Dr. Rupert Whitaker
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Dear Sirs,

I have been asked by *, solicitors, to provide an expert opinion on the likelihood of transmission of HIV through a bite, in reference to an altercation between Ms. Q and a police-officer, date *.

Summary of opinion:
Transmission of HIV through a bite is of such low risk as to be extremely rare. It requires detectable virus in the bloodstream and significant tearing of the skin with access to the other person's blood-stream. Ms. Q's most recent blood-tests show that she is on stable treatment and that HIV has not been detectable in her blood-stream for a year or more; if she had continued her treatment in this manner up to the incident, it means that there is effectively no risk of transmission. If she had recently discontinued her antiretroviral treatment (i.e., within the week prior to the incident), the risk is still so negligible as to still effectively be zero, even with significant tearing of the police-officer's skin (e.g., requiring stitching).

Qualifications:
My relevant qualifications consist of a clinical and scientific PhD in the immunology of HIV disease-development as well as in the social and neurological psychiatry of HIV. I trained at the University of California San Francisco School of Medicine; Veterans Administration Medical Center, Neurological Laboratory, San Francisco; the University of Michigan School of Medicine, Dept. Psychiatry, Ann Arbor; the Henry Ford Hospital, Infectious Disease Dept., Detroit, MI; the Midwest AIDS Biobehavioral Research Center; the, Dept. Geographic Medicine and Infectious Diseases, New England Medical Center Hospitals, Tufts University, Boston, MA; Boston University, University Professors Program, School of Medicine, School of Public Health, Boston, MA; Harvard University School of Medicine, Brigham and Women's Hospital, Boston MA.

I am chairman of an international research-organisation, the Tuke Institute, which works in health-services' research and health-policy; as part of my work there, I have acted as an Expert Advisor to the National Institute of Health Research (UK), and I have worked with academic and first-sector colleagues in UK, USA, Canada, Sweden, Norway, China, India, Switzerland, etc. My research has also been seminal in influencing international AIDS-policy on immigration and infectiousness in HIV. I have lectured in the UK, US, Poland, and Norway. I also am a reviewer for the British Medical Journal, formerly also for the journals AIDS and Blood, and am on the editorial committee of the International Journal of User-Driven Healthcare. I also work as an expert witness in biobehavioural medicine and public health. I have published about 70 clinical, scientific, and health-policy papers, many on HIV.

Opinion:
I am given to understand that Ms. Q was involved in an altercation with a police-officer, during which the officer's hand was bitten; that Ms. Q has HIV; and that there is a concern of possible HIV-transmission through the bite.

HIV is a chronic retroviral infection which can not be eradicated from an infected person; it can only be suppressed. Current treatment is very successful at suppressing the virus and people on

stable treatment who have no detectable virus in their blood-stream are unable to transmit HIV through normal routes (excepting organ-transplants *et sim.*).

I have been provided with certain medical records indicating that Ms. Q has been on stable anti-HIV treatment for three years, consisting of tenofovir disoproxil fumarate 300 mg, efavirenz 600 mg, and emtricitabine 200 mg, in the form of a single pill taken once a day. The most recently available test of her "viral load" (how much virus she has in her bloodstream) was on *, which indicated that her viral load was undetectable (below the detection level of 20 viral copies per ml of blood); the previous result on * was the same, indicating that Ms. Q has been on stable treatment with good adherence to her medication for a significant time.

In such an instance, Ms. Q would be unable to transmit the virus, given that having an undetectable viral load means that one is effectively uninfectious, even through routes of possible transmission that are far riskier than a bite (e.g., sex without associated condom-use).

If Ms. Q had stopped taking her medication around the time of the incident for some reason, then the suppression of HIV in the blood-stream would have stopped. In this instance, it takes 1-2 weeks before the virus re-appears in the blood-stream using standard tests, which constitutes a window of risk, albeit still extremely low, after which the risk slowly theoretically increases. However, that risk increases from zero to "negligible" at worst.

The question then becomes "what is the risk of HIV-transmission through a bite from a person with detectable virus in their blood-stream?". A number of studies have been done on this scenario, and the consensus is that the risk remains "negligible", even when the person has a high amount of virus in their blood-stream (which in Ms. Q's instance would take at least a few months to occur if treatment were stopped completely). There are some very rare cases in which transmission has occurred, which indicate certain likely requirements for transmission: a significant amount of blood in the mouth of the infected person (due to their having bitten their tongue or having actively bleeding gums) and significant tearing of the skin-tissue with good access to the other person's blood-stream, such as that requiring stitching of the skin. However, studies of clinicians who have been bitten in the course of their clinical work by people with detectable HIV in their blood-stream have shown no cases of transmission. Thus, overall, the risk of transmission through biting is considered epidemiologically to be "negligible". I understand that the CPS has not disclosed the degree of injury, if any, to the police-officer's hand and so I am unable to provide a more detailed opinion in this particular regard.