Dr Choy Chiaw Yee

Overview

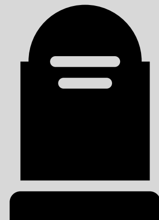
- Why is testing important
- Who should we test
- Consent and pre-test counselling
- Testing algorithm
- Post test care

WHY IS TESTING IMPORTANT?

Epidemiology of HIV

- ARV has improved the quality of life and life expectancy of people living with HIV infection. However….

Every year, approximately **1.7 million people** are diagnosed with HIV infection.



680 000 people died of AIDS in 2020.

Global HIV & AIDS statistics – 2020 fact sheet. In: UNAIDS Global HIV & AIDS statistics [Internet]. 2020. Available from: https://www.unaids.org/en/resources/fact-sheet.

HIV Testing is the essential first step in the HIV Care Continuum[1] and has important implications for individual and public health:

Identifying those infected with HIV allows for:

- linkage to care
- initiation of antiretroviral therapy (ART)
- provision of appropriate immunisations and prophylaxis

Linkage to care, retention in care and ART leads to:

- virologic suppression and reduced AIDS-related complications[2]
- Reduced HIV/AIDS-related mortality and morbidity
- improved quality of life and normalisation of life expectancy[3]

1. https://www.aids.gov/federal-resources/policies/care-continuum/
2. Walensky RP, et al. J Infect Dis. 2006;194(1):11
3. Losina E, et al. Clin Infect Dis. 2009;49(10):1570

HIV Testing and Screening: Why is it important?

- Reducing onward transmission from undiagnosed HIV-infected
  - Evidence shows that persons living with HIV who are unaware of their HIV diagnosis have a markedly higher HIV transmission rate when compared with those who are aware of their HIV diagnosis[2,3]

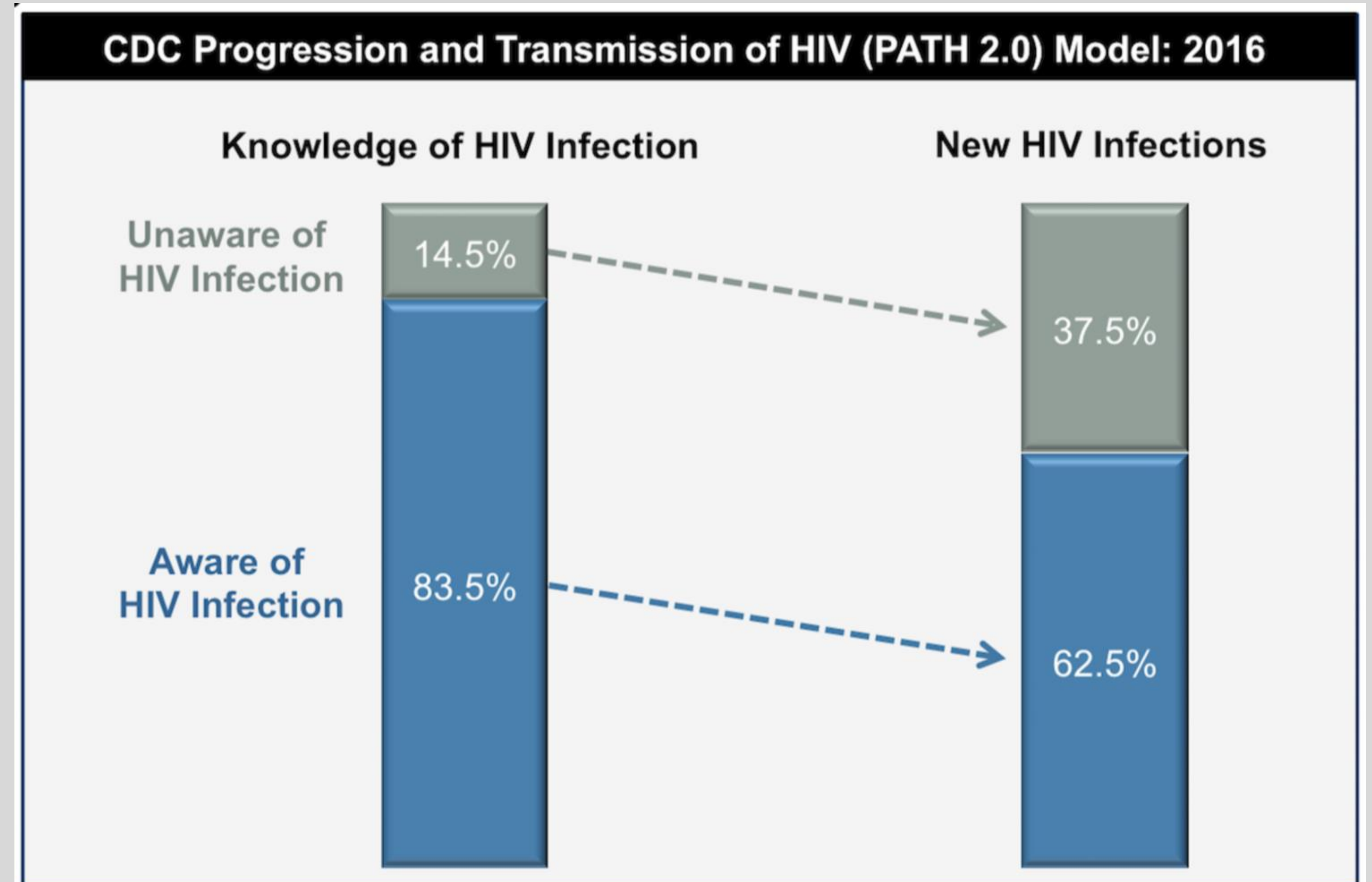
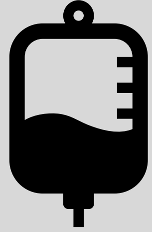


Figure 4 - HIV Transmissions in the United States in 2016 Based on Awareness of HIV Infection
In this Progression and Transmission of HIV (PATH 2.0) model, investigators from the CDC estimated HIV transmissions and transmission rates in the United States in 2016, including stratification based on awareness of HIV infection. As shown, persons unaware of their HIV infection account for a disproportionate percentage of HIV transmissions.

1. MMWR Morb Mortal Wkly Rep. 2019;68:267-72.
2. AIDS. 2006;20:1447-50.
3. J Acquir Immune Defic Syndr. 2005;39:446-53.

HIV Testing and Screening: Why is it important?

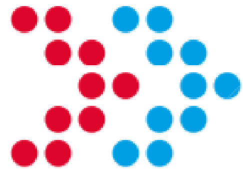


Reduces risk of AIDS related event, serious non- AIDS related death or death by **50%**[1,2]

Slows disease progression, decreases size of viral reservoir, reduces risk of treatment failure and **improves immune recovery**[3,4]

[1] New England Journal of Medicine. 2015;373(9):795-807.
[2] New England Journal of Medicine. 2015;373(9):808-22.
[3] The Cochrane database of systematic reviews. 2019;6(6):CD012962-CD.
[4] Clin Infect Dis. 2016;62(2):250-7

The UNAIDS 90-90-90 Targets

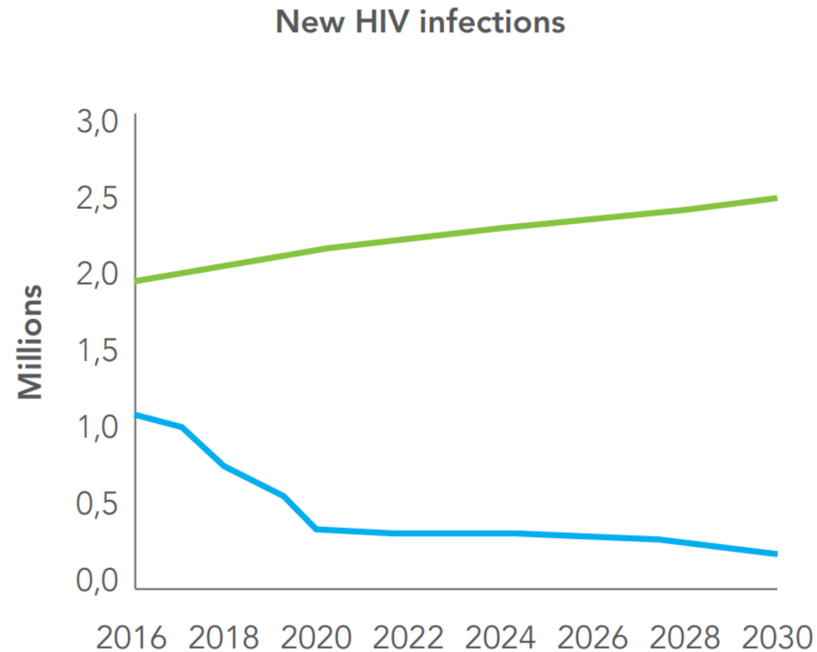


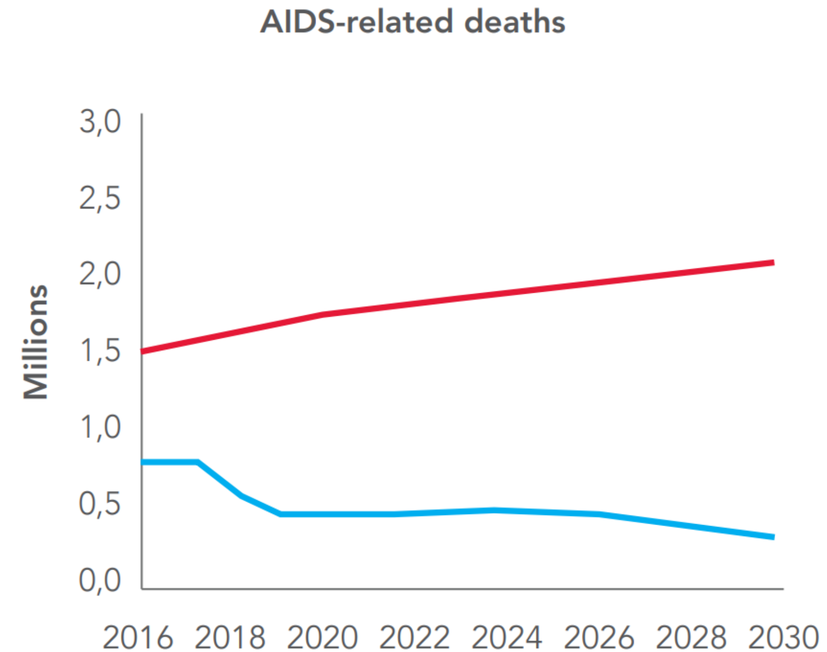
Fast-Track Targets

by 2020	by 2030
90-90-90 HIV treatment	**95-95-95** HIV treatment
500 000 New HIV infections or fewer	**200 000** New HIV infections or fewer
ZERO Discrimination	**ZERO** Discrimination

Why is achieving the 90-90-90 Targets important?

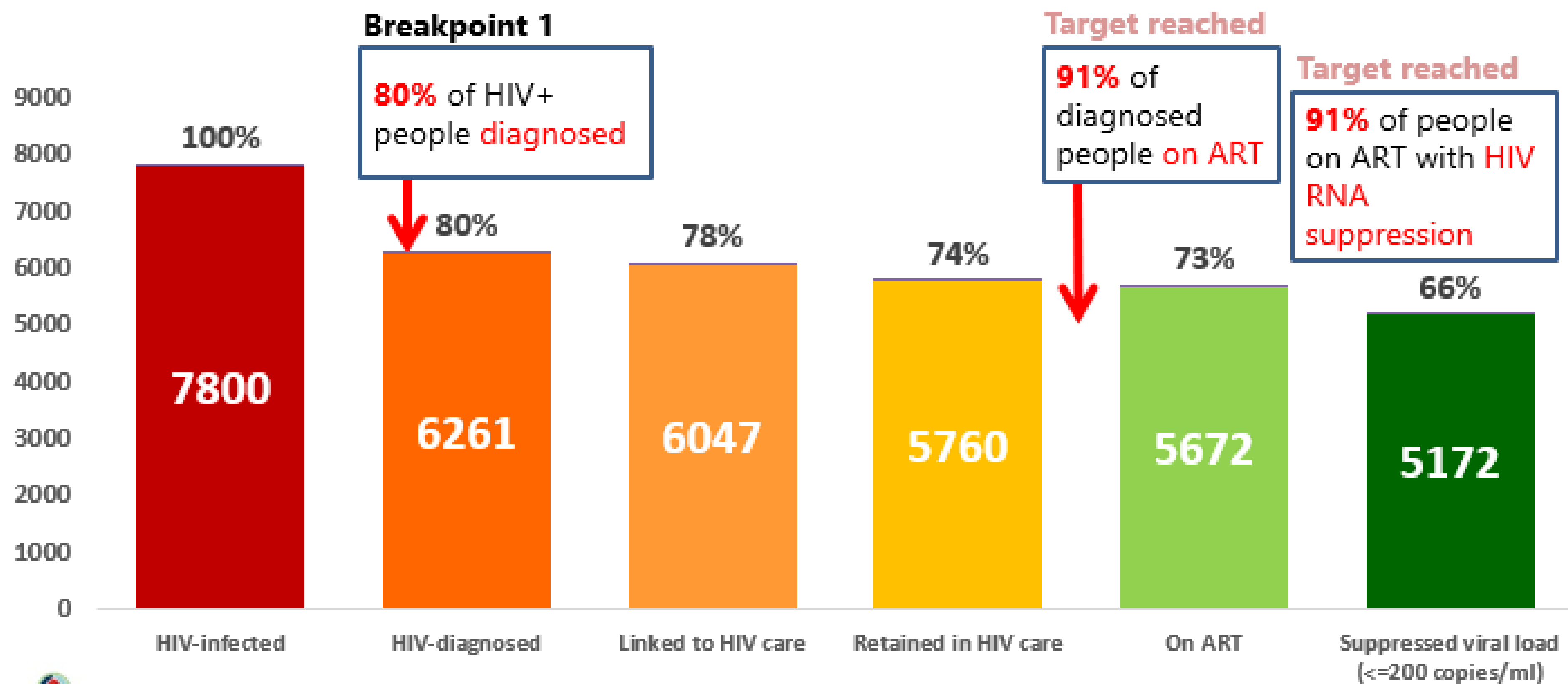
IMPACT OF THE 90-90-90 TARGET ON HIV INFECTIONS AND AIDS-RELATED DEATHS, 2016-2030



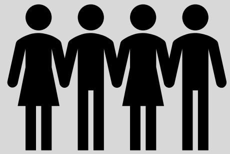


Source: The Gap Report, UNAIDS, 2014.

Singapore's performance on 90-90-90



Singapore's performance on 90-90-90 in 2019



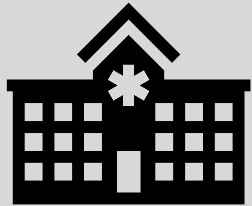
82% of people in Singapore who have HIV infection know their status

93% of those aware of their status are on therapy

94% of those on therapy has sustained viral suppression

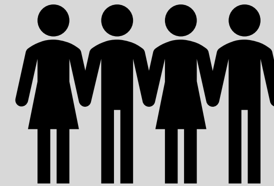
Source: National Public Health and Epidemiology Unit

Where is HIV testing done in Singapore?



- Voluntary opt out screening (VOS) program in hospitals

- Ten clinics currently provide anonymous HIV testing[1]



- Anonymous testing services provided by community based organizations

- Self-testing maybe available in the future

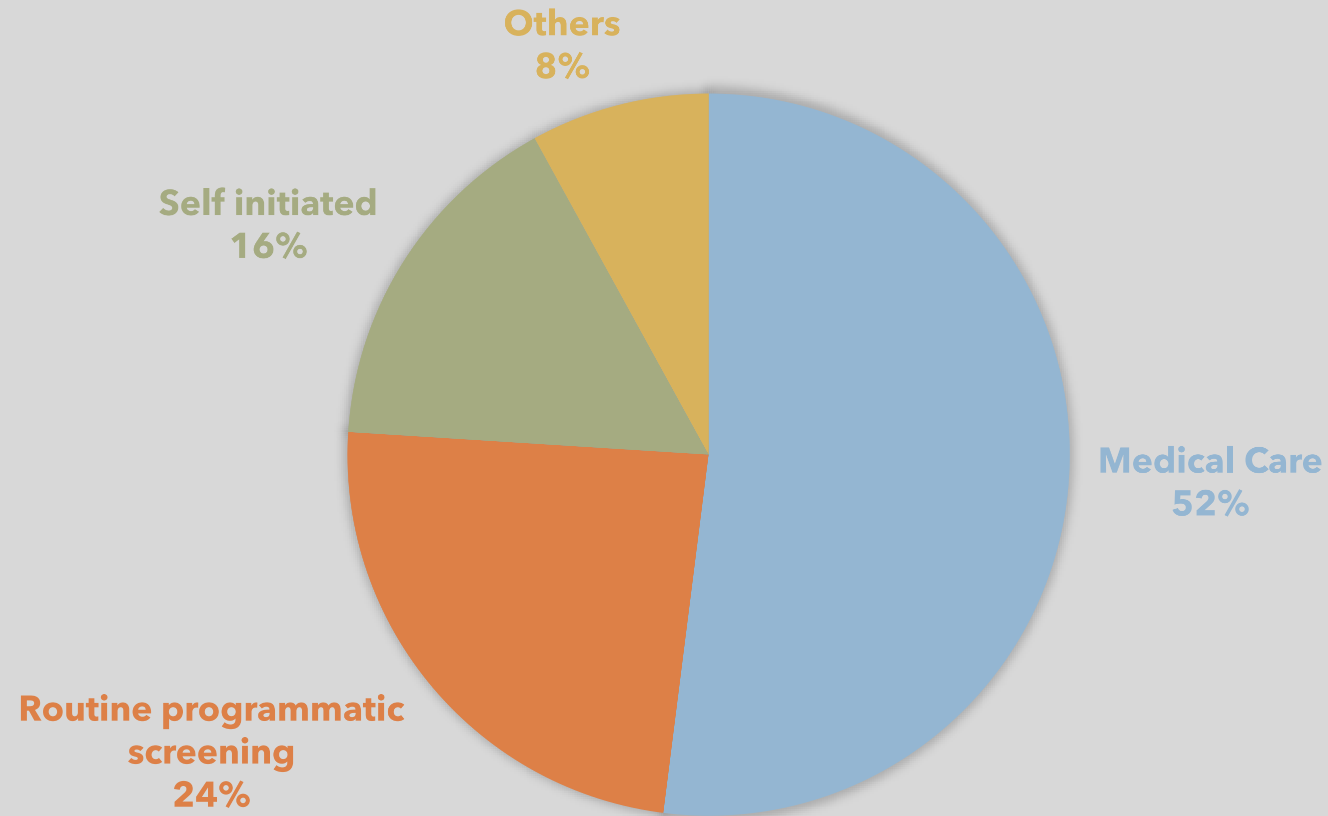
[1] Ministry of Health (MOH) [Internet]. Anonymous HIV testing; 2020

Number of newly diagnosed HIV cases

- **Between 2007 and 2017**, number of newly diagnosed HIV cases has been stable between **400-500 cases**
- **From 2018 to 2019**, the number decreased to **320 cases**
- **As of 2020**, there are **261 newly diagnosed HIV cases**

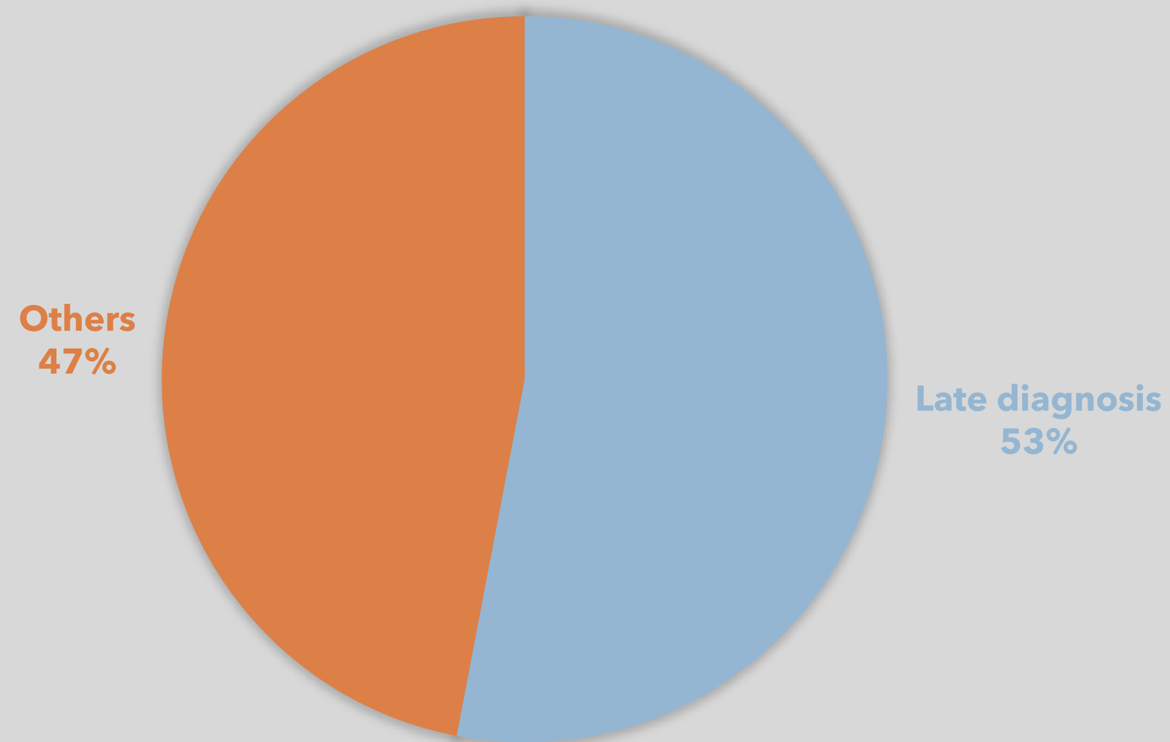
Adapted from UPDATE ON THE HIV/AIDS SITUATION IN SINGAPORE 2020 (JUNE 2021), MOH

SOURCES OF HIV DIAGNOSIS 2020



Adapted from UPDATE ON THE HIV/AIDS SITUATION IN SINGAPORE 2020 (JUNE 2021), MOH

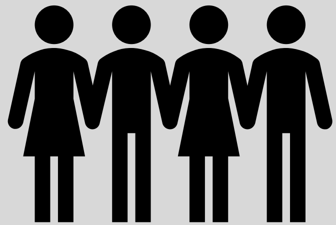
PROPORTION OF LATE-STAGE HIV INFECTION AT DIAGNOSIS 2020



Adapted from UPDATE ON THE HIV/AIDS SITUATION IN SINGAPORE 2020 (JUNE 2021), MOH

WHO SHOULD WE TEST?

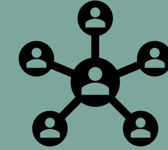
Initial screening: Who should be screened?



- All persons above the age of 21 years old should be offered HIV screening at least once in their lifetimes
- Except for females above the age of 65 years old*

* In accordance with CDC guidelines where health-care providers should initiate screening unless prevalence of undiagnosed HIV infection in their patients has been documented to be <0.1%.

Initial screening: Who should be screened?

		
• Tuberculosis • Sexually transmitted disease • AIDS-defining illness • Symptoms suggestive of HIV infection including acute HIV infection	• All pregnant women should also be offered HIV screening at each first antenatal visit.	• All persons with high-risk behaviours for HIV transmission

AIDS Defining Illness

Bacterial infections, multiple or recurrent*
Candidiasis of oesophagus, bronchi, trachea, lungs
Cervical cancer, invasive §
Coccidioidomycosis, disseminated or extrapulmonary
Cryptococcosis, extrapulmonary
Cryptosporidiosis (>1 month's duration)
Cytomegalovirus disease (other than liver, spleen, or nodes), onset at age >1 month
Cytomegalovirus retinitis (with loss of vision)†
Encephalopathy, HIV related
Herpes simplex: chronic ulcers (>1 month's duration) or bronchitis, pneumonitis, or oesophagitis (onset at age >1 month)
Histoplasmosis, disseminated or extrapulmonary
Isosporiasis, chronic intestinal (>1 month's duration)
Kaposi sarcoma†
Lymphoid interstitial pneumonia
Lymphoma, Burkitt (or equivalent term)
Lymphoma, immunoblastic (or equivalent term)
Lymphoma, primary, of brain
Mycobacterium avium complex or *Mycobacterium kansasii,* disseminated or extrapulmonary†
Mycobacterium tuberculosis of any site,
Mycobacterium, other species or unidentified species, disseminated† or extrapulmonary†
***Pneumocystis jirovecii* pneumonia**†
Pneumonia, recurrent†§
Progressive multifocal leukoencephalopathy
Salmonella septicemia, recurrent
Toxoplasmosis of brain, onset at age >1 month†
Wasting syndrome attributed to HIV

What are the features of acute HIV infection?

Table II. Clinical features of acute HIV-infected patients in Singapore (n = 34).

Clinical feature	No. (%)
Symptom	
Fever	31 (91)
Rash	19 (56)
Diarrhoea	18 (53)
Headache	8 (24)
Myalgia	15 (44)
Arthralgia	10 (29)
Weight loss	9 (26)
Anorexia	7 (21)
Pharyngitis	9 (26)
Cough	8 (24)
Nausea/vomiting	6 (18)
Swollen glands	4 (12)
Mouth ulcers	3 (9)
Genital ulcers	1 (3)
Neck stiffness	2 (6)
Sign	
Lymphadenopathy	14 (41)
Rash	10 (29)
Tonsilitis	4 (12)
Oral thrush	3 (9)
Oral ulcers	2 (6)
Genital ulcers	2 (6)
Meningism	2 (6)

Table taken from Singapore Med J 2011, 52(12) 860

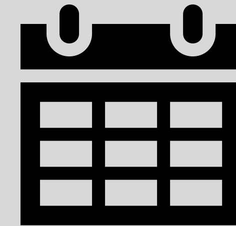
It really looks like dengue though

- A prospective cross sectional study done in 2012 to 2015 by National University Hospital, Tan Tock Seng Hospital, and Alexandra Hospital to identify seroprevalence of acute HIV infection among patients with dengue-like illness in Singapore.
- Febrile patients with 2 or more symptoms of Dengue fever were identified and offered testing for AHI.
- 140 participants were recruited, 3 were identified to have acute HIV infection-> seroprevalence is **2.1%**

Taken from Open Forum Infect Dis. 2018 Aug; 5(8): ofy171.

Repeat screening: Who should be screened?

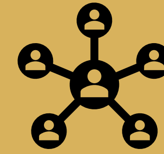
- Individuals in this population should be screened at least annually
- More frequent re-testing (3-6 monthly) may be warranted based on individual risk factors.



Repeat screening: Who should be screened?

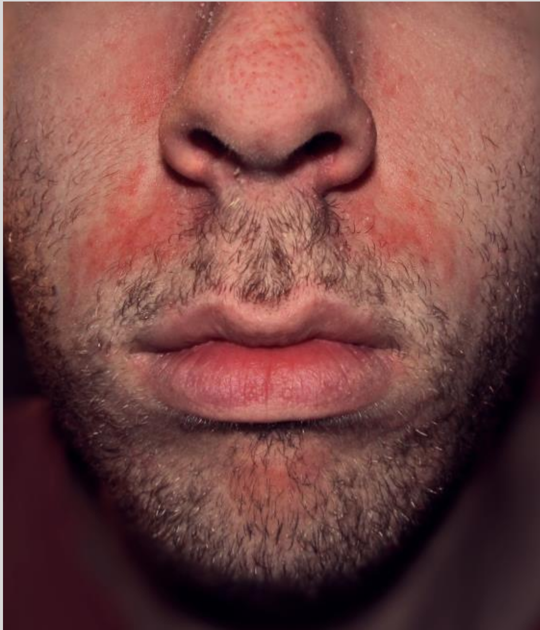
- Symptoms suggestive of HIV infection including acute HIV infection
- STD

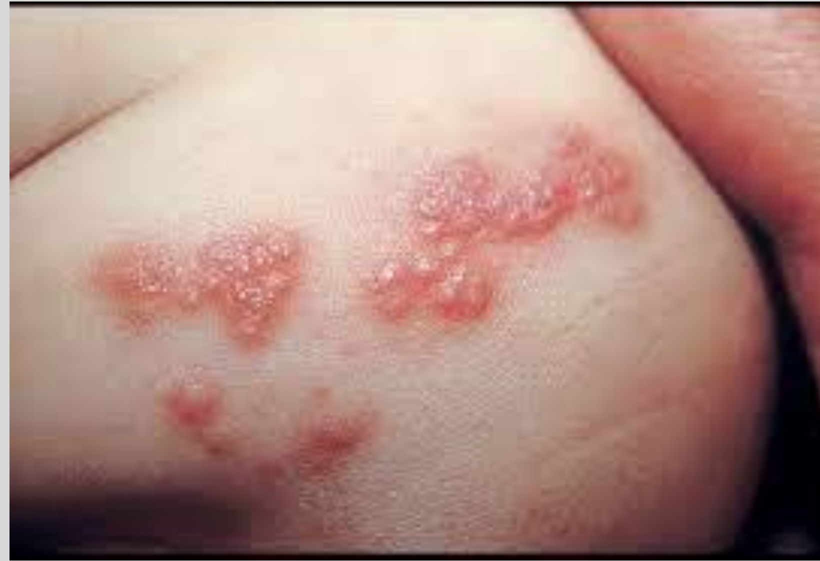
- History of IVDU
- Engage in sexual activities under the influence of alcohol or other drugs (including partners of such persons)
- Pre-exposure prophylaxis



- Sexual partners of HIV-infected persons whose viral load is above the limit of detection, especially if RNA>200 copies/ml
- Persons who exchange sex for money, and the partners of such persons
- Persons with multiple sexual partners

Other conditions to consider





When is HIV screening NOT required?

- Unless required by prevailing legislation (i.e Immigration Act), employment-related screening for occupations that do not involve exposure prone procedures **does not** require routine HIV screening

CONSENT AND PRE-
TEST COUNSELLING

How do you decide if an individual needs pre-test counselling?

Pre- Testing counselling necessary	Pre-test counselling not necessary
• First time testers • Not sufficiently educated on implications of HIV testing	• Regular testers • Low-risk individuals during the course of clinical care

Approach to Screening

Counselling

- Voluntarily
- With individual knowledge that HIV screening is being done

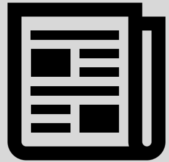
Space

- Ensure individual privacy and confidentiality

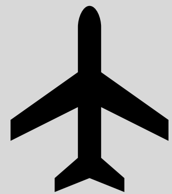
Interpreters

- The competence of interpreters to provide any required language assistance to individuals should be ensured.

Pre-test counselling content



Information on HIV infection and implications of a **positive** and **negative** test results



Non- Singaporeans should be made aware of the **restrictions** on long term passes, residency and other immigration matters in the setting of a positive results

Individuals should be allowed given the opportunity to **ask questions**, **decline testing** or **opt for anonymous testing**

Pre-test counselling content cont'd

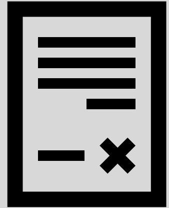
If **a rapid HIV test** is being done for an individual, a **second confirmatory HIV test** before the diagnosis can be confirmed in the event of a positive test.

What if an individual does not have mental capacity?

If the lack of decision making capacity is **permanent**, decision to screen for HIV infection should be made by the **primary physician** in the **patient's best interest**

If it is temporary, consider **delaying screening** for HIV infection until individual has decision making capacity

Documentation



Physical consent form is **NOT** necessary.

If an individual **declines** a HIV test, this decision should be documented in the clinical records as well.

TESTING ALGORITHM

Testing algorithm

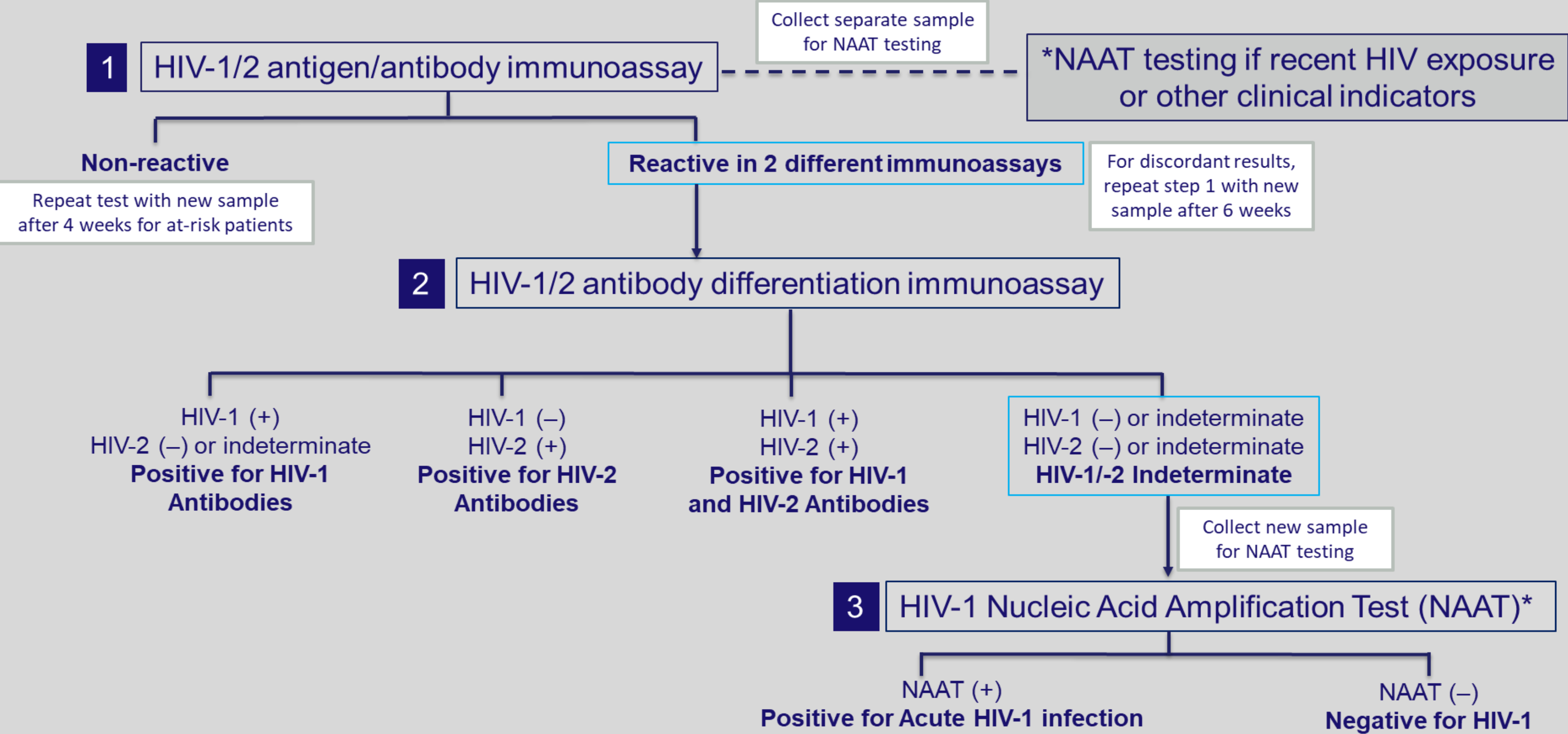
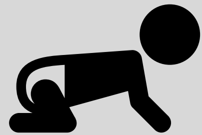
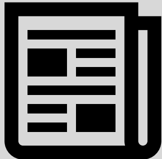


Figure obtained from NHIVP HIV testing Recommendations

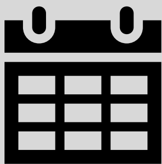
Other points to note



Diagnosis of HIV infection in **newborns and infants up to 2 years old** should be made by **virologic detection of HIV-1 proviral DNA and RNA.**



All laboratory staff are required to inform the ministry of a confirmed case **within 72 hours of diagnosis except for anonymous testing clinics**



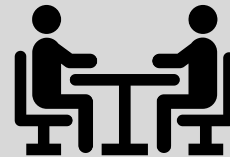
Confirmation of positive results should occur within **5 days,** but ideally within 24-48 hours if possible

POST TEST CARE

Communication of results

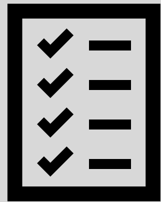
Physicians and providers of HIV testing must ensure that there are protocols in place to inform individuals of their test results

HIV-negative results can be done without direct personal contact between physician/providers and individuals



HIV-positive results should be conveyed confidentially and in person by physicians or skilled staff

HIV negative results



Efforts should be undertaken to **obtain a risk assessment** for infection with HIV and other STIs

Individuals with high risk behaviours should be encouraged to go for **periodic re-screening**

Prevention counselling and services should be provided

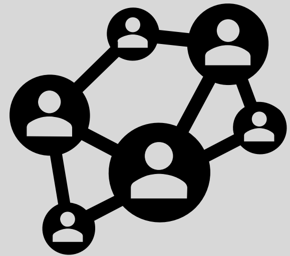
HIV positive results: linkage to care

Link to clinical care, counselling, support and prevention services no more than **2 weeks** after diagnosis

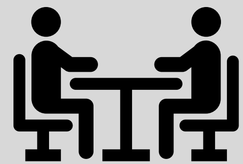
Counselled on importance of **early ARV** and **treatment as prevention (TasP)**

Assess risk of **suicide and self harm** after disclosure of results

Partner counselling and referral



Encourage to disclose status to **spouse**, **current sex partners** and **previous sex partners**



They will be **contacted by a public health officer** for an index interview to discuss notification of their partners and collection of epidemiological information

Under the ID Act, they are required to **inform sexual partners** on **the risk of contracting HIV** and partners must **accept the risk voluntarily** prior to engaging in any sexual activity.

NHIVP HIV Testing Recommendations Advisory Group and Acknowledgements

Draft preparation:

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- Dr Teh Yii Ean, Director (SGH)
- Dr Jaime Chien, Director (CGH)
- A/Prof Raymond Lin, Director
- Dr Carmen Low, Senior Scientific Officer
- A/Prof Matthias Toh, Director
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Reviewed by:

1) Chapter of Infectious Diseases physician
2) Community advisory board, consisting of representatives from:
    - Action for AIDS
    - Oogachaga
    - Project X
    - The Greenhouse
    - Inter-university LGBT Network
    - Persons living with HIV

The End

- Any questions?