



AFAO Policy Briefing Paper on Rapid HIV Testing

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for the Australian Federation of AIDS Organisations.

Overview

Currently, the use of rapid HIV testing technologies as screening tests at the point of care is not permitted in Australia. Rapid HIV tests are routinely used in many developed and developing countries. Their use is supported by the World Health Organisation, UNAIDS, and permitted by regulators of medical devices in many countries.

AFAO has recently completed a comprehensive policy review in relation to the possible place of rapid HIV testing in Australia. This paper outlines the key findings and recommendations of that review and presents some of the key data considered in the course of the review.

The AFAO policy review was supported by a policy reference group. The Reference Group had regard to research by AFAO concerning experiences in other settings where rapid HIV testing is offered, analysis of published data regarding rapid HIV testing, analysis of mathematical modelling of the possible impact of rapid HIV testing in Australia, and has held consultations with key stakeholders and selected healthcare workers.

Scope

The Rapid HIV Testing Policy Reference Group limited itself to examining issues in relation to the possible introduction of rapid HIV testing in Australia, and did not examine broader issues in relation to HIV testing in detail. AFAO's 2005 submission to the review of the Australian National HIV Testing Policy articulated AFAO's policy position on many other aspects of HIV testing. The recommendations on rapid HIV testing in this paper build on that position and propose concrete actions to pursue these policy objectives. The 2005 AFAO submission supported the limited introduction of rapid HIV testing for point of care testing in Australia, however, this position was not adopted in the 2006 National HIV Testing Policy (DoHA 2006).¹

Since 2006, there have been improvements in the quality of available rapid HIV tests, and considerable experience in their use in many settings outside Australia. The recent AFAO review of rapid HIV testing examined those experiences and other data relevant to rapid HIV testing.

The recommendations in this paper only relate to the use of rapid HIV testing technologies by

appropriately trained healthcare professionals. The paper does not discuss issues regarding the potential use of rapid HIV tests in other settings, e.g., home testing. (The 2005 AFAO submission to the review of the Australian National HIV Testing Policy articulates AFAO's position on home testing.)

Key Recommendations

- 1** AFAO recommends that high quality rapid HIV tests should be licensed for use as point of care tests in Australia subject to appropriate guidelines for their use and the participation in appropriate training and quality assurance programs by those administering rapid tests.
- 2** AFAO recommends that the Department of Health and Ageing initiate a review of the National HIV Testing Policy 2006 with a view to supporting licensing of rapid HIV tests for use at the point of care in Australia and the development of guidelines to support their use. It is further recommended such a review consider whether all laboratory-based HIV testing in Australia should move to the use of fourth generation enzyme immunoassays.
- 3** AFAO recommends that in considering applications for licensing of rapid HIV tests for use as screening tests, the Therapeutic Goods Administration should include an assessment of the potential public health benefits of rapid HIV tests at point of care, such as increasing access to HIV testing and supporting increased HIV testing frequency among populations with high HIV prevalence.
- 4** AFAO recommends that the National Reference Laboratory provide technical support in relation to appropriate trials of rapid HIV tests at the point of care.
- 5** AFAO recommends that the National Reference Laboratory develop a quality assurance program to support best practice in the use of rapid HIV tests at the point of care.
- 6** AFAO recommends that Commonwealth, State and Territory governments provide resources to support trials of rapid HIV testing.
- 7** AFAO recommends that the planning of trials of rapid HIV testing should include consultation with representatives of affected communities.



The Policy and Regulatory Framework of HIV Testing in Australia and Rapid HIV Tests

Regulation of HIV Testing

The Therapeutic Goods Authority (TGA) has regulatory responsibility (under the Therapeutic Goods Act, 1989) for licensing of 'medical devices', this including 'devices' such as HIV rapid test kits. In licensing a device for use in Australia, the TGA limits who can provide tests of a particular class, and where the test can be provided. We understand that if approved by the TGA, rapid HIV tests would be subject to the parts of the Therapeutic Goods (Medical Devices) Regulations 2002, under which testing may only be performed by a "health professional". "Health professional" includes a person who is:

- (a) a medical practitioner, a dentist or any other kind of health care worker registered under a law of a State or Territory; or
- (b) a biomedical engineer, chiropractor, optometrist, orthodontist, osteopath, pharmacist, physiotherapist, podiatrist, prosthetist or rehabilitation engineer." (underlining ours)

The Current Status of Rapid HIV Tests in Australia

The Australian National HIV Testing Policy does not support the use of rapid HIV tests as screening tests at the point of care. The Policy does support the limited use of rapid HIV tests in some circumstances:

Screening

Currently rapid HIV tests are not approved by the TGA for use in HIV screening, except in very limited specific settings; that is, they are restricted to use in remote settings where laboratory resources are limited. Remote laboratory sites that wish to use rapid HIV tests must get special permission from the TGA. Advice from the National Reference Laboratory (NRL) is that there has been only very limited use of this exemption. Use of rapid HIV tests in these settings has not included their use as point of care tests, but for processing blood samples at the laboratory.

Reference Tests

Three rapid tests are approved for use as reference tests; that is, for laboratory use in confirming other test results, and in distinguishing between HIV-1 and HIV-2. Use of rapid tests as reference tests only occurs following a reactive result on a first-line enzyme immunoassay (EIA) test.

Clinical decisions

The National HIV Testing Policy supports the use of rapid tests to guide clinical decision-making in urgent situations e.g. assessment for Post-Exposure Prophylaxis, and diagnosis of *Pneumocystis jiroveci* pneumonia (PJP).

Barriers to Licensing of Rapid HIV Tests as Screening Tests

An additional barrier to the licensing of rapid HIV tests as screening tests in Australia has been the high benchmark for assessing new HIV tests applied by the National Reference Laboratory. If an application is made to the TGA for a registration of a rapid HIV test device, the test is referred by the TGA to the NRL for an assessment. The NRL then performs tests on the HIV test device to assess its performance, using stored samples.

The NRL assesses whether the test performs to the same technical standards as currently licensed tests. To be approved for licensing, a new HIV test would have to perform similarly or better than existing laboratory EIAs.

Rapid HIV tests usually require longer window periods for detecting HIV antibodies in recent HIV infections than EIA tests, and in some cases have lower performance in terms of sensitivity (that a true antibody positive sample will give a positive result) and specificity (that a positive result on the rapid test will be a true positive; lower specificity will mean more false positive results). Thus, rapid HIV tests have not achieved equal or better performance to EIAs and have not been approved as screening tests in Australia. **AFAO believes that the TGA/NRL assessment process does not take into account important aspects of rapid HIV tests relevant to their use as screening tests at point of care, which in the experiences of services using them in other settings, have demonstrated many public health benefits.**

Fourth Generation Rapid HIV Tests

A 'fourth generation' rapid HIV test is now available. This test (the Determine HIV-1/2 Ag/Ab Combo Test) is a significant advance on previous rapid HIV tests. Through the addition of an HIV antigen detection assay, the test significantly reduces the window period after HIV exposure after which an infection can be diagnosed. There is data demonstrating that this test has a shorter window period (by five days) compared to third generation EIAs, which are still licensed by the TGA and in use by many laboratories in Australia.ⁱⁱ AFAO is aware that the manufacturer of this test has applied to the TGA for licensing; at the time of writing (June 2010) the application is still being assessed.

Recent Policy Developments

The recently released Sixth National HIV Strategy 2010–2013 addresses rapid HIV testing. The Strategy notes that despite high levels of testing for HIV, there is room for improvement, and it gives priority to assessing rapid HIV testing:

'Priority will be given to assessing approaches to the implementation of rapid HIV testing for use in communities that have high HIV prevalence, drawing on evidence from comparable countries where rapid testing has been introduced. While rapid techniques may present opportunities for better uptake of testing, they must meet Australia's established quality standards.'ⁱⁱⁱ (Section 6.2: HIV diagnosis and testing.)

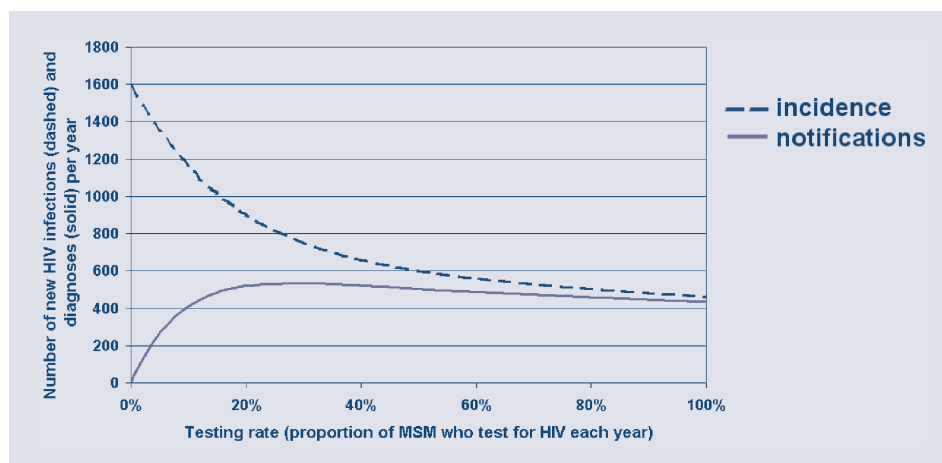
This priority is also reflected in the Strategy's *Priority Actions* in research.

Why Should Rapid HIV Testing at Point of Care be introduced in Australia?

AFAO believes that there are strong arguments to support the introduction of rapid HIV testing in Australia. HIV testing and knowledge of HIV status is a key aspect of HIV prevention, and early diagnosis is necessary for optimal treatment and care for PLHIV. In populations with high HIV prevalence, such as gay men and MSM in Australia, high testing rates and high testing frequency (repeat testing) are necessary to identify people with undiagnosed primary HIV infection. Based on experiences in similar settings overseas, AFAO believes that the introduction of rapid HIV testing would reduce some barriers to HIV testing, and would therefore assist in maintaining or increasing HIV testing rates and frequency among gay men and MSM. AFAO believes that the introduction of rapid HIV testing would also bring considerable benefits in terms of consumer experiences, workforce experience, and reduced costs.

HIV Transmission by Undiagnosed People with HIV

Mathematical modelling by the National Centre in HIV Epidemiology and Clinical Research estimated that 31% of new HIV infections among MSM in Australia are from men who are not aware of their positive HIV status.^{iv} People with undiagnosed HIV infection are likely to have significantly higher HIV viral load levels than people on ARV treatments. Increased testing coverage and increased testing frequency among MSM would assist in reducing undiagnosed HIV infection and therefore should assist in reducing new HIV transmissions and improving health outcomes for people diagnosed with HIV.



Source: David Wilson, NCHECR

HIV Testing in Australia

While Australia has long been thought to have high HIV testing rates among gay men and other men who have sex with men (MSM), recent data suggest that there is considerable room for improvement. Among men who participated in the 2008 National Centre in HIV Social Research *E-male Survey*:

- 23.8% reported that they had never tested for HIV, and
- among men who had tested, 31% had not tested in the previous 12 months^v

A substantial proportion of HIV diagnoses among MSM are late diagnoses:

- In the period 2004–2008, 13.1% of diagnoses among MSM in Australia were late diagnoses^{vi}

In the 2009 NSW HIV diagnoses data:

- 15% of MSM diagnosed were late presenters (increased from 10% in 2008),
- only 31% had tested in the previous 12 months, and
- 18% had never previously tested

Data from the Victorian Primary Care Network for Sentinel Surveillance study show among men visiting the participating clinics, HIV testing frequency was lower than the self-reported HIV testing frequency data from behavioural surveys, and significantly lower than the HIV testing frequency recommended for sexually active MSM in Australian National STI Testing Guidelines issued by the Australasian Chapter of Sexual Health Medicine (STIGMA/RACP 2005):

- o less than 40% of MSM had retested after one year
- o less than 20% of highly sexually active men had retested after six months^{vii}

Positive Experiences where Rapid HIV Testing has been Introduced

Rapid HIV tests are routinely used in many developed and developing countries. Their use is supported by the World Health Organisation and UNAIDS, and a number of rapid HIV tests have been assessed and licensed for use by regulatory bodies in many countries, including the United States, the United Kingdom, and across Western Europe.

Advantages of rapid HIV tests include that they are less invasive, can be used outside established clinical settings, and can lead to an increased proportion of those testing receiving results. In most settings approximately 98% to 99% of results will be negative, so these results can be given at the same visit as the test.

In settings overseas where rapid HIV tests have been used as screening tests, reported benefits have included:

- Increased testing frequency among regular testers
- Increased testing rates (i.e. presentation for testing by those who have never tested)
- Increased client satisfaction
- Increased clinical staff satisfaction
- Consumer preference for rapid tests for future testing
- Reduced costs for testing services
- A (much) higher proportion of clients receiving test results (i.e. reduced problems with return rates to collect test results)

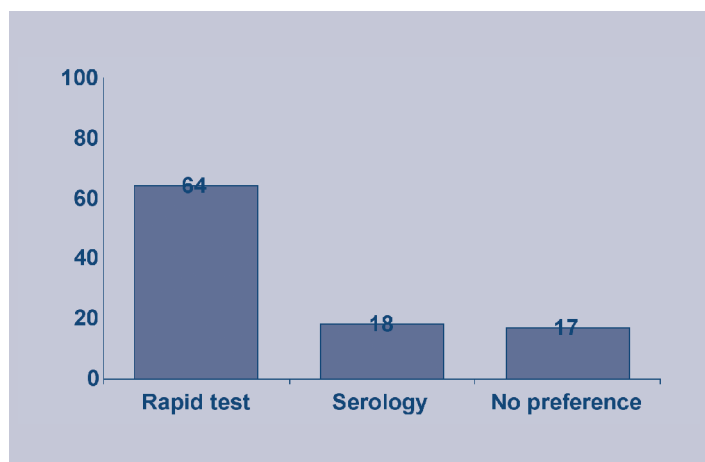
The AFAO Literature Review of Rapid HIV Testing^{viii} and the Summary of Responses from AFAO's survey of rapid HIV testing services (AFAO 2009) provide more detail and discussion about the experience of rapid HIV testing programs in other settings.

Acceptability of Rapid HIV Testing Among MSM in Australia

As rapid HIV testing has not yet been offered in Australia, we don't really know how acceptable it may be to consumers. Reports from HIV rapid testing services cite strong consumer preferences for rapid HIV testing: clients value the speed with which results can be obtained, the reduction in anxiety associated with waiting for standard test results, and the option to provide samples using a less invasive collection method e.g. finger prick or oral fluid. A minority of consumers describe concerns about the accuracy of rapid HIV testing compared with standard HIV testing.^{viii}

A recent study by the Melbourne Sexual Health Centre, where gay men were asked about preferences for rapid or conventional HIV testing suggests that rapid testing is likely to be preferred by many gay men.^{ix}

Preference for HIV testing in a clinic setting.



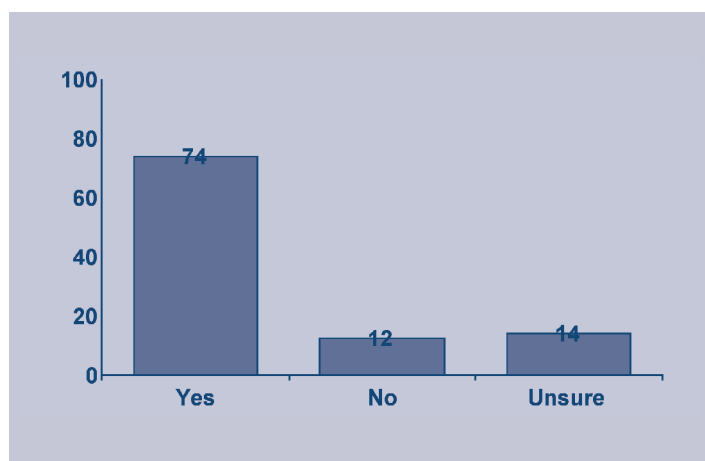
n = 176

MSHC Study 2009: Midsumma and Chill Out in Melbourne and Daylesford 2009.

Source: Marcus Chen

Data from the same study suggests that gay men may also test more frequently if rapid HIV testing were available

More frequent testing if rapid HIV tests available in a clinic setting?



n = 176

MSHC Study 2009: Midsumma and Chill Out in Melbourne and Daylesford 2009.

Source: Marcus Chen

The Pleasure and Sexual Health Study (PASH), a recent large national online survey of gay men and MSM conducted by the National Centre in HIV Epidemiology and Clinical Research and the Australian Centre in Sex, Health and Society found similar results in relation to the acceptability of rapid HIV testing.^x Among men who had previously tested for HIV:

- 58.4% indicated that they would test more frequently if available tests were more convenient; and
- 75.2% indicated that they would test more frequently if they had access to rapid testing.

Among men who had never been tested, 65.2% indicated they would be more likely to test if they had access to rapid testing.

Barriers to Testing in Australia

Among men who had previously tested for HIV in the PASH Study, 68.9% indicated that they didn't have enough time to go for tests. AFAO believes that rapid HIV testing would significantly reduce this barrier to testing; as approximately 99% of men receiving a rapid test would be HIV negative, a second clinical visit to collect results would not be required.

A recent Melbourne study conducted by the Australian Research Centre in Sex, Health and Society identified barriers to HIV testing experienced by gay men and MSM in Australia. Two of the top three barriers may be significantly reduced if rapid HIV testing were available.^{xi}

ARCSHS Midsumma Survey 2010 n = 376						
Barriers to Testing for HIV (among men previously tested for HIV)	No Effect					Mean
	1	2	3	4	5	
Needing to tell my sexual partners if I am diagnosed with HIV	41.1	12.4	19.0	12.6	14.9	2.48
Having to return for test result	42.6	13.9	15.9	17.3	10.2	2.39
Finding time to get tested	47.9	14.2	13.0	16.1	8.8	2.24
Worry that testing would become known to other people	46.3	15.6	16.5	12.2	9.4	2.23
Getting an appointment	51.0	13.7	17.1	11.7	6.6	2.09
Needing to have a discussion with the doctor after getting my test results	51.4	15.3	15.9	9.5	7.8	2.07
Knowing where to go	53.5	15.9	12.5	10.8	7.4	2.03
Finding a doctor	52.9	15.1	14.9	11.7	5.4	2.02
Cost of testing	53.4	15.3	16.5	8.5	6.3	1.99
Having to test too often	49.9	17.7	21.1	7.1	4.3	1.98
Embarrassment about testing	53.7	16.0	14.9	10.0	5.4	1.97
Needing to have a discussion with the doctor before getting tested	53.2	17.8	14.7	7.2	7.2	1.97

Source: Marion Pitts, ARCSHS.

Affordability

An argument sometimes used against rapid HIV testing is that the unit-cost of a rapid test kit is more than the cost of processing a sample in a laboratory on an EIA testing platform. This simplistic comparison does not take account of all the cost factors involved, such as:

- The fixed costs of running a laboratory, such as buildings, salaries and equipment. These costs are in addition to the cost per unit to process a sample.
- Transport costs to take samples to labs. In a rapid HIV testing service around 99% of samples will be negative and no samples will be sent to a laboratory for further testing; only reactive results would require further testing (although if comprehensive STI testing is included, those samples would need to be transported).
- In a rapid HIV testing service around 99% of samples will be negative and no second visit to the clinic will be required for collecting results, saving costs on clinic time and salaries/Medicare payments. (If rapid HIV testing were incorporated into an ongoing testing service in the future, and comprehensive STI screening was undertaken, then incorporating rapid syphilis testing may mean that, for most men (i.e. men with hepatitis immunity and no previous syphilis), rapid HIV & syphilis results could be given on the day and other results (bacterial STIs) advised by phone/SMS.)

Assessing the comparative cost of providing rapid HIV testing services and current HIV testing services was beyond the scope of AFAO's research on rapid HIV testing. If rapid tests are approved in Australia, a separate case will need to be made to gain Medicare payments for test costs.

Limitations of Rapid HIV tests and implications for their use

Test Performance – Sensitivity

Early rapid HIV tests had lower performance in terms of sensitivity (that a true antibody positive sample will give a positive result) than laboratory EIA tests. Many newer rapid HIV tests now have 100% sensitivity.

AFAO believes that only rapid tests with 100% sensitivity are appropriate for use in Australia.

Reactive Results and Confirmation of Results

A positive (often described as a 'reactive' or 'preliminary positive') result on a rapid test needs to be confirmed by laboratory testing, so one disadvantage of their use is that clients with a reactive result must wait for a confirmed result. With conventional HIV testing, reactive EIA results must still be confirmed, however this is normally completed before the result is given to the client.

Confirmation of a reactive rapid HIV test is usually managed by taking a venous blood draw for EIA and Western Blot testing in a laboratory. Some sites overseas are trialling the use of an algorithm of different rapid HIV tests (a specific set of tests used in a specific sequence) to confirm results, however, this is not yet considered best practise.

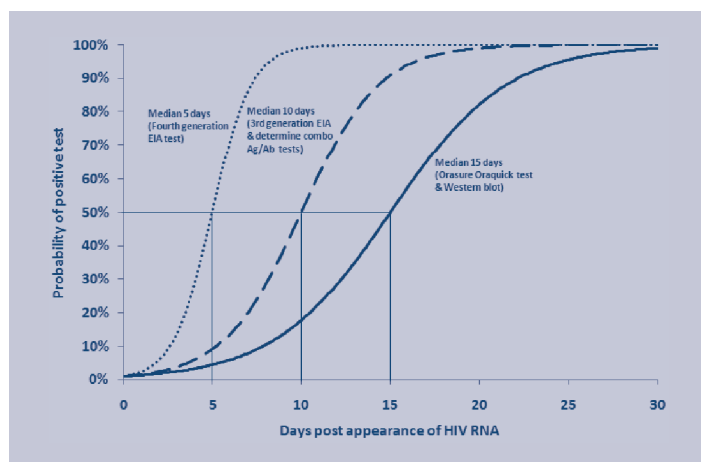
Implication for Use

To minimise the anxiety of clients with reactive rapid HIV test results, sites offering rapid HIV testing should ideally have facilities in place to draw blood, and arrangements in place with high-quality laboratories for rapid processing of confirmatory testing.

Services offering rapid HIV testing must have appropriate guidelines in place for pre-test and post-test discussions and counselling that address the limitations of rapid HIV tests and the need to confirm reactive results. Services may need to develop procedures to provide support to clients while confirmatory testing is underway.

Test Performance – Recent Infections

Most of the currently available rapid HIV tests require longer window periods for detecting HIV antibodies in recent HIV infections than the best laboratory EIA tests. However, the newer fourth generation (combined antigen/antibody tests) rapid HIV tests perform equally or better in this area than third generation (antibody only) laboratory EIA tests, which are still used for approximately 25% of screening tests in Australia, including with high prevalence populations.



Source: David Wilson, NCHECR

Implications for Use

The longer window periods required by rapid tests mean that where rapid tests are offered, pre-test discussions should carefully assess whether the client has had a recent risk exposure. **For clients with recent risk exposures, the most sensitive available HIV test should be recommended;** this will normally mean a fourth generational antigen/antibody EIA test or pro-viral DNA test should be offered instead of a rapid HIV test.

Services offering rapid HIV testing must have appropriate guidelines in place for pre-test and post-test discussions and counselling that address the limitations of rapid HIV tests and have clear advice about testing options for clients with recent risk exposures.

Test Performance – False Positives

Test specificity measures the proportion of positive results that are true positive results. While many rapid HIV tests now have high specificity ratings comparable with laboratory EIAs, an operational aspect of the use of rapid HIV tests is that a reactive result must be confirmed by further testing before a definitive diagnosis of HIV infection can be made. This means that some reactive results will be false positive results.

The proportion of true positive and false positive results depends on (i) the specificity of the test and (ii) the proportion of positive individuals in the population being tested. Where HIV prevalence in the population being tested is lower, a higher proportion of reactive results will be false positives. It is for this reason that many clinicians believe that rapid HIV testing is not appropriate for HIV testing in low prevalence populations.

For example:

The manufacturer of the Determine HIV-1/2 Ag/Ab Combination Rapid test estimates that the test has a specificity of between 99.23 (for antibodies) and 99.66% (for antigens). For the purpose of the illustration below the assumed specificity is 99.5%

If this test were used to test 1,000 people where approximately 1.5% of the population is HIV positive (the approximate HIV prevalence among MSM testing at metropolitan sexual health services in Australia), then the results would theoretically be:

- 1,000 tests
- 980 negatives
- 20 reactive results, of which:
 - 15 would be true positive results
 - 5 would be false positive results

Fifteen of the 20 initially 'positive' or 'reactive' results would be true positives, and 5 would be false positives. Thus, one in four positive/reactive results would be a false positive result.

However, if the prevalence of HIV in the population was just 0.5% then the results would be:

- 1,000 tests
- 990 negatives
- 10 'reactive' results, of which:
 - 5 would be true positive results
 - 5 would be false positive results

Five of the 10 initially 'reactive' results would be true positives, and 5 would be false positives. Thus, 50% of the reactive results would be false positive results.

In populations where HIV prevalence is lower than the examples above, or where tests with lower specificity were used, the outcomes of rapid HIV testing may be that there would be more false positives than true positive results.

Implications for Use

Rapid HIV tests are best suited to testing in populations with relatively high HIV prevalence. Careful consideration should be given to use of rapid HIV tests among populations with low HIV prevalence. In AFAO's consultations on rapid HIV testing, most clinicians did not support the use of rapid tests in low prevalence populations, however, in the case of an Aboriginal Health Service, low test return rates were considered a greater problem than managing false positives results, and thus rapid tests were seen as better than conventional testing.

Test Performance – Subjective Reading of Results

Rapid HIV tests results are subjectively read and interpreted and are open to erroneous interpretation by inexperienced users. Rapid HIV testing is therefore not considered appropriate for use where the person administering the test may only do so occasionally. Where rapid HIV testing is offered, it is usually in the context of proper training of practitioners, established quality management procedures, and rigorous quality assurance programs.

Implications for Use

Use of rapid HIV tests is best undertaken by properly trained personnel in settings where regular experience in reading tests is likely. Services should develop quality management processes and participate in quality assurance programs. For these reasons, AFAO believes that use of rapid testing is best suited to sexual health clinical settings, properly resourced HIV/gay men's health community organisations, and high gay/MSM caseload GPs.

Outcomes from Mathematical Modelling of the impact of rapid HIV testing among MSM in Australia

David Wilson of NCHECR kindly undertook a mathematical modelling study of the outcomes that may be expected if rapid HIV testing replaced HIV testing in Australia. For the purposes of the model, it was assumed that rapid HIV testing replaced all HIV testing among MSM. Outcomes were modelled for two rapid HIV tests: the Determine HIV1/2 Ag/Ab Combo rapid test and the Orasure Oraquick rapid test (which is an antibody-only test and requires a longer window period than the Determine test).

The model did not assume any increase in testing frequency or HIV testing rates, both of which are reported by services that have introduced rapid testing. Also, the model did not assume any triage of clients with recent risk exposures to more sensitive tests, so in this model some recent HIV infections would not be detected. It should be noted that in AFAO's consultations with rapid testing services, those which did filter clients depending on recency of risk exposure reported that this process was straightforward and successful.

The outcomes of the modelling showed that (i) 13 diagnoses among MSM would be missed per year (2.03% of current annual MSM diagnoses) if all tests were replaced by the Determine rapid test, and (ii) 25 diagnoses among MSM would be missed per year (3.93% of current annual MSM diagnoses) if all tests were replaced by the Orasure Oraquick test. Even in the worst case scenario, the model predicted that there would be **a net benefit in terms of reduced new HIV transmissions**, as people undertaking rapid testing would learn their HIV status earlier than in the current environment.

Rapid Testing in General Practice Clinical Settings

In AFAO's consultations, pathologists and clinicians stressed that the use of rapid HIV tests should be in the context of adequate training in the use of tests and interpretation of results, and that sites where rapid testing may be offered in future should participate in appropriate quality assurance programs. While Australian GP clinics with high caseloads of gay men and HIV positive clients would be likely to be able to meet such requirements, GPs had mixed views about the suitability of rapid HIV testing for their practices. Some GPs indicated that if rapid tests were licensed and preferred by clients, they would offer them. However, other GPs expressed concern about some aspects of rapid HIV tests, such as the unpredictability of which clients would return a reactive rapid HIV test result. Where a reactive result occurred, a GP would need to spend more time with a patient to explain the result and take blood for confirmatory testing, potentially disrupting other clinic appointments.

Further Issues

AFAO's consultations identified a number of issues in relation to rapid HIV testing that will require attention if rapid testing becomes licensed in Australia. These include:

- Clarifying the impact of a reactive result on a sex worker's ability to work while a confirmed result is awaited.
- Addressing concern that rapid HIV tests may be inappropriately used in settings such as immigration detention or in relation to cross-border movements in the Torres Strait.

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AFAO Rapid HIV Testing Policy Reference Group

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- i Australian Government: Department of Health and Ageing. National HIV Testing Policy 2006 (2006). Canberra.
- ii Keren, T., Guidasci, T., Rivetz, B., Fish, F. (2009, July). Performance evaluation of the Determine HIV 1/2 Ag/Ab Combo, a novel HIV 4th-generation rapid test. Conference presentation, 5th IAS Conference on HIV Pathogenesis, Treatment and Prevention, South Africa.
- iii Australian Government: Department of Health and Ageing (2010). Sixth National HIV Strategy 2010–2013. Canberra.
- iv Wilson, D., Hoare, A., Regan, D., Wand, H., Law, M. (2008) Mathematical Models to investigate trends in HIV notifications among men who have sex with men in Australia. National Centre in HIV Epidemiology and Clinical Research. University of New South Wales, Sydney.
- v Rawstorne, P., Holt, M., Kippax, S., Worth, H., Wilkinson, J., and Bittman, M. (2009). E-male survey 2008: key findings from a national online survey of men who have sex with men in Australia (Monograph 3/2009). Sydney: National Centre in HIV Social Research, The University of NSW.
- vi National Centre in HIV Epidemiology and Clinical Research. HIV/AIDS, viral hepatitis and sexually transmissible in Australia Annual Surveillance report 2009. National Centre in HIV Epidemiology and Clinical Research, The University of New South Wales, Sydney.
- vii Guy, R., Goller, J.L., Spelman, T., et al. (2010). Does the frequency of HIV and STI testing among MSM in primary care adhere with Australian guidelines? *Sex Transm Infect.* May 10 2010; 21
- viii Holt, M., (2009). Rapid HIV Testing: A Literature Review. AFAO, Sydney, 2009.
- ix Melbourne Sexual Health Centre Study 2009: Midsumma and Chill Out in Melbourne and Daylesford 2009
- x Prestage, G., McCann, P.D., Hurley, M., Bradley, J., Down, I., Brown, G., (2010). Pleasure and Sexual Health: The PASH Study, 2009. Monograph, National Centre in HIV Epidemiology and Clinical Research, Sydney.
- xi Pitts, M., Smith, A., Grierson J., (2010). Testing patterns for Syphilis and HIV Among Gay Men in Victoria (Briefing Paper pending publication). Australian Research Centre in Sex, Health and Society, Melbourne.
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