**Title:** Pharmaceutical HIV Prevention Technologies in the UK: Six Domains for Social Science Research

**Authors:** Peter Keogh[[1]](#footnote-1) ; Catherine Dodds[[2]](#footnote-2)

**Corresponding author:** Dr Peter Keogh

Senior Lecturer in Sexual Health

School of Health and Social Care

University of Greenwich

S107, Avery Hill Campus

London SE9 2UG

Tel: +44 (0)20 8331 8065

Email: p.g.keogh@greenwich.ac.uk

**Acknowledgement:** The symposium and consultation development that gave rise to this article was funded by the Foundation for the Sociology of Health and Illness.

# Pharmaceutical HIV Prevention Technologies in the UK: Six Domains for Social Science Research

**Abstract**

The development of pharmaceutical HIV prevention technologies (PPTs) over the last five years has generated intense interest from a range of stakeholders. There are concerns that these clinical and pharmaceutical interventions are proceeding with insufficient input of the social sciences. Hence key questions around implementation and evaluation remain unexplored whilst biomedical HIV prevention remains insufficiently critiqued or theorised from sociological as well as other social science perspectives. This paper presents the results of an expert symposium held in the UK to explore and build consensus on the role of the social sciences in researching and evaluating PPTs in this context.

The symposium brought together UK social scientists from a variety of backgrounds. A position paper was produced and distributed in advance of the symposium and revised in the light this consultation phase. These exchanges and the emerging structure of the paper formed the basis for symposium panel presentations and break-out sessions. Recordings of all sessions were used to further refine the document which was also re-drafted in light of ongoing comments from symposium participants.

Six domains of enquiry for the social sciences were identified and discussed: Self, Identity & Personal Narrative; Intimacy, Risk & Sex; Communities, Resistance & Activism; Systems, Structures & Institutions; Economic Considerations & Analyses; and Evaluation & Outcomes. These are discussed in depth alongside overarching consensus points for social science research in this area as it moves forward.

[Abstract word count: 233]

**Background**

Pharmaceutical HIV Prevention involves the use of antiretroviral drugs by HIV-negative and HIV-Positive individuals to reduce HIV acquisition and transmission respectively. Current Pharmaceutical HIV Prevention Technologies (PPTs) include Pre-Exposure Prophylaxes (PrEP) – administered either orally or topically, Post-Exposure Prophylaxes (PEP) and Treatment as Prevention (TasP). Clinical science has delivered a consistently high effect size for TasP and a range from 0% to 73% reduction in incidence across placebo-controlled PrEP trials (McCormack *et al*. 2014; Mayer, 2014). Although trial evidence for PEP is less robust, it has been widely used as a PPT for some time now (McCormack *et al*. 2014).

Whilst some have hailed PPTs as having the potential to end the AIDS pandemic (Havlir & Beyrer, 2012) others are circumspect (Miller *et al*. 2013; Wilson 2012). Reservations sometimes focus on epidemiological factors; with the point being made that many new instances of exposure and transmission emanate from those most recently infected who have not yet had the opportunity to test for HIV (Cohen *et al*. 2012a; Delpech, 2012). Others focus on implementation and acceptability, citing psycho-social and interpersonal factors mediating individuals’ interactions with HIV treatments and their capacity to use PPTs (Adam *et al*. 2003), (Rosengarten *et al.* 2004), (Keogh, 2013), (Persson, 2012). There are concerns that PPTs are being considered solely as a clinical intervention devoid of social context and where both effectiveness and the passive compliance of the target population is assumed (Davis & Squire, 2010; Nguyen *et al*. 2011; Squire, 2012; Seeley *et al*. 2012; Adam, 2011; Kippax & Stephenson, 2012). With only a few examples of research and commentary on the topic (Imrie *et al*. 2007), (Bourne *et al*. 2011), (Mykhalovskiy & Rosengarten, 2009), (Rosengarten, 2009), (Davis & Squire, 2010), (Patton, 2011), social sciences in the developed Global North has not kept in step with clinical and epidemiological developments with key questions around implementation remaining unexamined (Young & McDaid, 2013; Kippax & Stephenson, 2012).

These concerns are of relevance in the UK context: a high-income country with a concentrated HIV epidemic. An estimated 98,400 people are living with HIV in the UK (Aghaizu *et al.* 2013). Men who have sex with men (MSM) and Black-African men and women are the two groups most affected by HIV making up approximately 42% and 32% of the overall UK population of PWHIV respectively. Free, accessible HIV treatment and care has resulted in high treatment coverage in the UK with an estimate of 85% of the diagnosed population in care. Approximately 48% of the entire HIV population had an undetectable viral load in 2011 (Aghaizu *et al*. 2013). Clinical guidelines in the UK have been updated to take account of the efficacy of TasP with the expectation that all those accessing clinical services are to be fully informed about the prevention benefits of treatment (Williams, 2014). Moreover, there is also an implementation study of PrEP among MSM being undertaken in the UK by the Medical Research Council (see <http://www.proud.mrc.ac.uk/>).

This paper represents the culmination of a process that focused around an expert symposium of HIV social scientists held in London in December 2012. It was motivated by a desire to ensure that HIV prevention in the UK would not emerge from this ‘biomedical moment’ with insufficient support critique and theorisation from the social sciences. The process involved nearly forty social scientists specialising in HIV from a range of backgrounds: cultural sociologists, health service researchers, psychologists, economic sociologists, demographers, mathematical modellers, policy analysts, social epidemiologists and those with expertise in complex evaluations. Its purpose was to explore and build consensus on the role of the social sciences in researching and evaluating new and emerging HIV prevention technologies in the UK and to produce a discussion document to inform future work.

Rather than use established consensus-building approaches such as Delphi or Nominal Group Techniques (Van Teijlingen *et al*. 2006), the process was less formal, though still systematic. A draft discussion document was prepared by the authors in advance of the symposium and distributed to all participants prior to the symposium and comments invited. These comments were integrated into a final pre-symposium draft. The symposium consisted of a panel of presenters who were invited to give a background to each thematic area followed by break-out workshops where sub-groups engaged in facilitated discussion around each theme. These groups then fed back to the main symposium. The panel presentations and group feedback were recorded audio-visually and are available online (see http://vimeo.com/61718033). The sub-group discussions were audio-recorded. These recordings were used to amend the discussion document further with subsequent drafts re-distributed to workshop participants for further comments. Here we present the final discussion document emerging from this extensive consultative process. It is important to state the limitations of this process: symposium attendees were selected for their expertise and experience in this area and restricted comments to those that were strongly evidence-based. However it must be stressed that conclusions and consensus points presented here are those of an expert group, and as such are open to question or challenge.

**Domain 1: Self, Identity & Personal Narrative**

Sociologists have worked to describe the ways in which individuals engage in ‘identity work’ to forge identities and responses to the epidemic which reinforce or undermine over-arching social and cultural norms (Green & Sobo, 2000; Halkitis, *et al*. 2005; Flowers, *et al*. 2006; Baumgartner, 2007). Thus, we articulate the lived experience of ‘being’ HIV-Positive or HIV-Negative and describe selves that are sick/healthy, responsible/irresponsible, moral/immoral etc. (Kinsman, 1996; Adam, 2005; Keogh, 2008a; Keogh, 2008b; Doyal, 2013; Flowers *et al*. 2000; Flowers, 2010; Davis & Flowers, 2011). We can also identify relevant events or narratives in people’s biographical construction; for example, testing for HIV, HIV diagnosis HIV, illnesses, changes in clinical markers (viral load or CD4 count), and starting treatments which each hold considerable significance for that individual.

PPTs have the potential to disrupt such identities and narratives. For example, by requiring those with a negative diagnosis to take treatments, PrEP has the potential to disrupt established distinctions between sick and healthy or HIV positive and HIV negative. Moreover, the status of key events in personal narratives (such as an HIV test or commencing treatment) change as individuals test for different reasons and take various actions depending on the result. Finally, the question of locating the moral or responsible self becomes more complex as PrEP and TasP are targeted to those at greater risk through their sexual behaviours (Centers for Disease Control and Prevention, 2013). For example, delaying treatment initiation or sub-optimal adherence may take on a moral dimension as viral suppression is linked with potential for HIV transmission. Will those not adhering be judged differently if they are seen to increase the risk of infection to sexual partners?

To make better sense of people’s changing sense of self, symposium participants proposed the deployment of concepts such as *therapeutic* *citizenship* (Nguyen *et al*.2007) as a means of describing how people with HIV negotiate the conflicting moral economies of PPT implementation. Likewise, it was suggested that the concept of *bio-medicalisation* (Williams *et al*. 2009; Clarke *et al*. 2010) may support theorisation of how identities are shaped through embracing or resisting clinical technologies. Moreover, it was stressed that we require continuity with past research focusing on rights, responsibilities and morality as individuals engage with HIV technologies (Lupton *et al*. 1995a; Lupton *et al*.1995b; Green & Sobo, 2000).

Finally, participants discussed the potential for PPTs to interact with the self as inscribed within overarching social structures. HIV epidemiology is stratified by gender, ethnicity, social class and sexual identity. This is due in part to factors associated with the biology of HIV transmission but is also reflective of social/power inequities. PPTs offer the potential for individuals, especially women, to take greater control of their own transmission risk. Thus, we should explore how PPT implementation might be mediated by structural difference and how PPTs might re-balance structural asymmetries through shifting the control of sexual risk.

**Domain 2: Intimacy, Risk & Sex**

The imperative to engage with sexual HIV risk defines the parameters of intimate relationships and constrains sexual and reproductive decision-making for people with HIV (Davis, *et al*. 2002; Green & Sobo, 2000; Klitzman & Bayer, 2003; Marks & Crepaz, 2001; Persson, 2008; Van de Ven *et al*. 1999; Anderson & Weatherburn, 2004; Bourne *et al*, 2009; Bourne *et al*. 2011; Bourne *et al*. 2012; Keogh *et al*. 1999). Landscapes of risk may be re-drawn by PPTs with individuals having additional factors to weigh up in calibrating their sexual risk practices. Moreover, potential for new relationships may develop. For example, sero-different relationships may be more feasible if responsibility for avoiding infection is increasingly shared (that is, where both partners are taking antiretrovirals and engaging with the clinic together, and using clinical markers to negotiate risk).

Conceptualisations of individual risk propensities have shifted towards to a conception that sexual HIV risk involves individuals negotiating protean ‘landscapes of risk’ (Green & Sobo, 2000; Lupton, 1999). Thus reductive or deficit models of risk have been supplanted by an approach that characterises risk as productive in terms of the self and the possibilities afforded by intimate relationships. Technologies that increase complexity around risk, and promote the agency of those living with that risk, have the potential to shift us further from past deficit models. Conversely however, as they also herald greater involvement of the clinical sciences in measuring the impact of PPTs on risk behaviour, we may also see a resurgence of research utilising positivist models of risk.

**Domain 3: Communities, Resistance & Activism**

PPTs imply that people’s experience of and relationship with the virus and the clinic will change. Many people who have received a negative HIV diagnosis will be the subjects of medical interventions akin to those who have been diagnosed positive. As the identities/self-concept of ‘HIV Positive’ and ‘HIV Negative’ lose definitional power so too will they alter in terms of their collective, political and cultural meanings. Such meanings have been instrumental in defining interest groups united by common experiences (for example, people with HIV, gay men/MSM, African communities) and determining how groups have organised themselves to attain political ends (Berridge, 1996; Altman, 1994; Epstein, 1998; Haywood, 2009; James, 2011). Although community formations will retain social and political currency, relationships within and between them are likely to change as are the aims and methods of AIDS activism.

PPTs appear to be already having an impact on such relationships with the interests of AIDS activists, treatment advocates, communities, drugs companies, clinical providers and governments increasingly difficult to unpick. Moreover, enthusiasm for PPTs is unlikely to be shared equally in all quarters. For example, human rights concerns are emerging regarding compulsion to comply with treatments (International AIDS Alliance, 2012; GNP+, 2012; European AIDS Treatment Group, 2014). Reassurance is needed that clinical and treatment decisions will be guided by clinical need rather than cost.

At the symposium, attention focused on the extent to which social scientists should engage in activist and/or communitarian agendas around PPTs. It was argued that the limited notions of ‘patient and public involvement’ relied upon by UK research councils should be challenged by social researchers. Of considerable concern is the way in which social research on PPTs is predominantly conceived within clinical research models which tend to utilise positivist approaches. The social sciences can offer more meaningful participatory research models while being mindful of the ways in which knowledge production can generate or consolidate power asymmetries. Finally, social sciences emphasise exploratory and speculative approaches alongside positivistic or experimental approaches. Such approaches were seen as essential to ensure that research in this area is produced with, by and for people with HIV.

**Domain 4: Systems, Structures & Institutions**

In the history of PPT development, key moments function as drivers. The Swiss Statement (Vernazza, 2008), the publication of HTPN 052 data (Cohen *et al*. 2011), the iPrex study results (Grant *et al*. 2010), the licensing of Truvada as PrEP in the US (US Food and Drug Administration, 2012) and discussions of a ‘functional cure’ in 2013 (Persaud, 2013; Pollack & McNeil, 2013) are all examples of key moments which make PPT implementation appear increasingly inevitable. Less well-known are scientific results that fail to support this momentum, where evidence of efficacy is equivocal, or models of roll-out suggest a lack-lustre epidemiological impact. Those working in Science and Technology Studies are best placed to examine the ways in which systems, structures and institutions work to exploit or ignore such findings.

Moreover, as new prevention options emerge, the meanings and associations traditionally ascribed to HIV may be further re-framed. There is a potential, for instance, to re-consider the collective protections that widespread treatment access can afford entire populations (not just those who are already infected). This framing would contrast strongly with the individualised and stigmatised perceptions of the pre-ARV epidemic. The ways in which systems, institutions and structures utilise such a re-framing will be a key area of study (continuing work examining systemic responses in light of the introduction of ARVs post-1996) (Yeatman & Dowsett, 2009; Piot & Coll Seck, 2001; Moatti *et al*. 2008; Nixon *et al*. 2011). For example, arguments about the public health benefits of TasP have convinced the UK government to remove charges for HIV treatment for those without recourse to public funds (Department of Health, 2012). Health policy analysts may seek to examine the way in which public health arguments shifted a policy that has proven immune to human rights advocacy campaigns.

Just as institutions such as clinics and voluntary agencies are already collaborating on the systemic delivery of PPTs, inevitably, institutions and systems - for cultural, disciplinary, pragmatic, resourcing and territorial reasons – will also conflict, obfuscate or delay the progress of the PPT agenda. For example, evidence demonstrates resistance or ambivalence toward early initiation of ARV treatment among those who expected to prescribe it (Persson, 2013; Vernooji, 2013). Those studying health systems delivery, organisational sociology, and policy analysis will find opportunities to explore the shifts, tensions and breakthroughs that impact how PPTs are conceptualised, managed and delivered at a systems level. With regard to implementation analysis, work is needed to understand the knowledge, attitude and skill capacities for those providing interventions around PPT uptake. Furthermore, in high-income countries with concentrated epidemics, initial PPT policy and clinical guidance appears to encourage targeting of patient groups most likely to benefit and sustain adherence. Adequate understanding of the dynamics of implementation of such guidance will require, for example, analyses of consultant and patient interactions that incorporate theoretical understandings of power relations via social stratification and stigmatising processes.

**Domain 5: Economic Considerations & Analyses**

In the UK (particularly England) severe public sector funding cuts have accompanied an overhaul of England’s National Health Service which shifts responsibility for the delivery and oversight of public health. The infrastructure and pharmaceutical costs required to implement PPT policies are pressing concerns for those tasked with clinical delivery within this already highly pressurised context. Moreover, there are resourcing implications beyond the provision of the pharmaceuticals themselves. For example, TasP implementation requires frequent clinical contact and regular monitoring of patients’ CD4 counts and viral loads. This is at odds with arms-length models for clinical management of stable patient being developed to ease the burden on clinical resources (Asboe *et al*. 2012; Adams *et al*. 2013). Moreover, there are questions about the abilities of the NHS to meet treatment budgets in the longer term. For example, London healthcare commissioners have already explored the feasibility of asking patients to switch to a less expensive treatment regime due to local fiscal pressures (National AIDS Trust, 2012). Finally, there are potential sectoral difficulties. For example, it is difficult to know how the Commissioning Board of the National Health Service in England (which commissions HIV care and treatment) will respond to calls for resourcing for preventive outcomes (which are now the responsibility of Local Government and which they may well consider beyond their remit). Feasibility studies of required frequency of HIV clinic visits, transferring of routine HIV care to Primary Care, and the potential for self-administered CD4 and viral load tests will assist our understanding of the economic implications of routinised self-care on PPT implementation. Moreover, there are ethical questions to be asked about the potential impacts of treatment plans that lack financial sustainability.

PPT clinical guideline development will inevitably necessitate the generation of cost effectiveness evidence within the NHS context. It is prescient for social scientists to start framing the types of questions that such evaluations should seek to answer. An array of services will compose PPT delivery including HIV testing, diagnostics, clinical and community services. Evaluations should consider the systemic costs and benefits, rather than simply considering treatment costs in isolation. Such economic evaluations are already underway in low and medium resource settings (personal communication, Peter Vickerman and colleagues), and should also be put into effect in high income countries with concentrated epidemics. In addition, such evaluations will need to take into account the various investments that are required at each stage along the patient trajectory given the considerable drop-out rates that are known to occur at each stage (increasingly referred to as the ‘Treatment Cascade’) (Gardner *et al*. 2011).

**Domain 6: Evaluation & Outcomes**

Symposium participants stressed lack of consensus regarding complex evaluation approaches as an inhibitor to evaluation of behavioural HIV prevention programmes in the UK. For example, bio-medical and social science disciplines differ on outcome indicators; the former favouring clinical or epidemiological markers, and the latter interim measures such as changes in knowledge, attitudes and behaviour. Consensus about appropriate indicators is essential and promising approaches that may help us achieve a better collective understanding of PPTs efficacy, effectiveness, impact and delivery were cited. At this stage in the potential implementation of PPTs, the role of mathematical modellers is likely to be important in policy development and planning, given their capacity to test a range of hypotheses and implementation variables. With improved collaboration between social scientists, clinicians and modellers, increasingly reliable variables can be selected for use. The work of the HIV Modelling Consortium considers the starting points for understanding and interpreting the complex relationships between PPTs, HIV prevention behavioural interventions, and behavioural change (HIV Modelling Consortium, 2012).

In the longer term, given the research funding environment in the UK, the symposium also noted that we are likely to be reliant upon naturalistic experimental approaches when designing complex evaluations of PPTs. It remains unclear how such approaches will be balanced with the imperative to carry out experimental implementation trials considering the ethical, resource and methodological challenges they entail.

Finally, as alluded to in prior sections, a policy analysis approach that incorporates the methods used by those in science and technology studies and the sociology of knowledge will also be essential to understand how and why particular research findings are widely known and counted as ‘evidence’ of effectiveness, while others are not.

**Discussion: Overarching Consensus Points**

The wide-ranging discussion prompted through this consultative process indicates substantial interest in PPTs from social scientists in the UK and a desire for a robust social scientific response to the challenges and opportunities presented. The complexity of these challenges was recognised in the main symposium consensus point: that social scientific research in this area should be interdisciplinary, should employ a range of methodological and theoretical approaches and should be inclusive and multi-perspectival. These principles were seen as having the greatest capacity to generate useful, strategic and ethically robust research.

Participants distinguished between research that facilitates and evaluates PPT implementation and research which problematises this implementation. The former will need to engage meaningfully with clinical and implementation studies whilst the latter should also critique knowledge production around PPTs and the way that they are being codified in clinical and public health discourses. Though these approaches should not be seen as oppositional or antagonistic, the relationship between them will always be troubled. Implementation and evaluative work should incorporate and respond to its own critiques and engage with research that theorises or problematises PPTs.

As PPTs touch on intimate, social and structural contexts, symposium participants called for inclusive research collaborations. Implementation and evaluation research necessitates joint-working between clinicians and social scientists from diverse backgrounds including epidemiologists, demographers, modellers, statisticians, economists, health service researchers, medical and cultural sociologists, and community-based researchers. Moreover, research should be methodologically diverse: including experimental designs, natural experiments, surveys, qualitative and participatory/community approaches. The skills of modellers in the design of evaluations will be essential. Limited resources will necessitate creative evaluative methodologies, the coordination of contributions from a range of backgrounds and the employment of strategic planning devices such as gap analyses and logic models.

Given that PPTs are an evolution rather than a revolution, continuity with past HIV research is essential. Participants stressed the need to revisit sociological concepts such as stigma and sick role in the light of PPTs and to consider similar innovations (such as the oral contraceptive pill) and other disease areas (such as breast and lung cancer and epilepsy) that have been the subject of sociological scrutiny.

Participants agreed that research funders should seek to procure research that meaningfully includes people with HIV as co-creators of knowledge. Such involvement implies that future research should also seek to investigate strengths as well as deficits in PPT implementation, especially with regard to investigating the impact of PPTs on sexual and emotional intimacy or pleasure.

Finally, research commissioning needs to coordinate the disparate activities that contribute to the evaluation *and* the critique of PPT implementation. Such coordination should recognise that research is often conducted within a power-imbued system of funding that exacerbates disparities between those with and without funding to undertake specified research. Planning needs to account for and overcome these differences.

Abdool Karim, Q., Abdool Karim, S., Frohlich, J., Grobler, A., Baxter, C., Mansoor, L., . . . Mlotshwa, M. (2012). Effectiveness and safety of tenofovir gel, an antiretroviral microbicide, for the prevention of HIV infection in women. *Science, 329*(5996), 1168-74.

Adam, B. (2005). Constructing the neoliberal sexual actor: Responsibility and care of the self in the discourse of barebackers. *Culture, Health & Sexuality, 7*(4), 333-346.

Adam, B. (2011). Epistemic fault lines in the biomedical and social approaches to HIV prevention. *Journal of the international AIDS society, 14*(Suppl 2).

Adam, B., Maticka-Tyndale, J., & Cohen, J. (2003). Adherence practices among people living with HIV. *AIDS Care: Psychological and Sociological Aspects of AIDS/HIV, 15*(2), 263-74.

Adam, B., Maticka-Tyndale, J., & Cohen, J. (2003). Adherence practices among people living with HIV. *AIDS Care: Psychological and Sociological Aspects of AIDS/HIV, 15*(2), 263-74.

Adams, E., Ogden, D., Erlich, A., & P, H. (2013). Treatment for stable HIV patients in England: can we increase efficiency and improve patient care? *Journal of Health Services Research and Policy, Doi: 10.1177/1355819613508176*.

Aghaizu, A., Brown, A., Nardone, A., Gill, O., & Delpech, V. (2013). *HIV in the United Kingdom 2013 Report: data to end 2012. .* London: Public Health England.

Almeda, J., Casabona, J., & Simon, B. (2004). Proposed recommendations for the management of HIV post-exposure prophylaxis after sexual, injecting drug or other exposured in Europe. *Eurosurveillance, 9*(4-6), 35-40.

Altman, D. (1994). *Power and Community: organisation and cultural responses to AIDS.* London: Taylor and Francis.

Anderson, W., & Weatherburn, P. (2004). The needs of people with HIV in the UK: findings from a national survey. *International Journal of STDs & AIDS, 15*(12), 793-796.

Asboe, D., Aitken, C., Boffio, M., Booth, C. C., Fakoya, A., Geretti, A., . . . Murphy, G. (2012). British HIV Association guidelines for the routine investigation and monitoring of adult HIV-1 infected individuals in 2011. *HIV Medicine, 13*, 1-44.

Baumgartner, L. (2007). The Incorporation of the HIV/AIDS Identity Into the Self Over Time. *Qualitative Health Research, 17*(7), 919-931.

Benn, P., Fisher, M., & Kulasegaram, R. (2011). UK guideline for the use of post-exposure prohylaxis for HIV following sexual exposure. *International Journal of STD & AIDS, 22*, 695-708.

Berridge, V. (1996). *AIDS in the UK:The making of policy 1981-1994.* Oxford: Oxford University Press.

BHIVA. (2012). British HIV Association guidelines for treatment of HIV-1 positive adults with antiretroviral therapy. *HIV Medicine, 13*(Suppl 2), 1-85.

Bourne, A., Dodds, C., Keogh, P., Weatherburn, P., & Hammond, G. (2009). *Relative safety II: risk and unprotected anal intercourse among men with diagnosed HIV.* London: Sigma Research.

Bourne, A., Dodds, C., Weatherburn, P., & Keogh, P. (2011). Perceptions of superinfection risk among gay men with diagnosed HIV who have unprotected anal intercourse. *International Journal of STD & HIV, 22*, 190-193.

Bourne, A., Dodds, C., Weatherburn, P., Madyara, A., Ntabyera, E., Owour, J., . . . Hammond, G. (2011). *Plus One: HIV sero-discordant relationships among black African people in England.* London: Sigma Research.

Bourne, A., Hickson, F., Keogh, P., Reid, D., & Weatherburn, P. (2012). Problems with sex among gay and bisexual men with diagnosed HIV in the United Kingdom. *BMC Public Health, 916*.

Center for Disease Control. (2011). Interim Guidance: Pre-exposure Prophylaxis for the Prevention of HIV Infection in Men Who Have Sex with Men. *Morbidity and Mortality Weekly Report, 60*(3), 65-8.

Center for Disease Control. (2012). Interim Guidance: Pre-exposure Prophylaxis for the Prevention of HIV Infection in Heterosexually Active Adults. *Morbidity and Mortality Weekly Report, 61*(31), 586-9.

Centers for Disease Control and Prevention. (2013). Update to Interim Guidance for Preexposure Prophylaxis (PrEP) for the Prevention of HIV Infection: PrEP for Injecting Drug Users . *Morbidity and Mortality Weekly, 62*(23), 463-465.

Centres for Disease Control and Prevention. (2005). Antiretroviral postexposure prophylaxis after sexual, injection-drug use, or other nonoccupational exposure to HIV in the United States: recommendations from the U.S. Department of Health and Human Services. *Morbidity and Mortality Weekly, 54*(RR-2), 1-16.

Clarke, A., Mamo, L., Fosket, J., Fishman, J., & Shim, J. (2010). *Biomedicalization: Technoscience, Health, and Illness in the U.S.* Duke University Press.

Cohen, M., Chen, Y., McCauley, M., Gamble, T., & Bollinger, R. (2011). Antiretroviral treatment to prevent the sexual transmission of HIV-1: results from the HPTN 052 multinational randomized controlled trial. Rome: Sixth International AIDS Socciety Conference on HIV Pathogenisis, Treatment and Prevention.

Cohen, M., Dye, C., Fraser, C., Miller, W., & Powers, K. (2012a). HIV treatment as prevention debate and commentary - will early infection compromise treatment as prevention strategies. *Plos Med, 9*(7).

Cohen, M., McCauley, M., & Gamble, T. (2012b). HIV treatment as prevention and HPTN052. *Curr Opin HIV AIDS, 7*(2), 99-105.

Davis, M., & Flowers, P. (2011). Love and HIV serodiscordance in gay men's accounts of life with their regular partners. *Culture, Health and Sexuality, 13*(7), 737-749.

Davis, M., & Squire, C. (2010). *HIV technologies in international perspectice* (1st ed.). London: Palgrave.

Davis, M., Hart, G., Imrie, J., Davidson, O., Williams, I., & Stephenson, J. (2002). 'HIV is HIV to me' the meanings of treatment, viral load and reinfection for gay men living with HIV. *Health Risk and Society, 4*(1), 31-43.

Delpech, V. (2012). Treatment as prevention (TasP) in the UK: what are the challenges. *BHIVA Autumn Conference.* London: BHIVA.

Department of Health. (2012). *HIV Treatment for Overseas Visitors: guidance for the NHS.* London: The Stationary Office.

Department of Health. (2013). *A framework for sexual health improvement in England.* London: Departmentof Health.

Doyal, L. (2013). *Living with HIV and Dying with AIDS: Diversity, Inequality and Human Rights in the Global Pandemic* (1st ed.). London: Ashgate.

Epstein, S. (1998). *Impure Science: AIDS, activism and the politics of knowledge.* Berkeley: University of California Press.

European AIDS Treatment Group. (2014). *Community consensus statement on the use of antiretroviral therapy in.* Brussels: EAGA.

Fisher, M., Benn, P., & Evans, B. (2006). UK guidelines for the use of post-exposure prophylaxis for HIV following sexual exposure. *International Journal of STD & AIDS, 17*, 81-92.

Flowers, P. (2010). HIV transitions: consequences for self in an era of medicalisation. In M. Davis, & C. Squire (Eds.), *HIV technologies in international perspective.* London: Palgrave Macmillan.

Flowers, P., Davis, M., Hart, G., Rosengarten, M., Frankis, J., & Imrie, J. (2006). Diagnosis and stigma and identity amongst HIV positive Black Africans living in the UK. *Psychology & Health, 21*(1).

Flowers, P., Duncan, B., & Frankiss, J. (2000). Community, responsibility and culpability: HIV risk‐management amongst Scottish gay men. . *Journal of community & applied social psychology, 10*(4), 285-300.

Gardner, E., McLees, M., Steiner, J., del Rio, C., & Burman, W. (2011). The spectrum of engagement in HIV care and its relevance to test-and-treat strategies for prevention of HIV infection. *Clinical Infectious Diseases, 52*, 793-800.

GNP+. (2012). *GNP+ Position Paper: ART for Prevention.* Amsterdam: GNP+.

Grant, R., Lama, J., Anderson, P., McMahan, V., Liu, A., Vargas, L., . . . Ramirez, J. (2010). Preexposure chemoprophylaxis for HIV prevention in men who have sex with men. *New England Journal of Medicine, 363*(27), 2587-99.

Green, G., & Sobo, E. (2000). *The endangered self: managing the social risk of HIV* (1st ed.). London: Routledge.

Halkitis, P., Wilton, L., Wolitskic, R., Parsons, J., Hoffe, C., & Bimbid, D. (2005). Barebacking identity among HIV positive gay and bisexual men: demographic, psychological and behavioural correlates. *AIDS, 19*(suppl 1), S27-S35.

Havlir, D., & Beyrer, C. (2012). The beginning of the end of AIDS? *New England Journal of Medicine, 367*(8), 685-7.

Haywood, M. (2009). South Africa's Treatment Action Campaign: combining law and social mobilization to realise the right to health. *Journal of Human Rights Practice, 1*(1), 14-36.

Imrie, J., Elford, J., Kippax, S., & Hart, G. (2007). Biomedical HIV prevention and social science. *The Lancet, 370*(9581), 10-11.

International AIDS Alliance. (2012). *Treatment as prevention: making it work for communities most affected by HIV.* Brighton: International AIDS Alliance.

James, R. (2011). Keep Taking the Tablets: HIV, rights and bio-activism in the post-ART era. PhD Thesis. University of London: Birkbeck.

Keogh, P. (2008a). How to be a healthy homosexual: HIV health promotion and the social regulation of gay men in the UK. *Journal of Homosexuality, 55*(4), 581-605.

Keogh, P. (2008b). Morality, responsibility and risk: Negative gay men's perceived proximity to HIV. *AIDS Care, 20*(5), 576-581.

Keogh, P. (2013). Austerity discourses and pharmaceutical HIV prevention technologies among people with HIV in London. Paris: Association for the Social Sciences and Humanities in HIV.

Keogh, P., Weatherburn, P., & Stephens, M. (1999). *Relative safety: risk and unprotected anal intercourse among men diagnosed with HIV.* London: Sigma Research.

Kinsman, G. (1996). Responsibility" as a strategy of governance: regulating people living with AIDS and lesbians and gay men in Ontario. *Economy and Society, 25*(3), 393-409.

Kippax, S., & Stephenson, N. (2012). Beyond the distinction between biomedical and social dimensions of HIV. *American Journal of Public Health, 102*(5), 789-99.

Klitzman, R., & Bayer, R. (2003). *Moral Secrets: truth and lies in the age of AIDS.* Baltimore: Johns Hopkins University Press.

Lupton. (1999). *Risk.* London: Routledge.

Lupton, D., Mccarthy, S., & Chapman, S. (1995a). ''Doing the right thing': the symbolic meanings and experiences of having an HIV antibody test. *Social Science and Medicine, 41*(2), 173-180.

Lupton, D., Mccarthy, S., & Chapman, S. (1995b). 'Panic bodies': discourses on risk and HIV antibody testing. *Sociology of Health and Illness, 17*(1), 89-108.

Marks, G., & Crepaz, N. (2001). HIV-positive men's sexual practices in the context of self-disclosure of HIV status. . *Journal of Acquired Immune Deficiency Syndrome, 27*(1), 79-85.

Mayer. (2014). Antiretroviral chemoprophylaxis: state of the evidence and research agenda. *Clinical Infectious Diseases, 59*(Suppl 1), S47-S51.

McCormack, S., Fidler, S., & Fisher, M. (2012). The British HIV Association/British Association for Sexual Health and HIV Position Statement on pre-exposure prophylaxis in the UK . *International Journal of STD & AIDS, 23*(1), 1-4.

McCormack, S., Gafos, M., Desai, M., & Cohen, M. (2014). Biomedical Prevention: State of the Science. *Clinical Infectious Diseases, 59*(Suppl 1), S41-S45.

Miller, W., Powers, K., Smith, M., & Cohen, M. (2013). Community viral load as a measure for assessment of HIV treatment as prevention. *Lancet Infect Dis., 13*(5), 459-64.

Moatti, J., Marlink, R., Luchini, S., & Kazatchkine, M. (2008). Universal access to HIV treatment in developing countries: going beyond the misinterpretations of the 'cost-effectiveness' algorithm. *AIDS, 22*(Suppl 1), S59-66.

Mykhalovskiy, E., & Rosengarten, M. (2009). HIV/AIDS in its third decade; renewed critique in social and cultural analysis. *Social Theory and Health, 7*, 187-95.

National AIDS Trust. (2012). *How does the NHS buy HIV Drugs?* Retrieved November 28, 2013, from http://www.nat.org.uk/media/Files/Policy/2012/April-2012-Briefing-drugs-prescribing.pdf

Nguyen, V., Bajos, N., Dubois-Arberd, F., O’Malleye, J., & Pirklef, C. (2011). Remedicalzing an epidemic: from HIV treatment as prevention to treatment is prevention. *AIDS, 25*(3), 291-293.

Nguyen, V., Yapo Ako, C., & Niamba, P. (2007). Adherence as therapeutic citizenship: impact of the history of access to antiretroviral drugs on adherence to treatment. *AIDS, 21*(suppl 5), S31-S35.

Nixon, S., Hanass-Hancock, J., Whiteside, A., & Barnett, T. (2011). The increasing chronicity of HIV in sub-Saharan Africa: re-thinking "HIV as a long-wave event" in the era of widespread access to ART. *Globalization and Health, 7*(1), 41.

Patton, C. (2011). Rights language and HIV treatment: universal care or population control. *Rhetoric Quarterly, 41*(3), 250-66.

Persaud, D. (2013). Functional HIV cure after very early ART of an infected infant. Atlanta: 20th Conference on Retroviruses and Opportunistic Infections.

Persson, A. (2008). Sero-silence and sero-sharing: managing HIV in serodiscordant heterosexual relationships. *AIDS Care - psychological and socio-medical aspects of AIDS/HIV, 20*, 503-506.

Persson, A. (2012). Non/infectious corporealities: tensions in the biomedical era of ‘HIV normalisation. *Sociology of Health and Illness, 35*(7), 1065–1079.

Persson, A. (2013). Selling TaP to serodiscordant couples: the perspective of HIV service providers. Paris: 2nd International Conference for the Social Sciences and Humanities in HIV.

Piot, P., & Coll Seck, A. (2001). International response to the HIV/AIDS epidemic: planning for success. *Bulleting of the World Health Organisation, 79*(12), 1106-12.

Pollack, A., & McNeil, D. (2013, March 3). In medical first, a baby with HIV is deemed cured. *New York Times*.

Rosengarten, M. (2009). *HIV Interventions: biomedicine and the traffic between information and flesh* (1st ed.). Seattle, WA: University of Washington Press.

Rosengarten, M., Imrie, J., Flowers, P., Davis, P., & Hart, G. (2004). After the euphoria: HIV medical technologies from the perspective of their prescribers. *Sociology of health and illness, 26*(5), 575-96.

Seeley, J., Watts, C., Kippax, S., Russell, S., Heise, L., & Whiteside, A. (2012). Addressing the structural drivers of HIV: a luxury or necessity for programmes? *Journal of the international AIDS society, 15*(Suppl 1), 17397.

Squire, C. (2012). Being naturalised, being left behind: the HIV citizen in the era of treatment possibility. *Critical public health, 20*(4), 401-27.

Sturt, A., Dokubo, E., & Sint, T. (2010). Antiretroviral therapy (ART) for treating HIV infection in ART-eligible women. *Cochrane Database of Systematic Reviews, 3*.

The HIV Modelling Consortium Treatment as Prevention Editorial Writing Group. (2012). HIV Treatment as Prevention: Models, Data, and Questions—Towards Evidence-Based Decision-Making. *PLOS Medicine, DOI: 10.1371/journal.pmed.1001259*.

US Food and Drug Administration. (2012, July 16). *FDA approves first drug for reducing the risk of sexually acquired HIV infection. Press Release July 16th.* Retrieved November 28, 2013, from http://www.fda.gov/NewsEvents/Newsroom/PressAnnouncements/ucm312210.htm

Van de Ven, P., Kippax, S., Knox, S., Prestage, G., & Crawford, J. (1999). HIV treatment optimism and sexual behaviour among gay men in Sydney and Melbourne. *AIDS, 13*, 141-159.

Van Teijlingen, E., Pitchforth, E., Bishop, C., & E, R. (2006). Delphi method and nominal group technique in family planning and reproductive health research. *J Fam Plann Reprod Health Care, 32*(4), 249–252.

Vernazza, P. (2008). Les personnes séropositives ne souffrant d’aucune autre MST et suivant un traitment antirétroviral efficace ne transmettent pas le VIH par voie sexuelle. *Bulletin des Médecins Suisses, 89*(5).

Vernooji, E. (2013). Making it Work: the role of the social sciences in a TasP implementation study. Paris: International Conference for the Social Sciences and Humanities in HIV.

Williams, I. (2014). British HIV Association guidelines for the treatment of HIV-1-positive adults with antiretroviral therapy 2012. *HIV Medicine, 15*(S1), 1–85.

Williams, S., Gabe, J., & Davis, P. (2009). *Pharmaceuticals and Society: Critical Discourses and Debates* (1st ed.). London: Wiley Blackwell.

Wilson, D. (2012). HIV treatment as prevention: natural experiments highlight limits of antiretroviral treatment as prevention. *Plos Med, 9*(7).

World Health Organisation. (2012). *Antiretroviral treatment as prevention (TasP of HIV and TB, programmatic update.* Geneva: World Health Organisation.

Yeatman, A., & Dowsett, G. (2009). Service Delivery and HIV-Positive Gay Men: Pre and Post Advent of Highly Active Antiretroviral Treatment (HAART) . In A. Yeatman, G. W. Dowsett, M. Fine, & D. Gursansky (Eds.), *Individualisation and the delivery of welfare services: contestation and complexity* (pp. 187-209). Basingstoke: Palgrave Macmillan.

Young, I., & McDaid, L. (2013). How acceptable are antiretrovirals for the prevention of sexually transmitted HIV?: a review of research on the acceptability of oral pre-exposure prophylaxis and treatment as prevention. *AIDS Behaviour*.

1. School of Health and Social Care, University of Greenwich, London, UK [↑](#footnote-ref-1)
2. Department of Social and Environmental Health Research, London School of Hygiene and Tropical Medicine, London, UK. [↑](#footnote-ref-2)