EXPERT WITNESS STATEMENT TO THE SOUTH AUSTRALIAN CRIMINAL COURT IN: R V PARENZEE [2006] SASC 316. ADELAIDE; 2006.

Professor John Kaldor PhD
National Health and Medical Research Council Senior Principal Research Fellow, Kirby Institute, University of New South Wales, Sydney, Australia

I am employed as a Professor of Epidemiology at the University of New South Wales, and have been Deputy Director of the National Centre in HIV Epidemiology and Clinical Research for nearly 17 years.

I am recognised nationally and internationally as a leader in the field of infectious diseases epidemiology, with a particular focus in the areas of HIV transmission and disease progression. I have been involved in the authorship of nearly 300 publications in the scientific literature, including over 130 related to HIV infection, and have been awarded a number of research grants from public and private sector organisations. From 1996 to 2000 I was President of the Australasian Epidemiological Association, and served from 1995 to 2004 on the Governing Council of the International AIDS Society, as an elected representative of the Asian Region.

I have been asked to comment on the contentions raised on behalf of Mr Parenzee that (1) HIV infection does not cause AIDS, and (2) HIV infection is not sexually transmissible. I have read the report dated 6 April 2006 by Valendar Turner in support of these contentions, and I am aware of related publications by Dr Turner and others, including Eleni Eleopulos.

These two contentions are in direct contradiction to a vast body of scientific evidence that has accumulated over more than two decades. This evidence demonstrates that, in the absence of treatment, virtually all people with HIV infection will, over time, develop a fatal disease of the immune system that is extremely rare, or non-existent in people who do not have HIV infection. Furthermore, people whose sexual partners have HIV infection are at highly increased risk of acquiring the infection compared to people whose sexual partners do not have the infection. While much remains uncertain about the biology of HIV infection in humans, these two issues are widely held to be proven beyond any reasonable doubt.

Before addressing these specific issues, I would like to comment on the process of investigating causal relationships in public health and clinical medicine. While the so called “basic sciences” provide crucial information about the mechanisms

of disease causation at a molecular and cellular level, the implications of such observations for disease prevention and treatment in humans can only be properly assessed through the methods of epidemiology. For example, experiments in the laboratory, whether in a test tube or animals, can show that a new drug is highly active against a particular virus, but its effectiveness as a treatment agent in humans can only be definitively assessed through clinical trials or other epidemiological investigations.

A number of public agencies, including the US Food and Drug Administration and Australia's Therapeutic Goods Administration, have endorsed hierarchical schemes for assessing epidemiological evidence about causation. Under these schemes, evidence from a randomised trial carries the greatest weight, compared to other types of epidemiological study, because they are most likely to be free of a range of biases and other errors that can arise in non-randomised studies.

Nevertheless, despite the pre-eminent position of randomised trials in the evaluation of causation, they are only feasible in a limited range of situations, such as the evaluation of pharmaceutical products. In many areas of importance in public health and clinical medicine, it is inconceivable that we will ever see randomised trials. In order to investigate the contention that "HIV does not cause AIDS" via a randomised trial it would be necessary to recruit a large group of people and assign half at random to be exposed to HIV infection, and then compare the proportion who developed AIDS in this group to the corresponding proportion in the other half who had not been exposed. A trial of the contention that "HIV is not sexually transmissible" would involve recruiting a group of people and randomly assigning half to become the sexual partners of people with HIV infection, and then comparing the proportion that developed HIV infection in this group to the corresponding proportion in the group who did not have sexual partners with HIV infection.

In the absence of randomised trials, epidemiological science relies on non-randomised or observational study designs. Such studies can never be as definitive as randomised trials, but they have been used in many important areas to guide policy and practice in public health and clinical medicine. For example, the evidence related to the adverse health effects of tobacco and alcohol comes entirely from observational studies. When making use of observational research, it is often necessary to draw on findings from a number of studies, each of which has its own inherent limitations, and to make judgements about the importance of these limitations in the interpretation of the findings.

With this background, I would like to comment on the evidence related to each of the two contentions. I would be happy to provide a comprehensive list of references to support my comments.

(1) HIV infection does not cause AIDS

It should be noted here that the definition of AIDS used in Australia and other industrialised countries requires that a person must be positive for HIV infection, so that it is not technically possible to have the disease known as AIDS in the absence of HIV infection. Therefore, in order to test this contention, it is necessary to examine whether people with HIV infection are at any greater risk than people who do not have HIV infection of developing a fatal disorder of the immune system that has the clinical and pathological features of AIDS.

As noted above, there has never been and never will be a randomised trial of this question. However many studies from all parts of the world have used the “cohort design”, to compare the outcome of people with and without HIV infection, and have consistently found that those who are HIV positive have far higher rates of illness and death due to conditions recognised as being associated with severe damage to the immune system.

Because HIV infection status is not randomly assigned in these studies, it is possible that the HIV positive and negative groups differ with respect to one or more characteristics other than HIV status. In fact there is no known characteristic that has been convincingly associated with the kind of damage to the immune system seen in people with AIDS, let alone that is capable of explaining such enormous differences between HIV positive and negative groups in the rates of Illness and death. Early hypotheses that factors such as drug use or other infections might explain these differences have been comprehensively dismissed, as the evidence in favour the role or HIIV infection has continued to strengthen.

More recent evidence in support of the role of HIV infection in causing AIDS has come from studies that showed that the higher the level of virus detected in a person by the technique known as polymerase chain reaction (PCR) the greater the likelihood of progression to AIDS. Furthermore, in a number of clinical trials, it has been shown that people whose viral levels are effectively suppressed by drug treatment, have a greatly reduced chance of developing AIDS, compared to the probability of disease progression in the absence of treatment. These studies demonstrate that HIV infection is both a qualitative and quantitative predictor of the subsequent development of AIDS.

(2) HIV infection is not sexually transmissible

Again, there will never be a randomised trial to test this contention, so we rely on observational studies. In the absence of randomised trials, the most definitive study design for investigating the sexually transmissibility of HIV infection is the cohort study. In fact much of the early evidence surrounding the sexual transmissibility of HIV infection came from cross-sectional studies, which found higher rates of HIV infection in various population groups defined by self-reported measures of sexual activity. These studies are generally weaker than cohort studies and were only capable of providing a rather indirect form of evidence regarding sexual transmissibility. Their interpretation required the assumption that those reporting higher levels of sexual activity (as defined by numbers of partners, for example) were more likely to be exposed to partners who had HIV infection.

There are nevertheless a few cohort studies that have measured the rates of viral transmission in the sexual partners of people with HIV infection, and compared to a group of people whose sexual partners were HIV negative. The relative paucity of such studies may be attributed to the particular logistical and ethical challenges posed by the recruitment and follow up of large numbers of couples in which one member is HIV negative and the other positive at the outset of the study.

The most definitive study of such couples was undertaken in a rural district of Uganda. Residents of the district were recruited into the study as individuals, and regularly provided blood specimens that were stored by the researchers. Primary sexual partnerships were recorded in the study database. After several years, the stored blood specimens were tested retrospectively for the presence of HIV infection, and the viral load was measured in those who had infection. The serial testing for HIV infection enabled the researchers to determine the rates of HIV transmission to participants who had been negative at the outset of the study. The study found that there was a very strong relationship between the likelihood that a person had become infected during the course of the follow up, and their primary sexual partner’s viral load.

I would be pleased to provide any additional information that may be required to support the position I have put forward in this letter.