.de](http://www.aidshilfe.de)

<sup>42</sup> For example, see Barreiro et al (2007), 'Is natural conception a valid option for HIV-serodiscordant couples?', *Human Reproduction*, Vol.22, No.9 p.2356; BHIVA (2008) pp.690-1, 693

<sup>43</sup> BHIVA, BASHH and FSRH (2008), p.705

<sup>44</sup> Deutsche AIDS-Hilfe (2009), xi; Conseil National du Sida (2009), *Statement followed by recommendations on the appropriateness of treatment as an innovative tool for fighting the epidemic of HIV infections*, [www.cns.sante.fr/](http://www.cns.sante.fr/), p.14

<sup>45</sup> Vernazza et al (2008), 'HIV-positive individuals not suffering from any other STD and adhering to an effective antiretroviral treatment do not transmit HIV sexually' ['The Swiss Statement'], *Bulletin des médecins suisses*, Vol.89:5, p.167

<sup>46</sup> For example, see BHIVA, BASHH and FSRH (2008), p.689; BHIVA (2008), 'British HIV Association and Children's HIV Association guidelines for the management of HIV infection in pregnant women 2008', [www.bhiva.org](http://www.bhiva.org), p.460

## Appendix

There are 26 fertility clinics in the UK with facilities for infectious diseases. In bold are those **known** to currently treat HIV positive patients:

<u>Region</u>	<u>Clinic</u>
East Midlands	CARE Nottingham
East of England	Herts and Essex Fertility Centre [Cheshunt] Isis Fertility Centre [Colchester]
London	<b>Assisted Conception Unit, King's College Hospital</b> Barts and the London Centre for Reproductive Medicine <b>Chelsea &amp; Westminster Hospital</b> Guys Hospital Homerton University Hospital IVF Hammersmith London Fertility Centre Reproductive Medicine Unit [University College] Shirley Oaks Hospital The Bridge Centre
North East	Centre for Assisted Reproduction, Gateshead Cleveland Gynaecology and Fertility Centre [Middlesbrough] Hartlepool General Hospital
North West	Hewitt Centre for Reproductive Medicine [Liverpool]
Scotland	Aberdeen Family Centre Ninewells Hospital [Dundee]
South West	Bristol Centre for Reproductive Medicine
West Midlands	Burton Hospitals NHS Trust [Burton-upon-Trent] Centre for Reproductive Medicine, Coventry Shropshire and Mid-Wales Fertility Centre [Shrewsbury] St Jude's Women's Hospital [Wolverhampton]
Yorkshire and the Humber	Centre for Reproductive Medicine and Fertility, Sheffield Clarendon Wing, Leeds

King's College offers services for patients with HIV, but does not have the facilities to freeze sperm from HIV positive patients.

Chelsea and Westminster Hospital treats HIV positive patients, and has sperm-washing and a freezing facility.