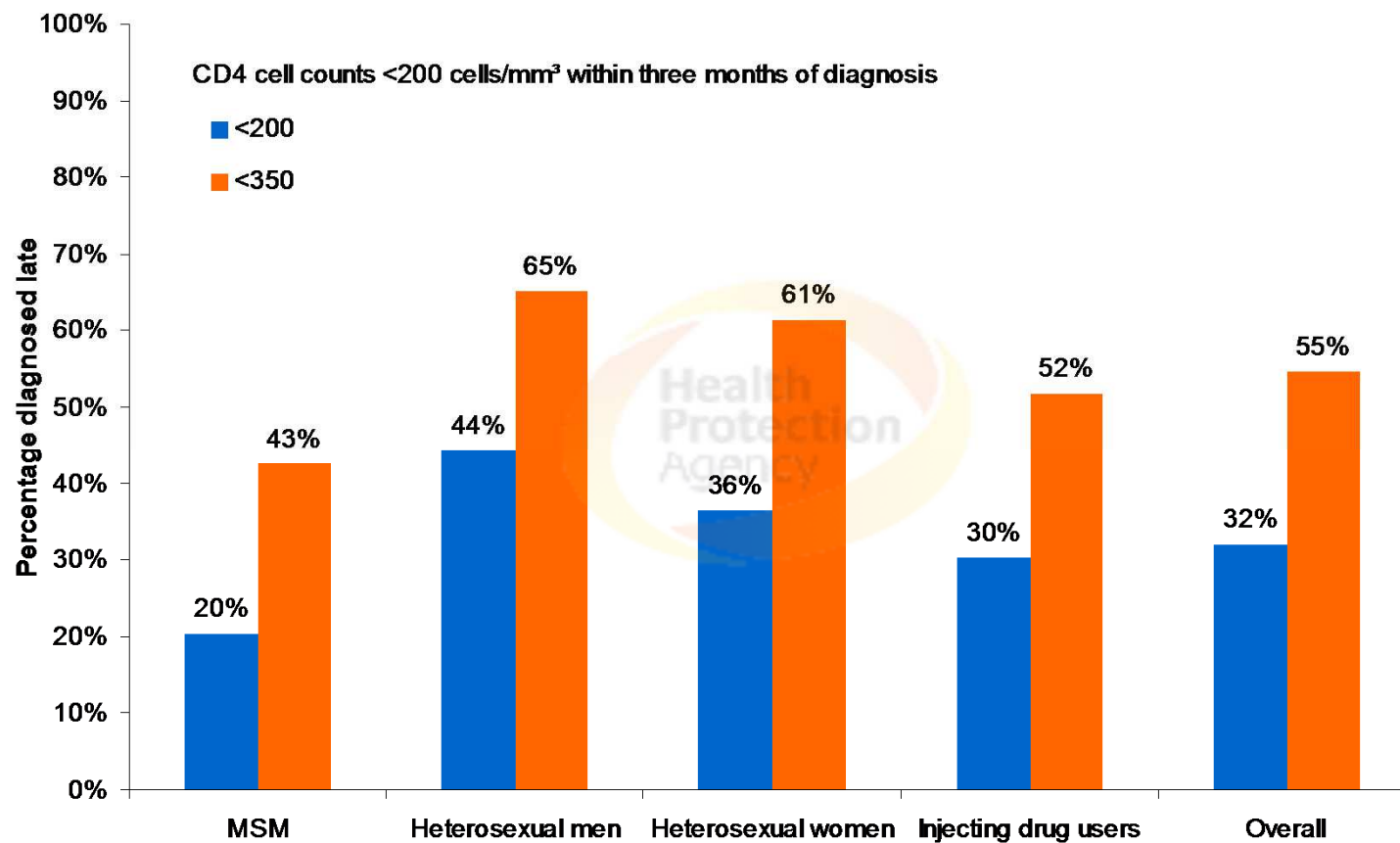


## Estimated late diagnosis of HIV infection by prevention group UK: 2008



# HIV / HepC

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**Hard to reach groups**

**Transmit**

**Treatable**

**Risk takers**

# Testing ↑

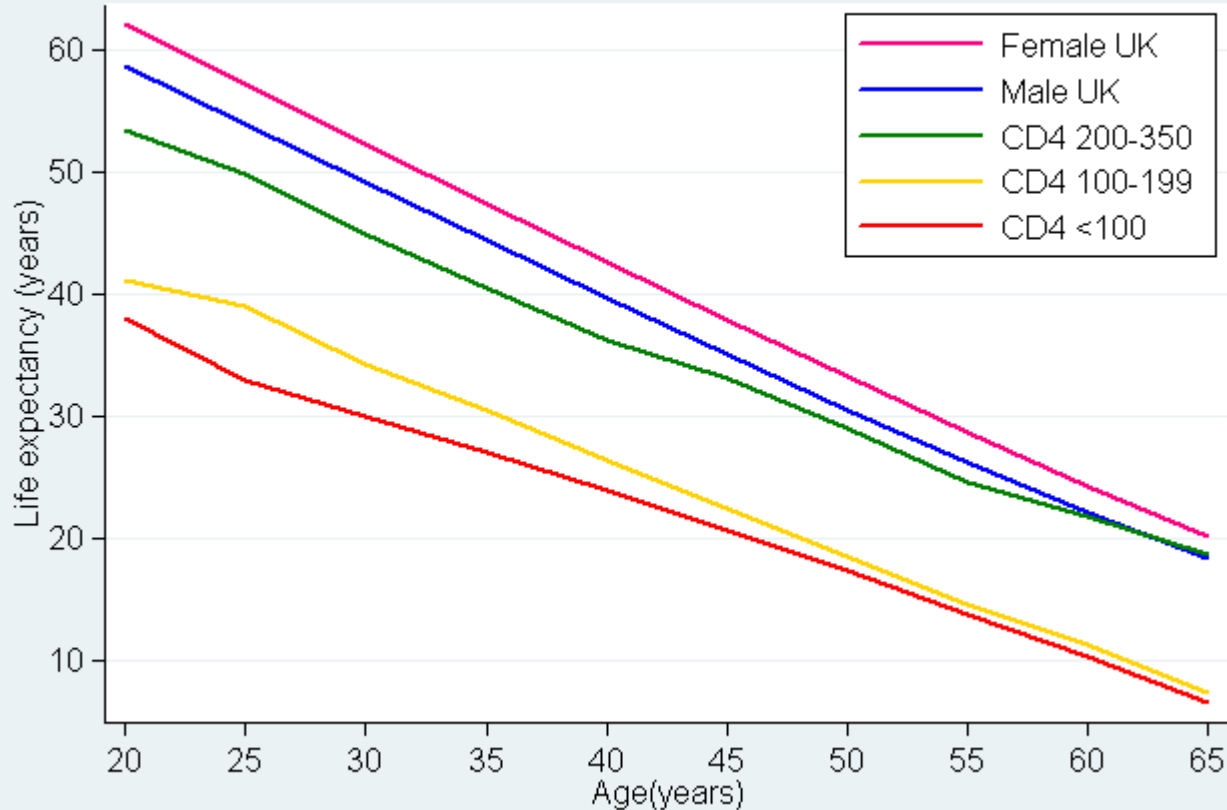
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## 2 reasons:

1. Death rate higher at low CD4 counts (at least initially)
2. Potential control of epidemic by prevention of transmission

# UK CHIC – Life expectancy

Life expectancy by CD4 count compared with UK population



LE at exact age 20 years:

1996- 2008

UK women 61.6 yrs

UK men 57.8 yrs

HIV+ women 50.2 yrs

HIV+ men 39.5 yrs

1996-99 HIV+ 30.0 yrs

2006-08 HIV+ 45.8 yrs

Start triple ART post 2000

CD4 200-350 53.4 yrs

CD4 100-199 41.0 yrs

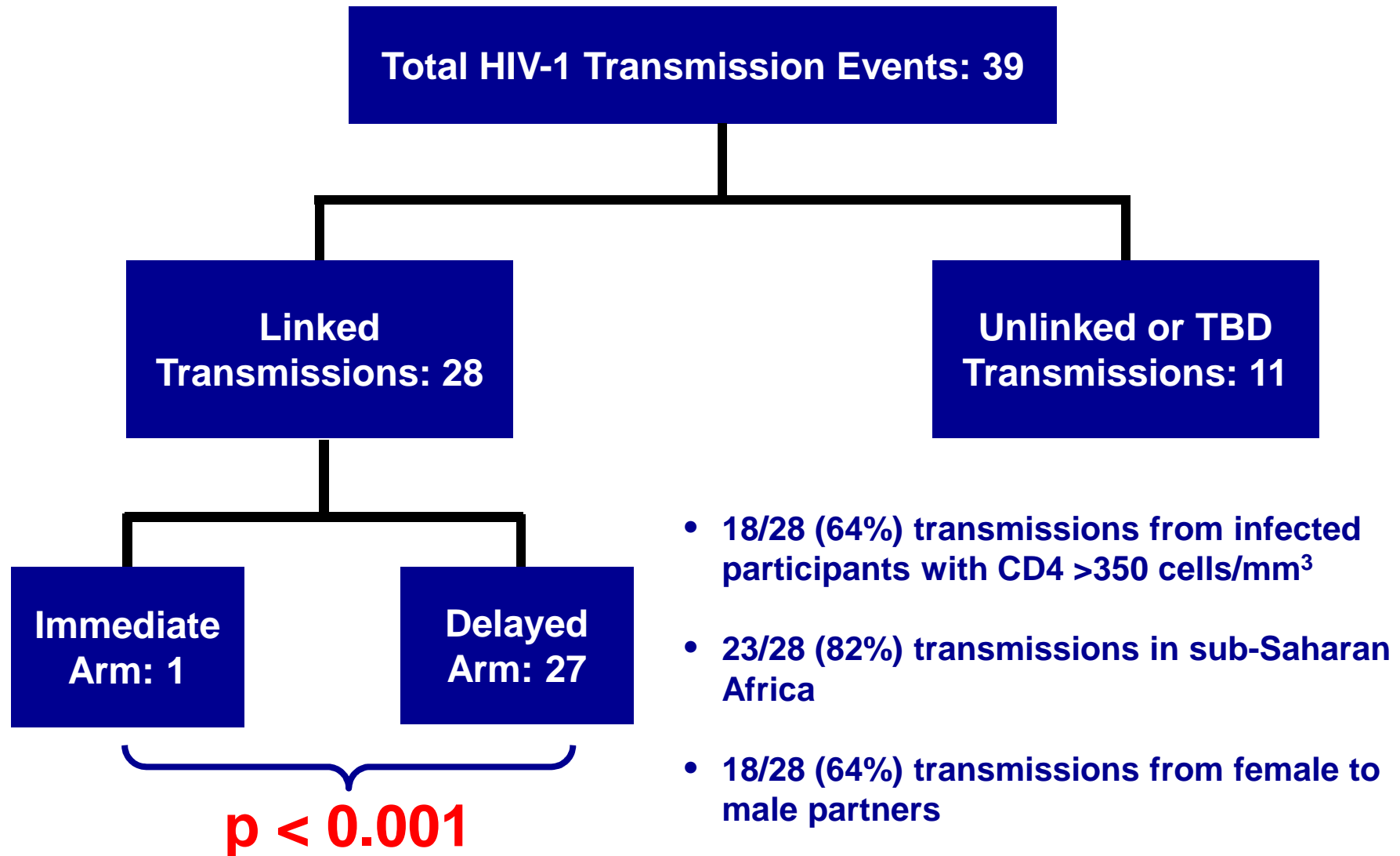
CD4 <100 37.9 yrs

Impact on life expectancy of late diagnosis and treatment of HIV-1 infected individuals:  
UK CHIC M May, M Gompels, C Sabin for UK CHIC. HIV10 Glasgow abstract 1629596



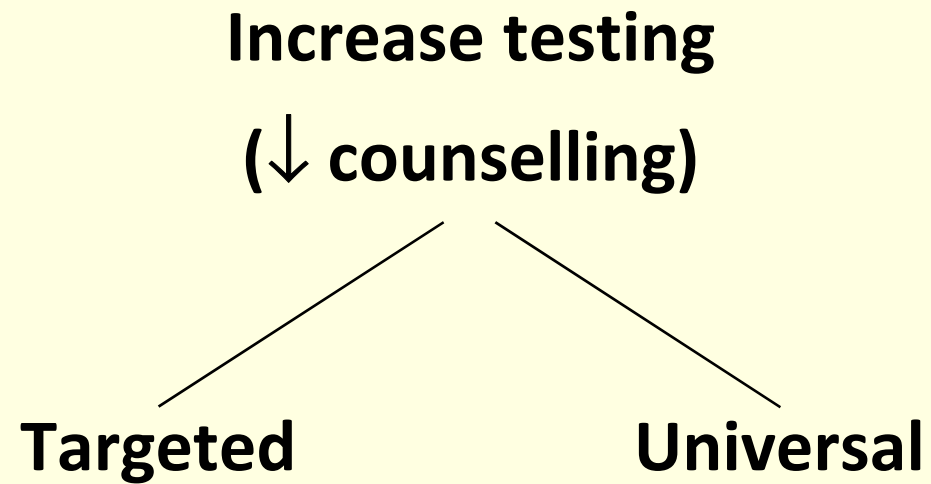
With permission from the author

# HPTN 052: HIV-1 Transmission



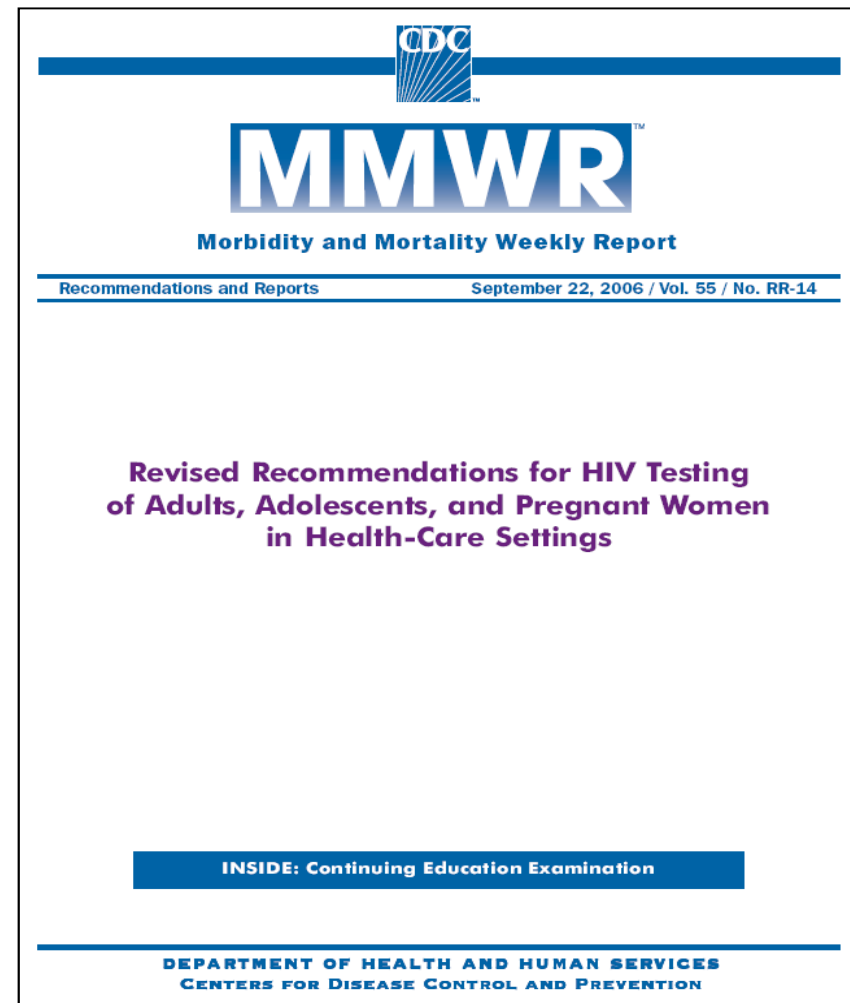
# How to increase testing

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# CDC Recommendations for HIV Testing in Healthcare Settings

- ▶ Routine voluntary testing for patients ages 13 to 64 years in healthcare settings
  - Not based on patient risk
- ▶ Opt-out testing
  - No separate consent for HIV
  - Resulting in increases in HIV testing rates
- ▶ Pretest counseling not required
- ▶ Repeat HIV testing left to discretion of provider, based on risk
- ▶ Within the US, 34 states are neutral to supportive of the CDC guidelines while 11 states have taken steps to reduce regulatory barriers
  - 6 states passed legislation (2007)



**Title**

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**'Universal' testing**

**No  
pejorative**

**Costly  
Issue of positive  
predictive value**



# Test the whole Population

- 63,500 HIV positive people in UK
- 20,100 undiagnosed

HPA 2005 figures

- 60,441,000 people living in UK
- Prevalence of undiagnosed HIV  
= 0.03325%

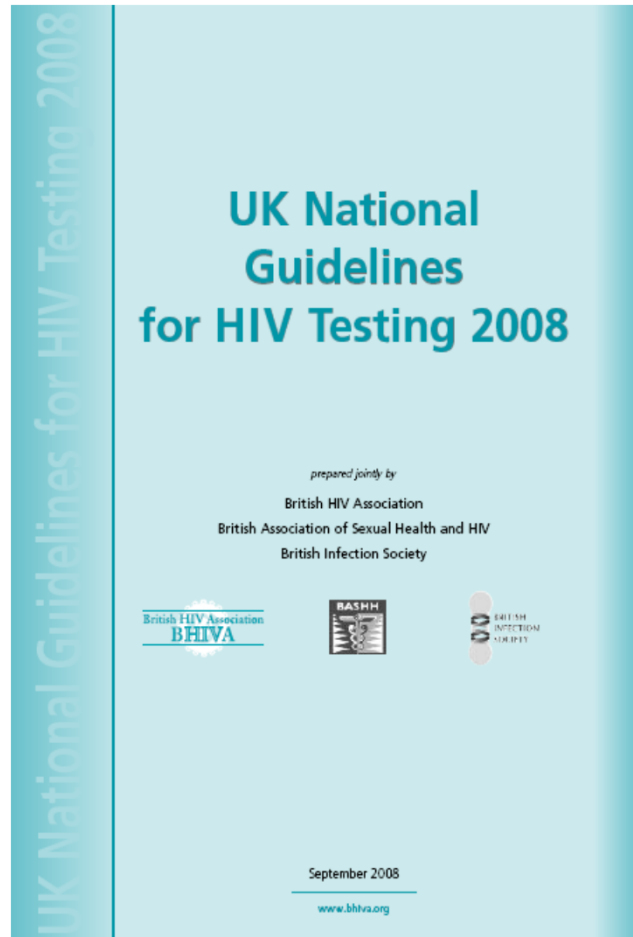
# Test whole population

Prev = 0.03325%	PPV
Oraquick (oral fluid)	14%
INSTI	5%
Determine	9%

# Uk experience with universal testing

50% population tested 30% unknowns

# BHIVA/BASHH/BIS UK National Guidelines for HIV Testing, September 2008



Recommendations:

(1) *Targeted* screening: risk groups

(2) *Targeted* screening: indicator diseases

(3) *Routine* screening in general medical settings when local diagnosed HIV prevalence  $>0.2\%$

# EU Recommendations for Target HIV Testing in Healthcare Settings

- ▶ **All individuals with diseases recognized to be associated with HIV should be tested for HIV (Table 1)**
- ▶ All HCPs across Europe should be aware of the need to test more individuals for HIV
- ▶ Some healthcare providers such as GPs, OBGYN, dentists, dermatologists, STD clinicians and ER physicians should particularly be targeted because they are likely to be the providers who first encounter HIV-infected patients presenting comorbid conditions
- ▶ All individuals attending STD clinics should be offered an HIV test on an annual basis
- ▶ European governments should consider the utility and cost-effectiveness of adopting opt-out testing for all pregnant women

Table 1: Clinical indicator diseases for adult HIV infection

	AIDS-defining conditions	Other conditions where HIV testing should be offered
Respiratory	Tuberculosis Pneumocystis	Bacterial pneumonia Aspergillosis
Neurology	Cerebral toxoplasmosis Primary cerebral lymphoma Cryptococcal meningitis Progressive multifocal leucoencephalopathy	Aseptic meningitis/encephalitis Cerebral abscess Space occupying lesion of unknown cause Guillain-Barré syndrome Transverse myelitis Peripheral neuropathy Dementia Leucoencephalopathy
Dermatology	Kaposi's sarcoma	Severe or recalcitrant seborrhoeic dermatitis Severe or recalcitrant psoriasis Multidermatomal or recurrent herpes zoster
Gastroenterology	Persistent cryptosporidiosis	Oral candidiasis Oral hairy leukoplakia Chronic diarrhoea of unknown cause Weight loss of unknown cause Salmonella, shigella or campylobacter Hepatitis B infection Hepatitis C infection
Oncology	Non-Hodgkin's lymphoma	Anal cancer or anal intraepithelial dysplasia Lung cancer Seminoma Head and neck cancer Hodgkin's lymphoma Castleman's disease
Gynaecology	Cervical cancer	Vaginal intraepithelial neoplasia Cervical intraepithelial neoplasia Grade 2 or above
Haematology		Any unexplained blood dyscrasia including: <ul style="list-style-type: none"> <li>• thrombocytopenia</li> <li>• neutropenia</li> <li>• lymphopenia</li> </ul>
Ophthalmology	Cytomegalovirus retinitis	Infective retinal diseases including herpesviruses and toxoplasma Any unexplained retinopathy
ENT		Lymphadenopathy of unknown cause Chronic parotitis Lymphoepithelial parotid cysts
Other		Mononucleosis-like syndrome (primary HIV infection) Pyrexia of unknown origin Any lymphadenopathy of unknown cause Any sexually transmitted infection

# What to target

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**1. Risk activity**

**2. Risk groups**

**3. Diseases:**

**Prevalence of many diseases in HIV known**

**Prevalance of HIV in many diseases unknown**

# Know your population

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**MSM**

**IVDU**

**Sex workers**

**High risk individuals**

**Young people**



## Indicator Conditions

- Conditions occurring with increased frequency in individuals infected with HIV because they share transmission pathways or their emergence is a consequence of the HIV-related immune deficit
- 52 conditions of which 11 are also AIDS defining illnesses





# Indicator Conditions (IC)

Pilot survey selected 8 IC

Sexually Transmitted Infections (STI)

Hepatitis B + C

Malignant lymphoma (LYM)

AIN or CIN II or above

Unexplained thrombocytopaenia or neutropaenia >4 weeks

Herpes zoster <65 years

Seborrhoeic dermatitis or exanthema

Mononucleosis-like illness (IM)


## Results – HIV diagnoses per Indicator Condition

	HIV test	HIV +	Prevalence (95%CI)	
Total	3588	66	1.84	(1.42-2.34)
STI	764	31	4.06	(2.78-5.71)
Malignant lymphoma	344	1	0.29	(0.01-1.61)
Cervical or anal dysplasia	542	2	0.37	(0.04-1.32)
Herpes Zoster <65yo	207	6	2.89	(1.07-6.21)
Hepatitis B/C	1099	4	0.36	(0.10-0.93)
On-going mononucleosis-like illness	441	17	3.85	(2.26-6.10)
Leuko/thrombocytopaenia	94	3	3.19	(0.66-9.04)
Seborrheic dermatitis/exanthema	97	2	2.06	(0.25-7.24)

# Testing

---

  
**High  
prevalence**

  
**High penalty for  
not doing**

## Results - HIV positive individuals

- 20% reported previous potentially HIV-related symptoms
- 52% previously tested negative  
median time to last test - 1.58 years

### ■ Odds of HIV diagnosis

Independent of the IC

Dependent on

	OR	p
■ non-white	5.2 (2.2-12.6)	0.0002
■ MSM	23.7 (10.2-55.2)	<0.0001
■ active IDU	10.9 (3.5-33.5)	<0.0001
■ Non-northern European region		<0.05

# Testing sites

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- 1. GUM clinic**
- 2. A&E**
- 3. General practice**
- 4. In patient - Medicine  
- ObGyn**
- 5. Abortion clinic**
- 6. ALTERNATIVE venues**

# HIV incidence in GUM clinic attendees

	<b>Annual Attendees (2012)</b>	<b>Annual Attendees Percent</b>	<b>Observed HIV incidence</b>	<b>Estimated numbers of new HIV infections per year</b>
<b>Attending for a HIV test</b>	74000	100%	2.5%	1850
<b>Sexual partner HIV+ve or unknown status</b>	15500	21%	5.5%	850
<b>Prior bacterial STI</b>	17000	23%	3.7%	630
<b>≥10 sexual partners</b>	22000	30%	2.7%	600
<b>Frequent HIV tester</b>	22000	30%	2.0%	440
<b>Prior chlamydia</b>	2000	3%	4.5%	90
<b>Prior gonorrhoea</b>	3000	4%	4.3%	130

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“The epidemic driven disproportionately  
by variance in sexual behaviour”

*Sir Roy Anderson*



Abstract number	Setting	Number offered testing	Offer rate	Number tested	Uptake	Number newly diagnosed	Positivity per thousand
AB1		3433	62%	2121	62%	4	1.89
	Emergency department						
	Acute care unit	548	40%	348	64%	4	11.49
		884	50%	598	68%	0	-
	Dermatology outpatients						
	One GP surgery	1329	21%	1001	75%	0	-
AB2		1553	40%	1413	91%	2	1.42
	Medical admission unit						
AB3		-	-	984	-	10	10.16
	Medical admissions unit						
AB4	Ten GP surgeries	2478	-	1473	59%	2	1.36
AB5	18 GP surgeries	-	-	2713	62%	19	7.00
AB6		-	-	191	-	4	20.94
a	Community clinics for MSM						
AB6b	Community clinics for African communities	-	-	106	-	2	18.87
AB7		-	-	459	-	4	8.71
	Outreach and community testing for African communities						
AB8		-	-	59	-	0	-
	Postal testing for MSM						



## Uptake of HIV test – Total Sample

- Of 3469 patients offered an HIV test, 2123 accepted: **UPTAKE: 61.2%**
- Four individuals newly diagnosed with HIV infection  
Prevalence: 0.19%
- Two false reactive salivary results, as demonstrated by confirmatory serological testing

## “It is acceptable to me to be offered an HIV test in this setting”

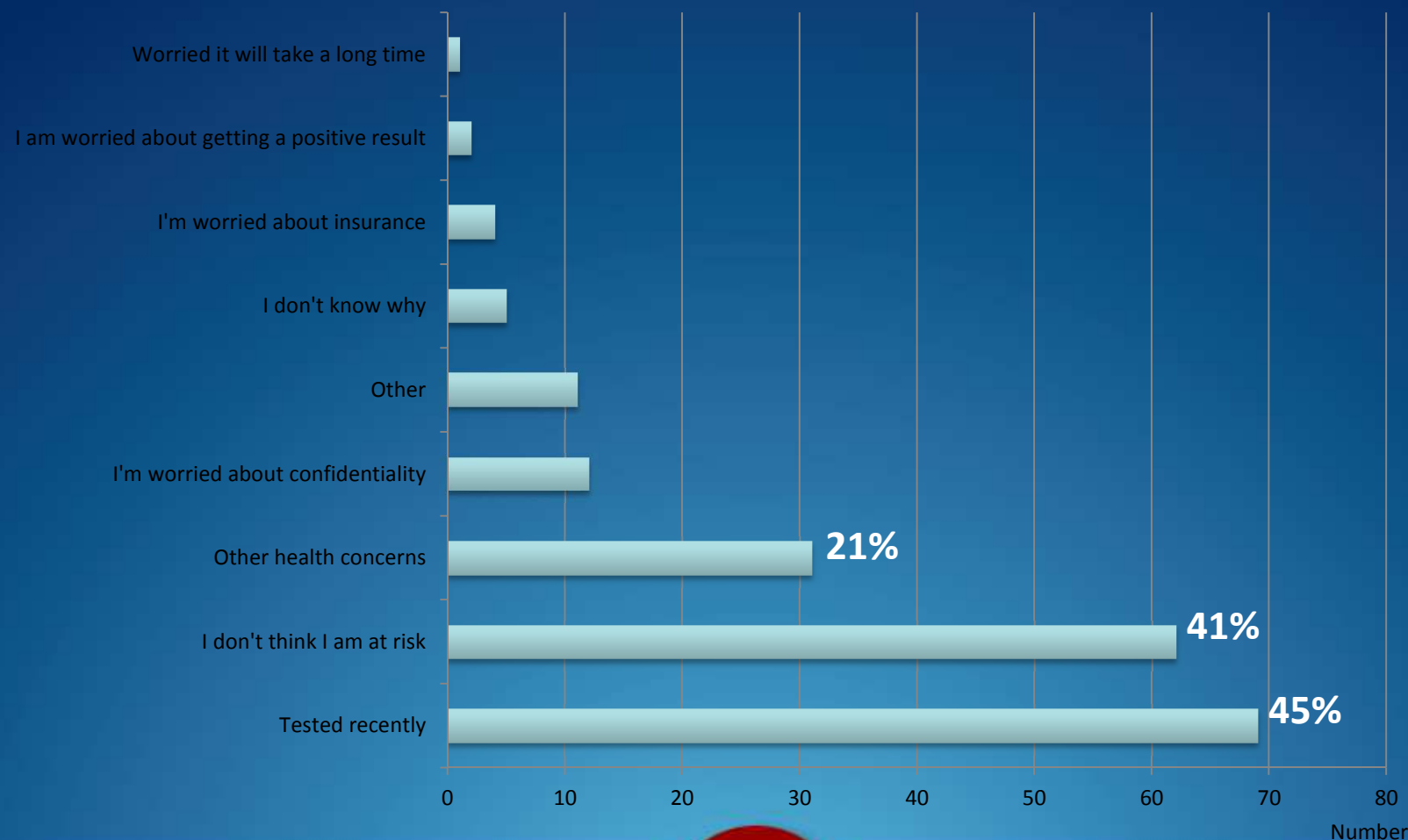
- 94% of questionnaire respondents stated it was acceptable to them to be offered an HIV test in the ED
  - Test decliners were no less likely to find the offer of a test in the ED acceptable than test accepters (table 1)*

Table 1: “It is acceptable to me to be offered an HIV test in this setting:”

	Agree	Disagree
All respondents	489 (94.4%)	29 (5.6%)
HIV test decliners	133 (89.9%)	15 (10.1%)
HIV test accepters	356 (96.4%)	14 (3.6%)

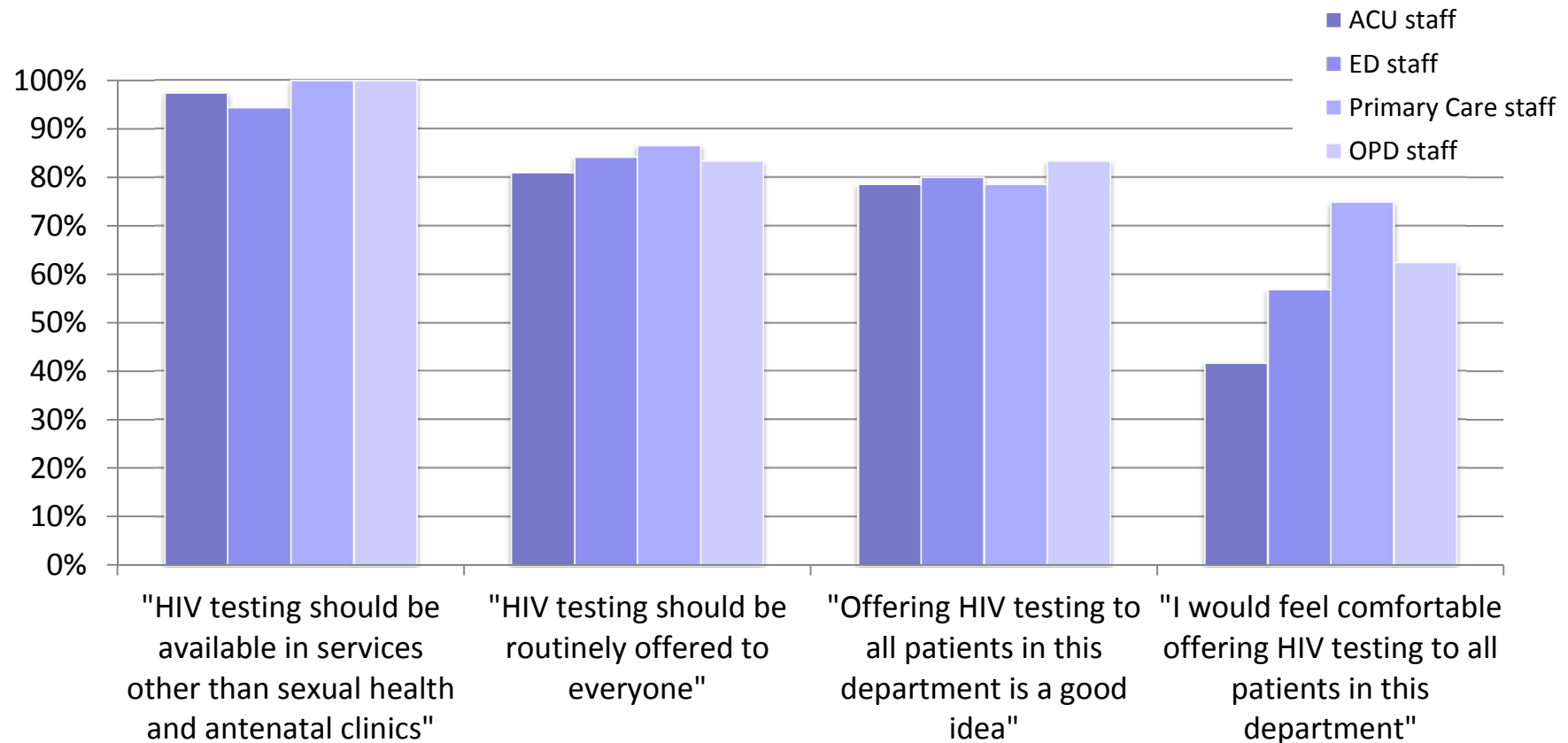
When stratified by acceptability, attitudinal data differed significantly in only one of twelve topic areas

# Reasons for Declining an HIV Test



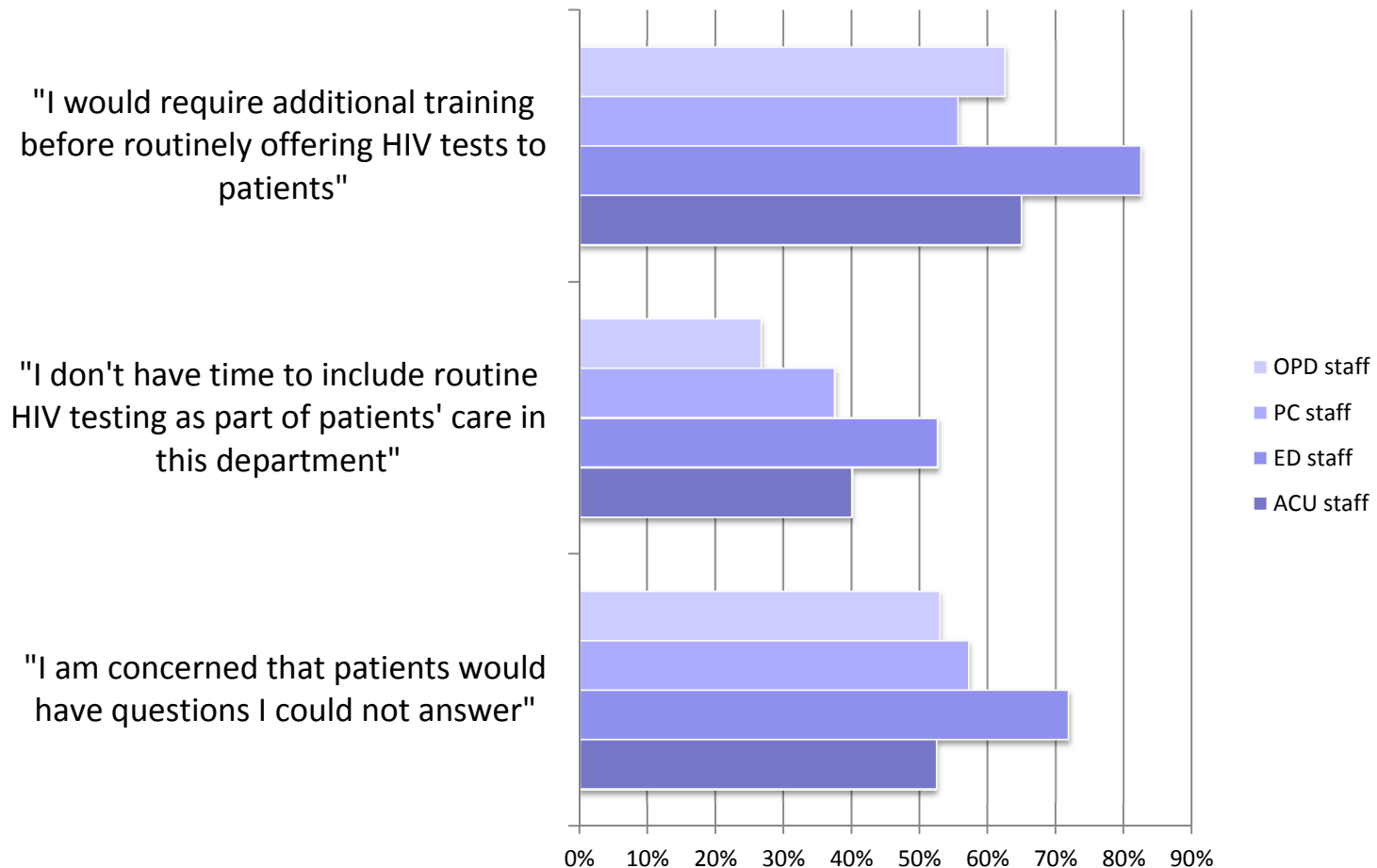
# Staff attitudes towards HIV testing

- 96% staff were supportive of the need for increased HIV testing, and 84% thought it acceptable for HIV testing to be offered in their Department (n=146)
- *BUT* only 54% staff agreed they would feel comfortable offering HIV tests themselves



# Staff Attitudes towards HIV Testing

Most staff felt they would require further training to offer HIV tests, in addition to identifying operational barriers in many settings



# A&E methodology

- Mobile number
- Blood test
- Results texted
- Immediate appointment for follow up

# Testing sites - issues

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- 1. Would they have tested anyway?**
- 2. Is testing acceptable?**
- 3. Pick up rate (not tested proportion)**
- 4. Transfer to care (is care available?)**
- 5. “Flow” of clinic**

# Psychosocial Barriers

- Fear of positive result
- Fear of stigma/rejection (particularly SSA)
- Fear lack Confidentiality (SSA)
- Criminal convictions for transmission
- Lack access to free healthcare

De Wit JBF. To test or not to test: Psychosocial; barriers to HIV testing in high income countries. HIV Medicine. 2008: 9, 20-22



# Barriers to HIV Testing

- Anxiety about wait for results
- Fear of venepuncture
- Unwanted counselling (31%)  
(Spielberg et al 2003)
- Failure to return/pick up result  
(Ilegbodu 1993)
- Convenience

# Effective delivery

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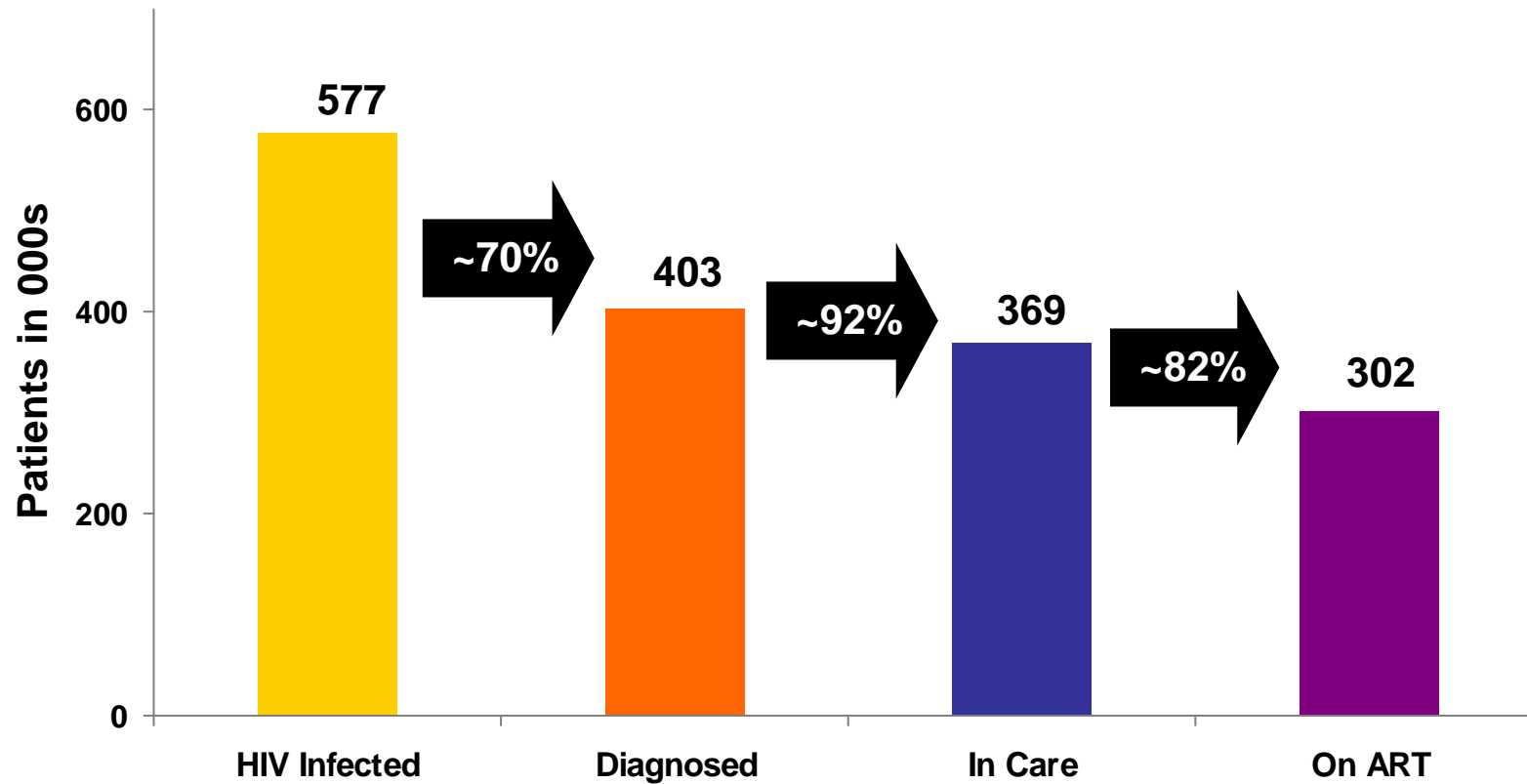
**“The devil is in the detail”**

**Multiple context-specific technical support activities**

**Iterative process**

# EU Big 5 HIV Market Dynamics

***Similar Dynamics as Seen in the U.S. with Strong Support in the EU for Increased Testing Initiatives and Early Treatment***



Sources:

\* National Surveillance Units per country & ECDC

\*\* IMS/GERS & Synovate Q3 2008



## **HEDsUP North West London**

### *HIV Testing in Emergency Departments: A Universal Offer Program*

- Aim: to bring the successful outcomes of the ED arm of the HINTS study to a network of Emergency Departments across North West London
- Delivery of testing by ED staff –primarily medical staff
- Close liaison with local Sexual Health service (training, support, results governance, transfer to care)
- Use of oral fluid HIV testing technology where applicable
- Application of sustainability methodology (run charts; PDSA cycles) to each testing service to optimise key outcome measures (test offer rate; test uptake)
- Weekly ED/GU team meetings



## Routine HIV testing in ED

- Sustainable, routine delivery of blood-based HIV testing with increased coverage – initial target 50% at 12M
- ALL patients in the majors stream to be offered a standard serological HIV test
- Given the patient flow, this is a largely a **NURSE DEPENDENT PROCESS**; nurses to be included in offer pathway and nurse champion identified



## **PDSA Interventions by ED/GU team**

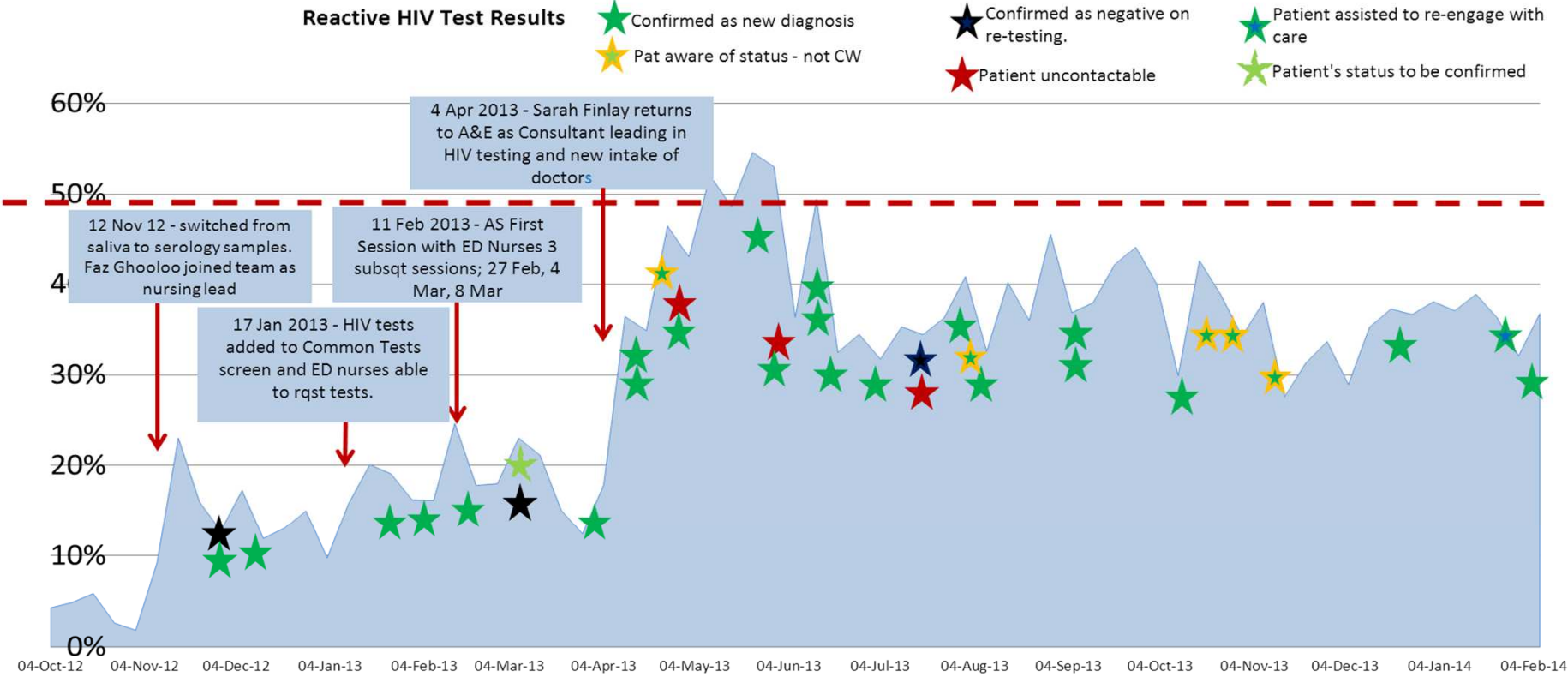
- Switch to serology
- Posters
- Prompts
- Nurse involvement
- HIV added to common order set
- Nurse, junior doctor, consultant champions
- Individual level reporting and top tester of the week with rewards
- Education sessions
- Newsletters and patient stories
- Staff badges
- Rewarding overall team performance
- Supporting abstract submission and conference attendance

# HIV TEST PROMPT

This pop up appears when specific patients are 'activated' by clinician, e.g 16-65 yo attending ED, admitted to AAU. Can also be linked to a specific clinic resource code and patient type –e.g new patient attending the TB clinic



# HIV Testing in ED as Percentage of Attendances (16-65yo) Oct 2012 to February 2014



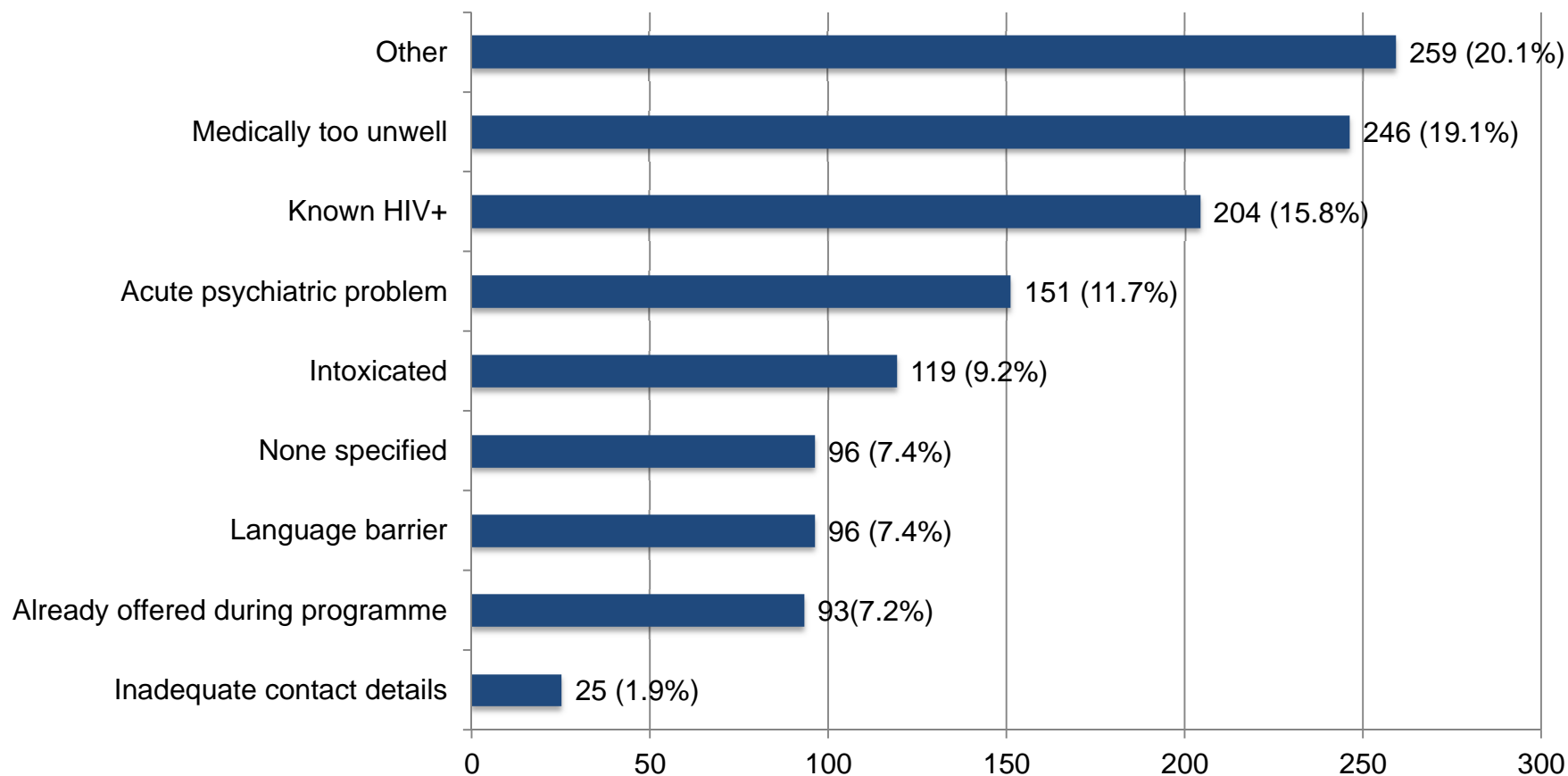




## Overall results of HIV testing in ED -2013

- Mean testing rates rose from 16% to 33% (peak of 50%)
- 30 reactive HIV tests
  - 19 confirmed new diagnoses - 0.3%
  - 1 patient chose to attend elsewhere
  - 5 known positives
  - 2 weakly reactives confirmed negative
  - 3 were not contactable (2 overseas visitors)
- 19 new diagnoses
  - all transferred to care
  - CD4 count - 353 cells/uL (range 18-1161)
  - 8 (42%) likely to have recently acquired their HIV infection (RITA +)
- Cost –pre-confirmatory
  - £1663.63 - lab and equipment alone
  - £1886.31 - + ED staff
  - £2035.26 - + implementation team time

## ED 1: Reasons for non-offer (n=1319)





## HIV testing technologies

- Sample types:
  - Serology, saliva (oral fluid), POCT, dried blood spot
  
- Assays:
  - 4<sup>th</sup> generation (HIV Ab plus p24 antigen) – 6/52 window period
  - 3<sup>rd</sup> generation and oral fluid (HIV Ab) – 3/12 window period
  
- Results:
  - Reactive, non-reactive, indeterminate, equivocal, positive, negative
  
- All reactive tests need confirmation on a different sample at different time using a different test
  
- Sensitivity and specificity of test varies but all exceed 99.8%



## Cost

- Cost effective
  - when diagnosed prevalence is 2/1000
  - Test positivity 0.1%
- Primary Care – paid £5-20 +/- cost of test
- Cost per new HIV diagnosis
  - Hospital            £298 - £7,148
  - PC                    1,901- £19,404 (£1,187-£4,673)
  - Community        £740-£2,590