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Views and Practice

An update on testing for HIV infection

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Upon the availability of HIV antibodies testing in mid-1980s, the test was rapidly applied to enhance blood and blood product bio-safety as well as surveillance of HIV epidemiologic situation. With the lack of effective treatment and the highly stigmatizing nature of the disease, HIV testing has all along been regarded as a restrictive test demanding extensive pre-test counseling for the clinical diagnosis of infected individuals.[1] However, how we look at HIV testing has evolved dramatically in the last few years, due to ongoing advances in HIV diagnosis, treatment and prevention which revolutionized the scene. This article attempts to give an update on the technological development, recommendations on application and strategic role of HIV testing in response to the epidemic.

Conventionally, HIV antibody testing is of a two-step approach, which comprises screening by enzyme immunoassay followed by confirmation with western blot for reactive sample. Though blood is the most often used sample for HIV serology testing, other body specimens such as urine and oral fluid can also be used in defined situations. The latest fourth generation assay is a combo kit which detects both HIV antibodies and antigen and is hence more sensitive. This technology advance shortens the window period and is particularly useful in the case of recent infection. Moreover, PCR for HIV RNA can diagnose acute HIV infection and infant infection in appropriate context. One other technologic advance is rapid HIV test which has become more popular in recent years, as it is advantageous in reaching at-risk populations in community or outreach settings, and facilitating timely interventions in point-of-care settings, e.g. prevention of mother-to-child HIV transmission (MTCT) in delivering women.[2]

The advent of effective highly active antiretroviral therapy (HAART) has transformed HIV disease from invariable fatality to a chronic treatable condition. As a consequence, diagnosis of the infected individual becomes more meaningful than ever, as it allows referral for life-saving specialist care, treatment and support. Unfortunately, nearly half of the newly reported HIV patients in Hong Kong had CD4 <200/ul at time of diagnosis, signifying advanced immunosuppression.[3] Not surprisingly, late HIV diagnosis is associated with much poorer survival despite HAART.[4] On the other hand, early diagnosis leads way to risk reduction counseling and other prevention measures targeting HIV positives which render onward transmission less

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likely. Needless to say, diagnosis of mother HIV status is critical to the institution of antiretroviral prophylaxis to reduce MTCT.

Public health wise, Hong Kong has embarked on two new universal HIV screening programmes after the turn of the century. In September 2001, the universal antenatal HIV testing programme (UAT) was launched in the public services, which was promptly followed by the private sector. Rapid test was incorporated into the programme at public hospitals since 2008 for late presenting pregnant mothers with unknown HIV status. The proportion of expectant mothers with HIV result before delivery reached a record high of 99.5% in 2008. For methadone clinic attendees, the universal HIV antibody urine testing programme (MUT) was rolled out in 2004 after a pilot scheme. It achieved a yearly testing coverage rate of 80-90% since implementation. HIV prevalence was found to remain low at <0.5% in the drug-using community, thanks to the methadone treatment programme and other prevention efforts. The success of UAT and MUT would have been contributed by its opt-out approach, i.e. test will be done after informing client of the test and related information and the client can choose to decline. This is in contrast to opt-in approach that a client has to initiate the testing or make separate consent (oral/written) to HIV test offered specifically to him or her. The opt-in, risk-based approach is much limited and frequently misses positives.

In fact, overseas authorities recommended screening beyond targeted populations. It was reported that a significant proportion of HIV infected people are unaware of their infection and often these subjects had accessed health care services before HIV diagnosis was eventually made when the infection went symptomatic.[5] In 2006, the US Centers for Disease Control and Prevention published a revised Recommendations to implement opt-out HIV testing for adults and adolescents (aged 13-64) regardless of risk in all health care settings with ≥0.1% of undiagnosed HIV infection.[6] A UK Guidelines released in 2008 recommended health care providers in various settings to offer HIV testing for an expanded list of clinical conditions, apart from AIDS-defining illnesses and other conditions clearly suspicious of HIV, so as to facilitate access to and increase in HIV testing.[7] In line, the World Health Organisation (WHO) has also recommended scale-up of provider-initiated HIV testing in health facilities, using opt-out approach, as part of the strengthening of health sector response to combat the epidemic.[8]

On top of MTCT prevention, more evidence is cumulating in last few years on the impact of antiretroviral therapy as a means of prevention for horizontal HIV transmission at population level. It has been demonstrated that viral load is the chief predictor of the risk of HIV transmission in serodiscordant couple and transmission is rare among persons with HIV levels of <1500 copies/ml. [9] Recently, Swiss and French AIDS authorities have issued statements on the positive role of treatment as a tool to control epidemic, from its effect on suppressing viral load and reducing infectivity. A modeling study from Canada showed that expansion of HAART can substantially reduce new HIV infections and even health costs.[10] Furthermore, another mathematical modeling study of South Africa conducted by the WHO found that universal voluntary HIV testing and immediate antiretroviral therapy, combined with present prevention, could have a major impact on severe generalized HIV/AIDS epidemics.[11]

In summary, with the advances and development over the years, HIV testing should be, as of now, barrier-free, widely available and readily accessible. Basic information and discussion together with allowing questions would suffice in most scenarios. However, it cannot be overstated that the well-treasured nature of HIV testing being voluntary and the importance of upholding confidentiality remain valid. Clearly, HIV testing links up care and prevention and is an integral component of HIV response. To maximally realize clinical and public health good, we should strive

to reduce undiagnosed HIV infections, through continual expansion of HIV testing in various potential settings.

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