



Relaxation of MSM deferral criteria: Current experience and the next steps

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For Life.





Content

1

History: How did we get to the current MSM policy in the Netherlands?

2

Trends in TTIs among Dutch donors after gradually lifting MSM deferral criteria.

3

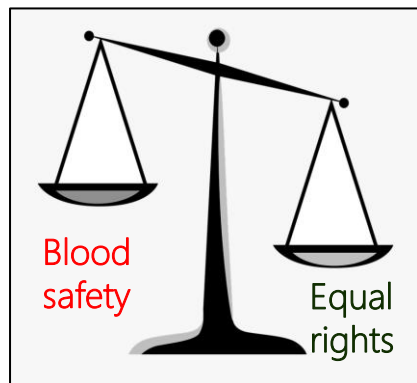
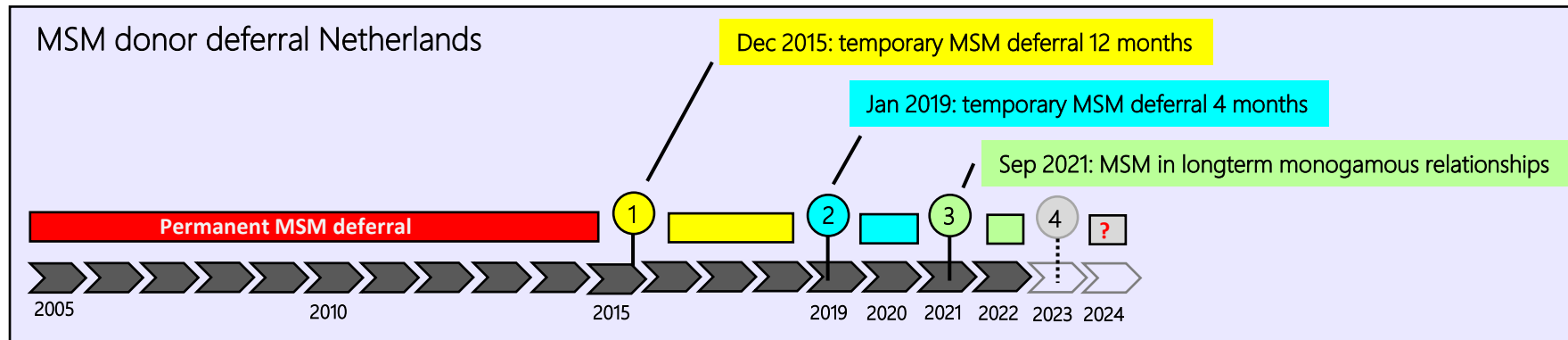
Measuring PrEP-medication in Dutch donors.

4

The next steps – Can we go forward?



Trajectory of MSM deferral criteria in the Netherlands



DRIVERS: Societal pressure / Legislation / Higher sensitivity TTI screening

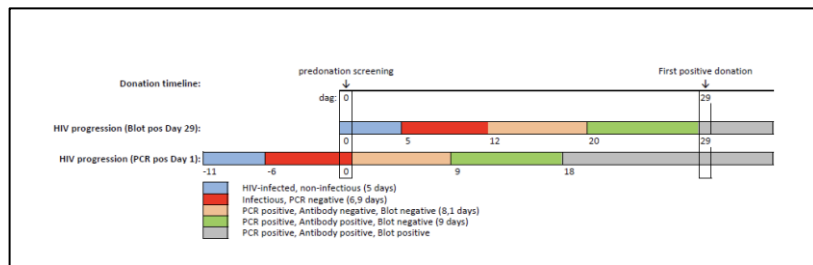
Residual risk TTI in the Netherlands		
HBV	1 per 1.4 million donations	1 per 5 years
HIV	1 per 7.6 million donations	1 per 29 years
HCV	1 per 80 million donations	<1 per 300 years



Dodging the bullet: HIV window donations

First-time donor (2009)

	Day	RNA	Ab	Blot
Visit 1	0	-	-	-
Visit 2	29	+	+	+



Visit 1: no donation
 Risk being HIV+ at visit 1: nearly 100%
 Risk being infectious at visit 1: 58%

Repeat donor (2019)

	Day	RNA	Ab	Blot
Visit 1	0	+	-	-
Visit 2	14	+	+	-

Viral load visit 1: < 20 copies/ml
 Viral load visit 2: 660.000 copies/ml

95% LOD NAT minipool: 154 copies/ml

!! Female (51 yrs): Regular sex partner !!

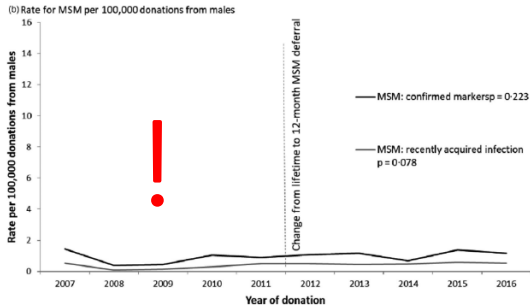
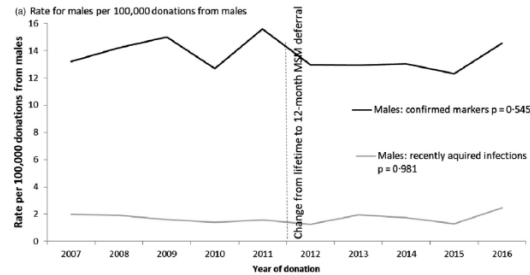
!! Female (64 yrs): Regular sex partner !!



Switch to temporary donor deferral: Negligible effect on blood safety

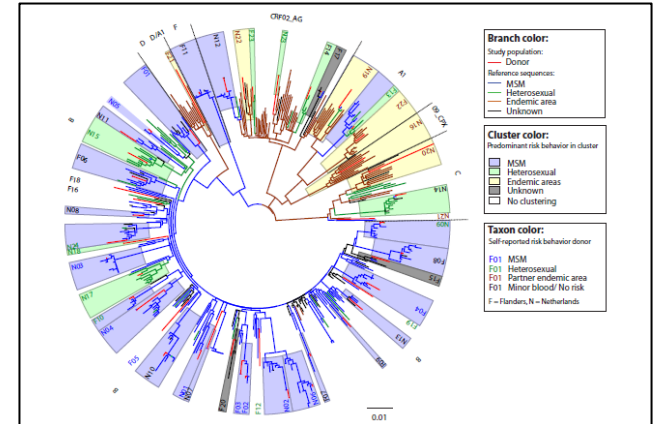
Blood donation by men who have sex with men: using evidence to change policy

Katy L. Davison,¹ Claire A. Reynolds,^{1,2} Nick Andrews,³ Susan R. Brailsford^{1,2} & the UK Blood Donor Survey Steering Group



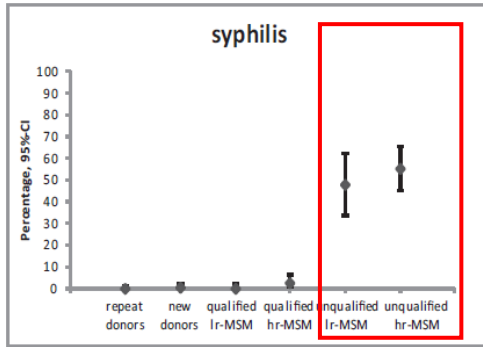
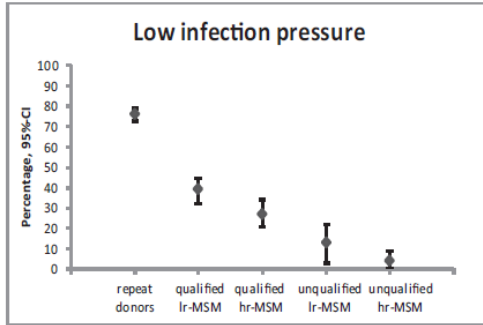
- No increase in (recent) TTI with temporary MSM deferral.
- No increase in proportion of MSM among recent infections.
- High(er) level of compliance to temporary deferral criteria.
- Low levels of test-seeking.
- Sufficient willingness to donate among MSM.

Non-compliance:
Not important.
Embarassement.
Self-perception





Individual risk assessment: self-perception of risk behavior



Infection Pressure in Men Who Have Sex With Men and Their Suitability to Donate Blood

Ward P. H. van Bilsen,^{1,a} Hans L. Zaaijer,^{2,3,a} Amy Matser,¹ Katja van den Hurk,⁴ Ed Slot,² Maarten F. Schim van der Loeff,^{1,3} Maria Prins,^{1,3,b} and Thijs J. W. van de Laar^{2,b}

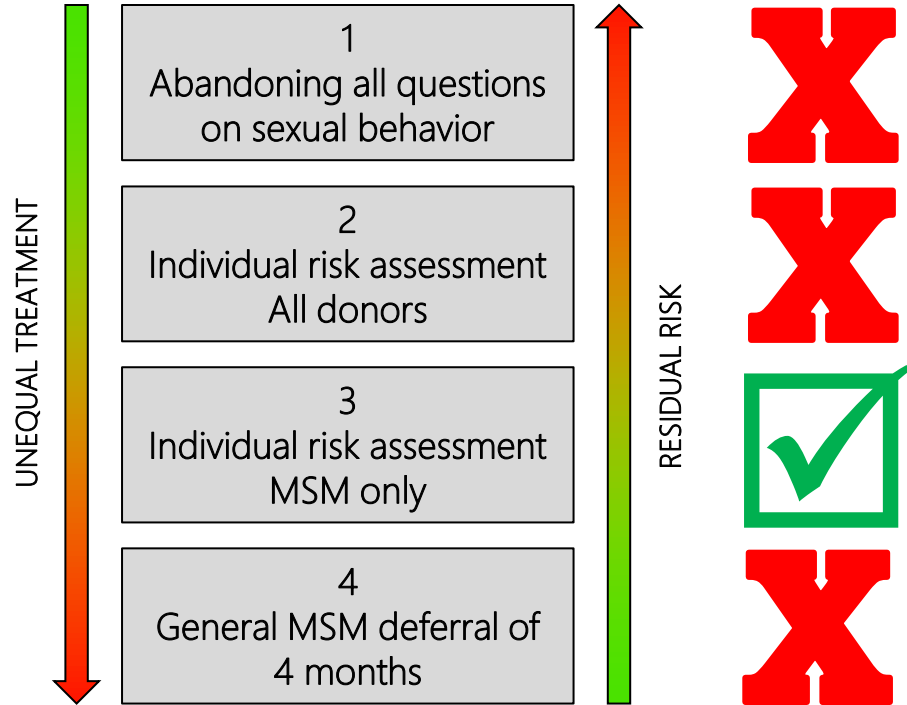
Objective proof of principle study

- Few questions to differentiate between low-risk and high-risk MSM.
- Self-reported risk confirmed by presence/absence infection markers.
- No recent (<1 year) HIV, HBV, HCV or syphilis in low-risk MSM.
- Low-risk MSM higher sexual risk profile compared to donors based.

Limitations: sample size, representativity MSM, serology and recent behavior



Ethical approach: what is the best scenario



Effectiveness of the DHQ:

True representation of the general population could result in 10x higher residual risk (acceptable?)

- Covert discrimination: the 'anal' question is about MSM.
- Unnecessary loss of now eligible heterosexual donors.
- Donor loss due to intimate questions.
- Ignoring epidemiology / expertise healthcare professionals

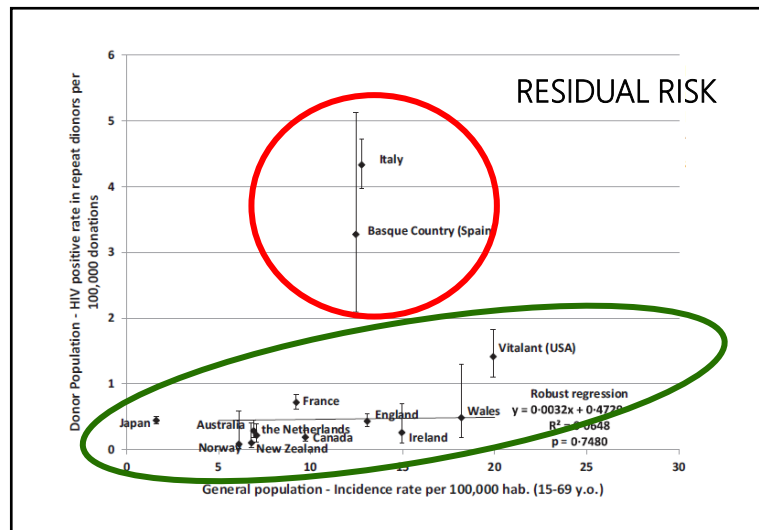
When studies suggest that relaxation is feasible, the Precautionary principle could maintain suboptimal policies



Scenario 2: individual risk assessments all donors

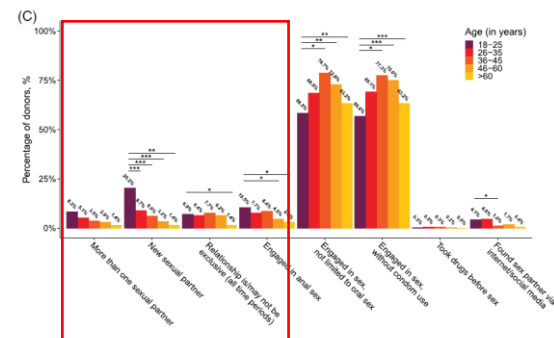
10x higher HIV incidence* in donors in European countries with individual risk assessments for all donors.

* Corrected for HIV incidence in general population



Germain et al (2021) Vox Sang 116; 1084-1093

DONOR LOSS

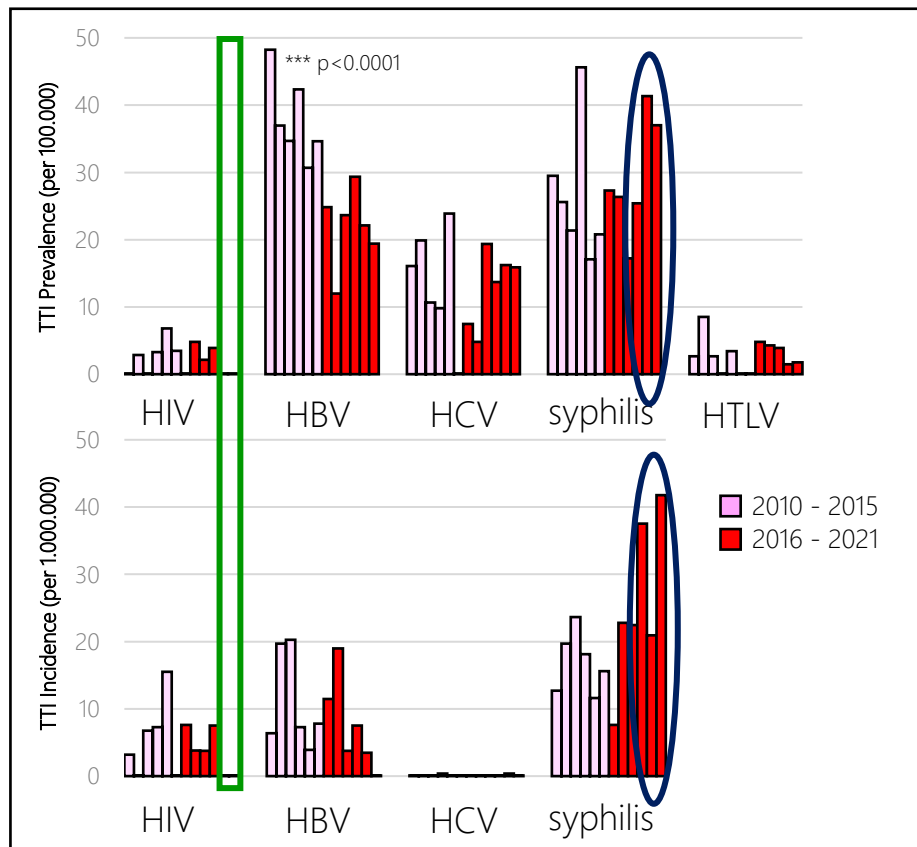


	Somewhat uncomfortable	Very uncomfortable	This would stop me from donating
Number of sexual partners	157 (8.6%)	35 (1.9%)	20 (1.1%)
Number of new sexual partners	155 (8.5%)	31 (1.7%)	30 (1.7%)
Exclusivity of relationship	118 (6.5%)	30 (1.7%)	12 (0.7%)
Anal sex practices	309 (17.0%)	111 (6.1%)	31 (1.7%)
Sex practices, not limited to only oral sex	289 (15.9%)	81 (4.5%)	25 (1.4%)
Condom use	208 (11.5%)	50 (2.8%)	25 (1.4%)
Drug use before sex	124 (6.8%)	39 (2.1%)	31 (1.7%)
Internet/social media use for sexual partners	191 (10.5%)	55 (3.0%)	29 (1.6%)

Hahn et al (2022) Transfusion 62; 1241-1250



Trends in TTI after relaxation of MSM deferral criteria in the Netherlands



TTI prevalence

- No changes in HIV, HCV HTLV prevalence over time.
- Decline in HBV prevalence (fits national trend).
- Prevalence of syphilis:
25.3 vs. 35.3 per 100.000 ($p=0.05$) cut-off Jan 2019

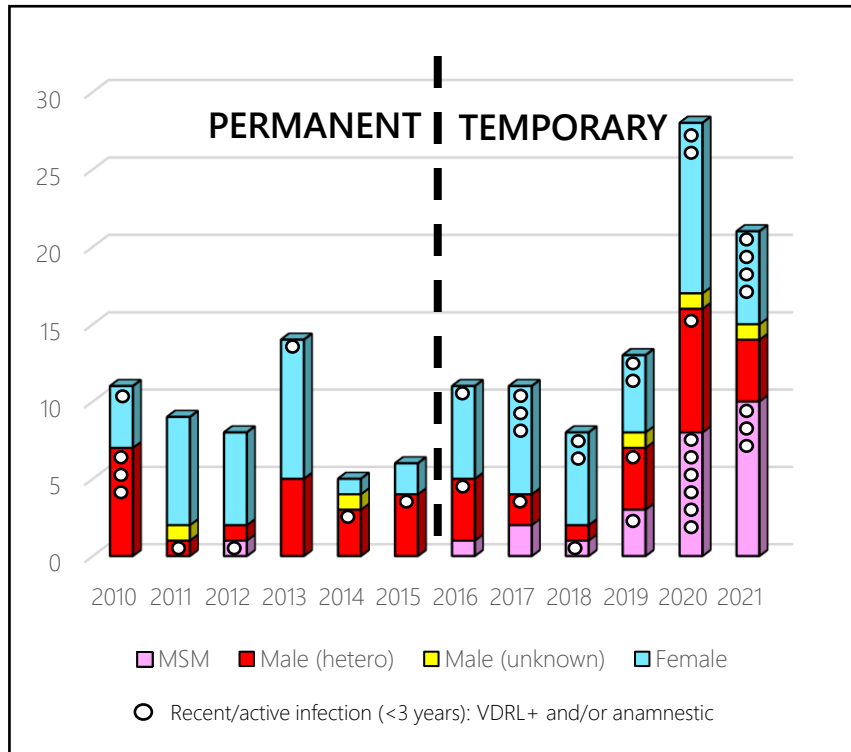
TTI incidence

- No changes in HIV, HBV or HCV incidence over time.
- Incidence of syphilis:
17.0 vs. 25.7 per 1.000.000 ($p=0.08$) cut-off Dec 2015
17.2 vs. 33.3 per 1.000.000 ($p=0.02$) cut-off Jan 2019

Zero HIV-infections in 2020 en 2021



New donors with syphilis – posttest counselling



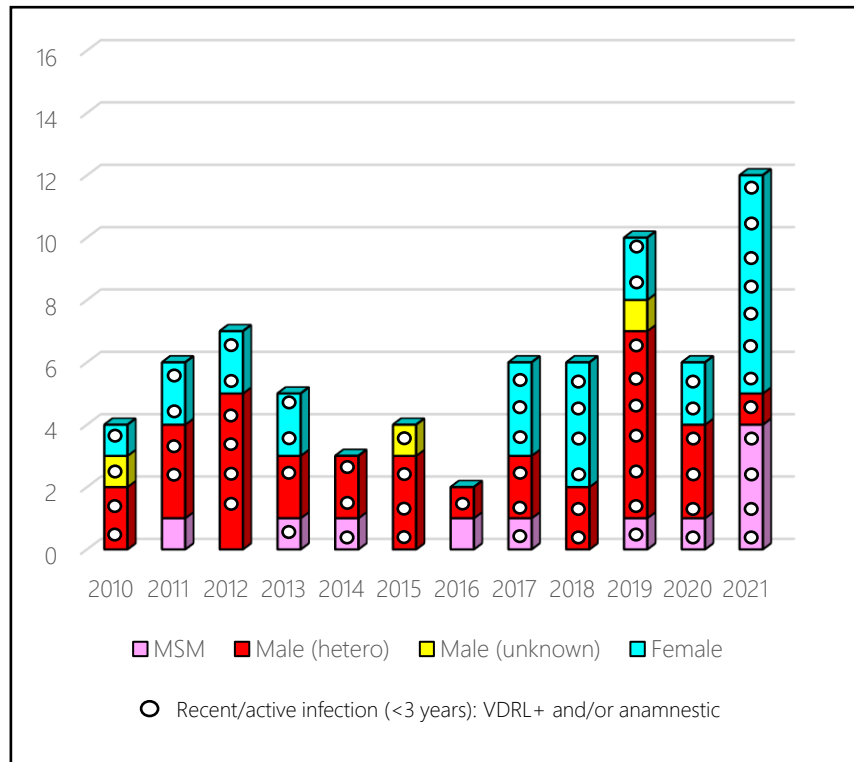
Syphilis prevalence in new donors

- Proportion MSM increases among syphilis positive donors after lifting MSM deferral criteria (2% versus 27%)
- Although prevalent infections are not associated with substantial residual risk, 12/26 (46%) MSM acquired syphilis within 3 years preceding donation, which suggest attracting a population with a higher TTI risk-profile.
- 6/26 (23%) MSM had active infection (positive VDRL).
15/26 (58%) MSM knew their syphilis status and were treated.

MSM non-compliance: 7/26 (27%) LUES+ MSM



Repeat donors with syphilis – posttest counselling



Syphilis prevalence in repeat donors

- No increase in proportion MSM among syphilis positive repeat donors, except maybe in 2021.

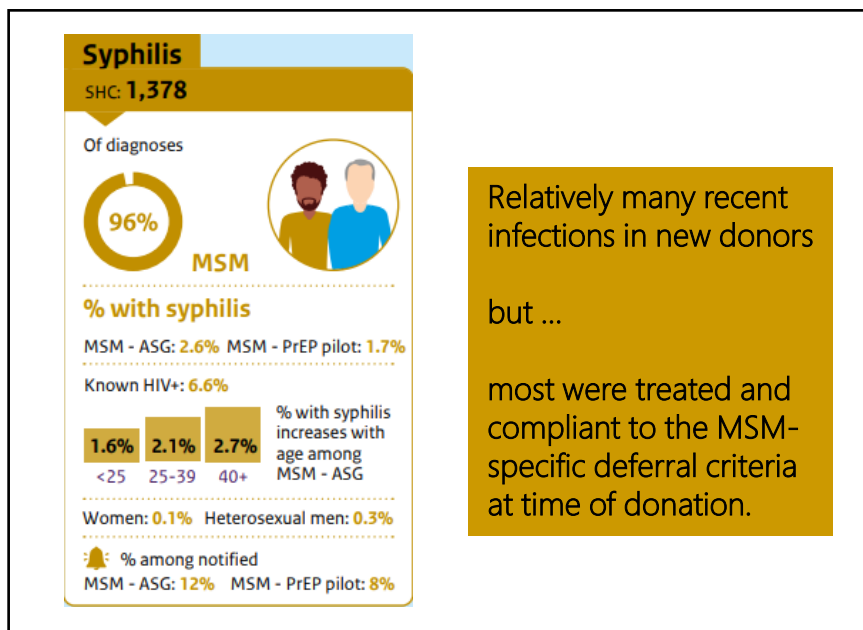
..... but small numbers and same seems true for women.

MSM non-compliance: 7/11 (64%) LUES+ MSM

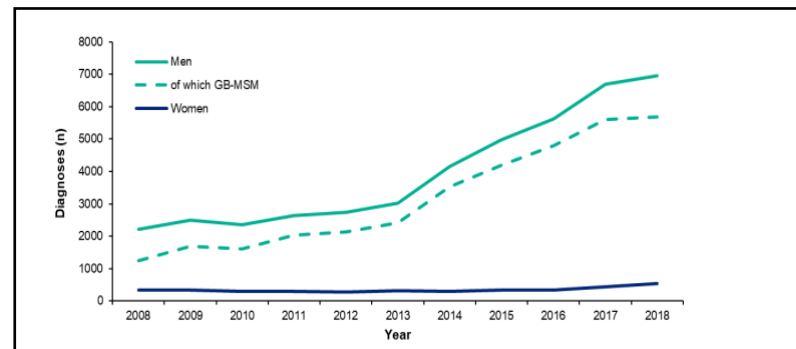


Syphilis – preliminary conclusions

- Relaxing MSM deferral criteria encourages MSM to register as donors, leading to increased number of mainly (new) LUES+ MSM donors.
- Upsurge in syphilis has been observed in other countries among donors as well as the general population



Addressing the increase of syphilis in England



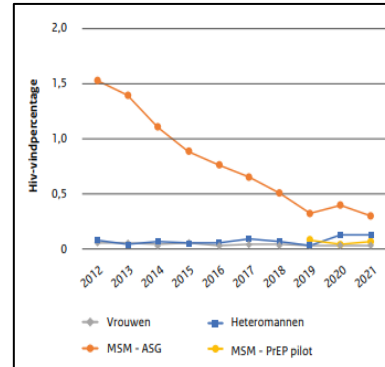
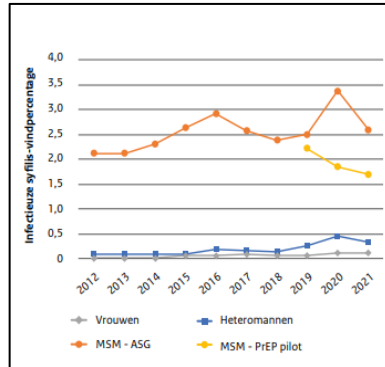
Foster et al (2019) PHE syphilis action plan



Syphilis – preliminary conclusions

- The risk of transfusion-transmissible syphilis on itself is (almost) negligible, but is used as a proxy for other STI especially HIV.

But: 2020/2021 had no new HIV-infections in donors.



- If indeed attracting a population with a TTI risk-profile, should we worry about potential new blood-borne STI?

Experience learned from new STI:

Rapid, international spread often confined to MSM.
HCV, LGV, Monkeypox

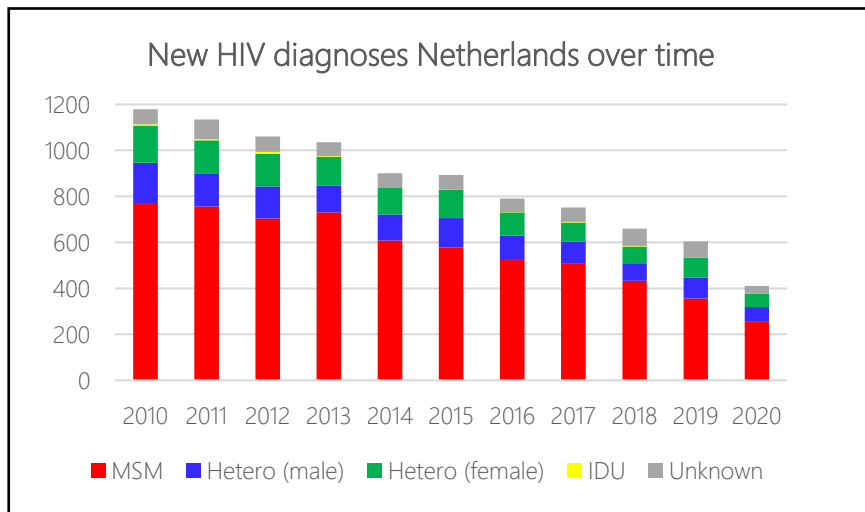


Thornhill et al (2022) NEJM 387: 679-691



HIV Pre-exposure prophylaxis (PrEP)

- PrEP is the use of HIV antiretroviral drugs to prevent HIV-infection.
- PrEP has proven highly effective in preventing HIV infections at populations at risk for HIV.
- Netherlands: PrEP (Truvada®) is officially advised to MSM at increased risk of acquiring HIV.



CONCERNS

- Antiretroviral resistance.
- Possible rise of STI other than HIV, e.g. syphilis
- Compromised laboratory diagnosis of HIV.

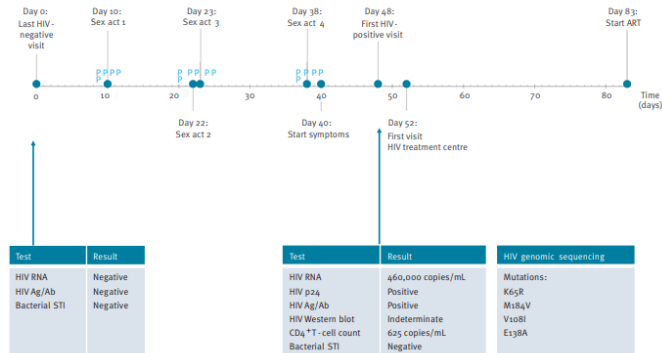


ANTIVIRAL RESISTANCE

RAPID COMMUNICATION

HIV-1-infection in a man who has sex with men despite self-reported excellent adherence to pre-exposure prophylaxis, the Netherlands, August 2021: be alert to emtricitabine/tenofovir-resistant strain transmission

Jeffrey CD Koole¹, Feline de la Court¹, Matthijs RA Welkers^{2,3}, Kenneth Yap⁴, Janneke E Stalenhoef³, Suzanne Jurriaans⁵, Henry JC de Vries⁶, Eline LM Op de Coul⁷, Maria Prins⁸, Elske Hoornenborg⁹



Koole et al (2022) *Eurosurveillance* 27: 2200275

RISE IN STI

JAMA | Original Investigation

Association of HIV Preexposure Prophylaxis With Incidence of Sexually Transmitted Infections Among Individuals at High Risk of HIV Infection

- Increase in condomless sex acts
- Increase in STI incidence (69.5 vs 98.4/100 PY)

Sexual behaviour and incidence of HIV and sexually transmitted infections among men who have sex with men using daily and event-driven pre-exposure prophylaxis in AMPPrEP: 2 year results from a demonstration study

- Increase in condomless sex acts
- No increase in STI incidence (93.1/100 PY)

Traeger et al (2019) *JAMA* 321: 1380-1390
 Hoornenborg et al (2019) *Lancet HIV* 6: e447-e455



Elliott T et al. *Journal of the International AIDS Society* 2019, **22**:e25419
<http://onlinelibrary.wiley.com/doi/10.1002/jia2.25419/full> | <https://doi.org/10.1002/jia2.25419>

JIAS
 JOURNAL OF THE
 INTERNATIONAL AIDS SOCIETY

REVIEW

Challenges of HIV diagnosis and management in the context of pre-exposure prophylaxis (PrEP), post-exposure prophylaxis (PEP), test and start and acute HIV infection: a scoping review

Tamara Elliott^{1,2}, Eduard J Sanders^{3,4}, Meg Doherty⁵, Thumbi Ndung'u^{6,7,8,9}, Myron Cohen¹⁰, Pragna Patel¹¹, Gus Cairns^{12,13}, Sarah E Rutstein¹⁰, Jintanat Ananworanich^{14,15}, Colin Brown^{16,17} and Sarah Fidler^{1,18,5}

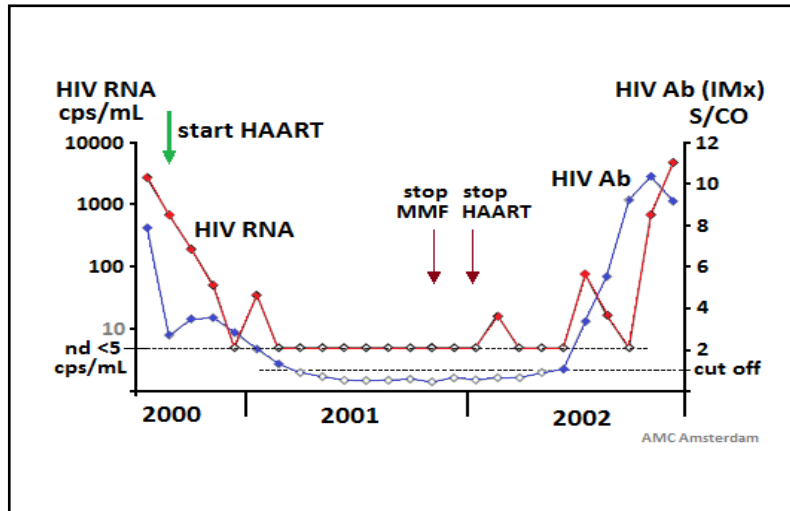


Figure obtained from Hans Zaaijer and Suzanne Jurriaans

A				
	Weeks on ART			
Subject	0	12	24	
01001	○	●	○	
01003	○	●	○	
01005	○	●	○	
01008	○	●	○	
01011	○	●	○	
01012	○	●	○	
01013	○	●	○	
01014	○	●	○	
01015	○	●	○	
01017	○	●	○	
01035	○	●	○	
01045	○	●	○	
<i>01004</i>	○	●	○	
<i>01031</i>	○	●	○	

B				
	Weeks on ART			
Subject	0	12	24	
01006	○	●	○	
01007	●	○	●	
01018	●	○	○	
01019	○	○	○	
01020	●	○	●	
01021	●	○	○	
01022	○	○	○	
01023	○	○	●	
01024	○	○	●	
01026	○	○	○	
01032	●	ND	○	
01036	○	○	○	
01037	●	●	○	
01038	○	○	●	
01039	○	○	○	
01041	●	○	●	
01042	○	●	○	
01043	○	○	○	
01044	●	○	○	
01046	○	●	○	
01047	○	ND	○	

○ Nonreactive
● Reactive
ND Not Done

Thailand:

234 MSM early HIV treatment

10-20% had no detectable HIV-Ab at week 24 of cART

Lack of antibodies increases (upto 50%) with lower Fiebig stage.

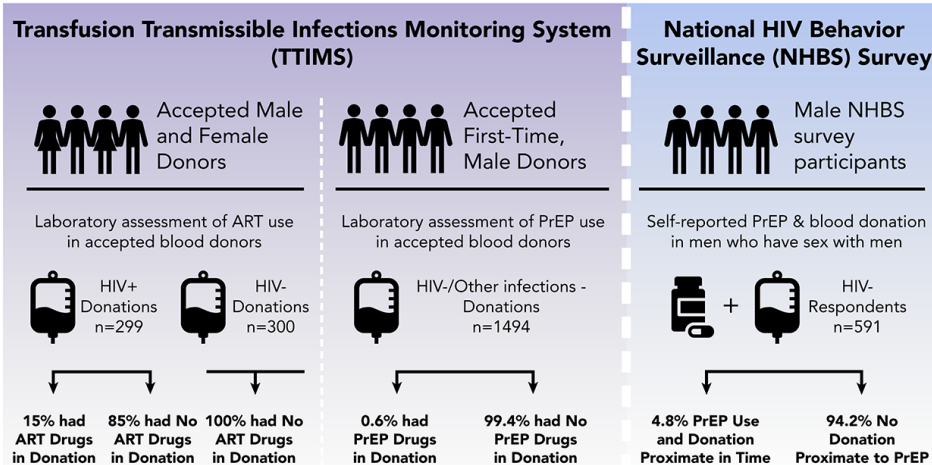
De Souza et al (2016) *CID* 63: 555-561

PrEP mimicks early antiretroviral therapy



Presence of antiretroviral drugs in donors

Antiretroviral therapy (ART) to treat infection and pre-exposure prophylaxis (PrEP) to prevent HIV infection modify detectability of biomarkers of HIV infection in blood and could change the safety of the blood supply.
Are people on ART and PrEP donating blood?

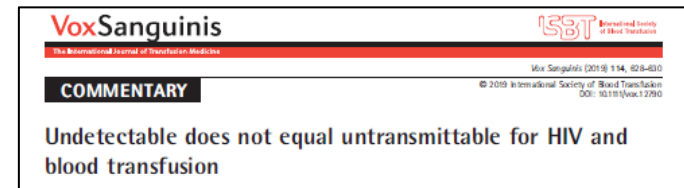


The implications for our ability to detect HIV infection in donated blood in persons using ART or PrEP needs further investigation

- People with a diagnosed HIV-infection and people at increased risk for acquiring HIV-infection and using PrEP come to the blood bank to donate blood.

Not per definition bad intentions:

U = U, so I can donate blood



Custer et al (2020) Blood 136; 1351-1358
Gosbell et al (2019) Vox Sanguinis 114: 628-630



Presence of antiretroviral drugs in donors

Health services research

Table 1 Characteristics of male blood donors with syphilis, July 2018 to June 2019 (n=46)

Donation month	Donor type	Age group	Ethnicity [§]	Possible source of infection and likely timing	Male partners	Syphilis status	Evidence of PrEP use
07/2018	Repeat	31–40	White British	Two new female partners	No	Past	No
07/2018	First-time	51–60	Asian	None identified	No	Past	No
08/2018	Repeat	61–70	White British	New sexual female partner; 2 months ago	No	Acute	No
09/2018	First-time	21–30	White British	None identified	No	Past	No
09/2018	First-time	41–50	White Other	None identified	No	Past	No
09/2018	First-time	41–50	White British	New sexual male partner; 3–6 months ago	Yes	Acute	No
10/2018	First-time	31–40	White British	Known past syphilis	No	Past	No
10/2018	First-time	61–70	White British	None identified	No	Past	No
11/2018	Repeat	61–70	White British	None identified	No	Past	No
11/2018	First-time	31–40	White British	Known past syphilis	No	Past	No
11/2018	Repeat	31–40	White British	Wife diagnosed with syphilis	No	Acute	No
11/2018	First-time	31–40	White British	Known past syphilis	No	Past	No
11/2018	First-time	51–60	Black African	Known past syphilis	No	Past	Yes*
12/2018	First-time	21–30	Black African	None identified	No	Past	No
12/2018	Repeat	21–30	White British	Male partners	Yes	Past	No
01/2019	Repeat	51–60	White British	New sexual female partner; few months ago	No	Acute	No
01/2019	Repeat	51–60	White British	New sexual female partner; few weeks ago	No	Acute	No
01/2019	Repeat	31–40	White British	New sexual female partner; 5 months ago	No	Acute	No
01/2019	Repeat	51–60	White British	None identified	Yes	Past	No
02/2019	First-time	21–30	White British	None identified	Yes	Acute	No
02/2019	Repeat	41–50	White British	None identified	No	Acute	No
02/2019	First-time	41–50	White Other	Known past syphilis	No	Past	No
02/2019	Repeat	51–60	Unknown	New sexual female partner; few months ago	No	Acute	No
02/2019	First-time	21–30	White British	No response	No	Past	No
03/2019	Repeat	41–50	White British	Known past syphilis (year ago)	Yes	Past	Yes†
03/2019	Repeat	41–50	White British	New sexual female partner; 1 month ago	No	Acute	No
03/2019	First-time	31–40	White British	Known past syphilis	Yes	Past	No
03/2019	First-time	31–40	Other	Known past syphilis	No	Past	No
03/2019	First-time	41–50	Asian	None identified	No	Past	No
04/2019	First-time	31–40	White Other	No response	Yes	Past	Yes†
04/2019	First-time	31–40	White Other	Known past syphilis	Yes	Past	No
04/2019	Repeat	41–50	Asian	None identified	No	Past	No
04/2019	First-time	31–40	Asian	Known past syphilis	No	Past	No
04/2019	First-time	31–40	White British	Known past syphilis	Yes	Past	No
05/2019	First-time	21–40	White Other	None identified	No	Past	No
05/2019	First-time	51–60	Asian	None identified	No	Past	No
05/2019	First-time	21–40	White British	None identified	No	Past	No
05/2019	First-time	41–50	White Other	Known past syphilis	Yes	Past	No
05/2019	Repeat	21–30	White British	Male partner	Yes	Acute	No
05/2019	Repeat	31–40	White British	Male partners	Yes	Past	No
05/2019	First-time	61–70	White British	Female partners	No	Past	No
06/2019	First-time	31–40	White Other	Female partners	No	Acute	No
06/2019	First-time	31–40	Asian	None identified	No	Past	No
06/2019	First-time	21–30	White British	Male partner years ago, now female partners	Yes	Acute	No
06/2019	First-time	41–50	Black African	Known past syphilis	No	Past	No
06/2019	First-time	51–60	Asian	None identified	No	Past	No

UK looked at PrEP in male donors with syphilis

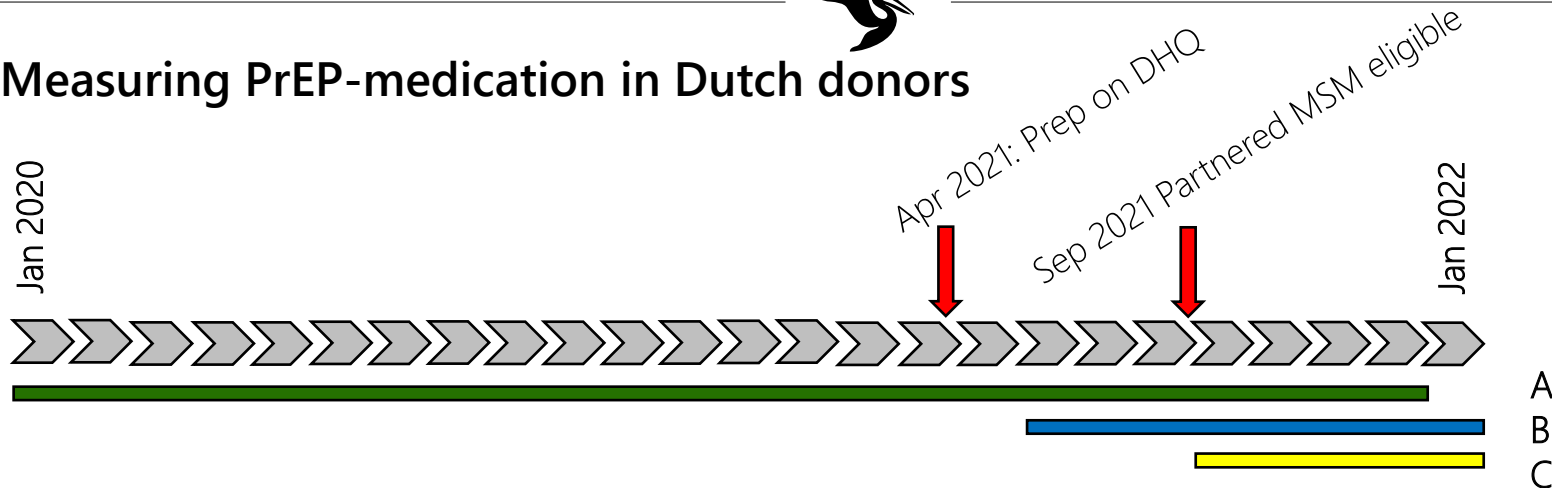
3/46 (6.5%) LUES+ male donors in UK tested PrEP+
2/13 (15.3%) LUES+ self-reported MSM used PrEP.

Not per definition bad intentions:

I take PrEP so I am safe, right?



Measuring PrEP-medication in Dutch donors



Measuring PrEP-medication (FTC+TDF/TAF by LC-MS-MS)

A: All donors who tested positive for syphilis in 2020 and 2021

B: All male donors from Amsterdam (MSM and PrEP hotspot).

C: All male new donors from other 4 major cities in the Netherlands.

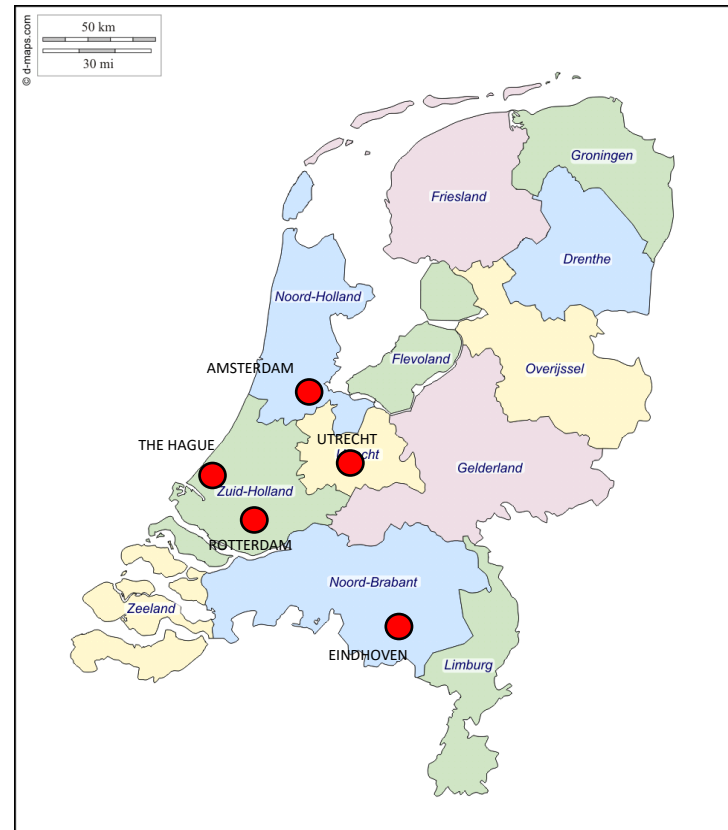
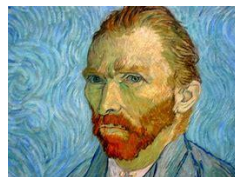
66 donors (poolsize 5).

10.000 donations (poolsize 20)

Methodology and acquired sensitivity similar to Custer et al (2020) Blood 136; 1351-1358



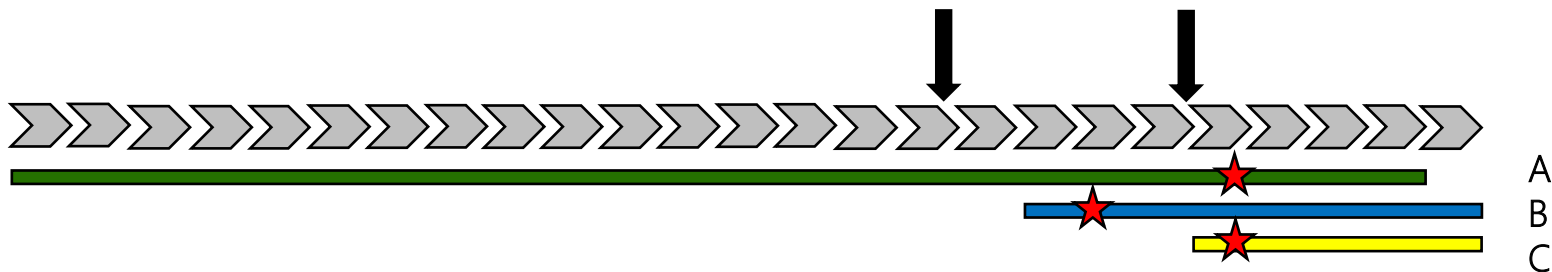
Characteristics	Category	Nr	%
Gender	Male	5708	100%
Age	≤ 25 years	994	17%
	26-35 years	1824	32%
	36-45 years	906	16%
	46-55 years	873	15%
	56-65 years	834	15%
	>65 years	276	5%
City	Amsterdam	4333	76%
	Rotterdam	352	6%
	The Hague	199	3%
	Utrecht	416	7%
	Eindhoven	407	7%
Donor type	New donor	2155	38%
	Repeat (whole blood)	2548	45%
	Repeat (plasma)	1005	18%
Nr of donations In the study	1 time	3439	60%
	2 times	1275	22%
	3 times	587	10%
	4 times	190	3%
	≥5 times	217	4%



● Together 2.7 million (15%) out of 18 million inhabitants



Measuring PrEP-medication in Dutch donors



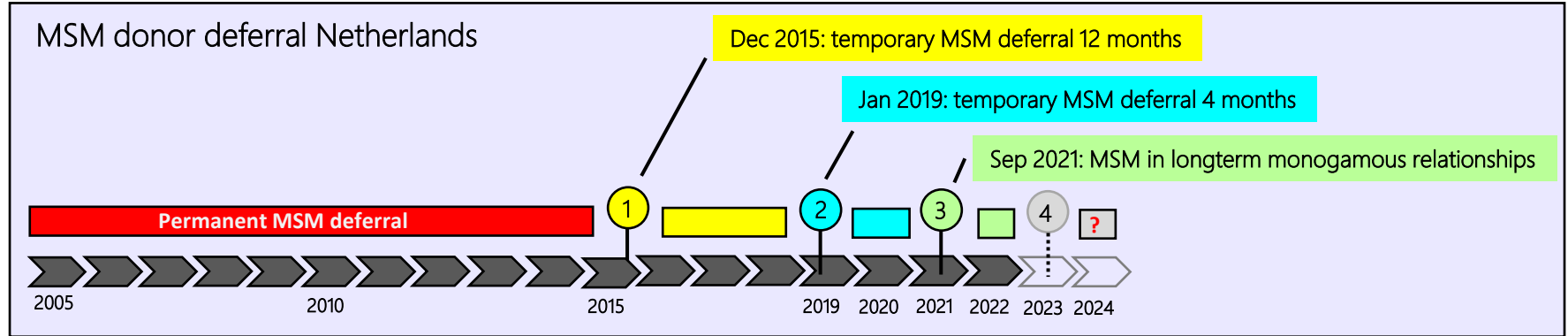
- ★ Male (25 yrs) – repeat donor: bisexual, LUES Aug 2021; self-reported: compliant DHQ and denied PrEP
- ★ Male (39 yrs) – repeat donor Amsterdam (no PrEP in Dec 2020, Mar 2021, May 2021, Sep 2021, Dec 2021)
- ★ Male (31 yrs) – new donor Rotterdam (never returned after predonation screening)

TOTAL: **2/5.708 (0,035%) donors or 2/9.962 (0,02%) donations tested positive for PrEP-medication**
 1/67 (1.5%) donors with syphilis tested positive for PrEP-medication
 1/39 (2.6%) male donors with syphilis tested positive for PrEP-medication

In 2021 PrEP use was added to Post-test counselling: 1 LUES+ new MSM donor reported previous PrEP use



Trajectory of MSM deferral criteria in the Netherlands: can we go forward?



January 2023: Eligibility of sexually active MSM who consistently practised safe sex during the last 4 months. Definition of safe sex is most likely based on consequent condom use with anal sex.

Did the current findings change our minds?



MSM deferral trajectory: can we go forward?

Are we worried about HIV transmission due to PrEP?

- 1) HIV window infections (resistance, failing iPrEP). NO
- 2) Undetected chronic HIV-infection (failing cPrEP). ?

Extrapolation PrEP results:

- 52 PrEP+ donations per year.
- PrEP breakthrough: 0.0025 per year diagnosed.
- Early ART studies: 0.0025 per year undiagnosed.
- 1 undetected chronic HIV every 10-15 years.
- Leads to multiple donations if on cPrEP

To et al (2021) HIV Med 22: 75-80

Girometti et al (2022) AIDS 36: 561-565

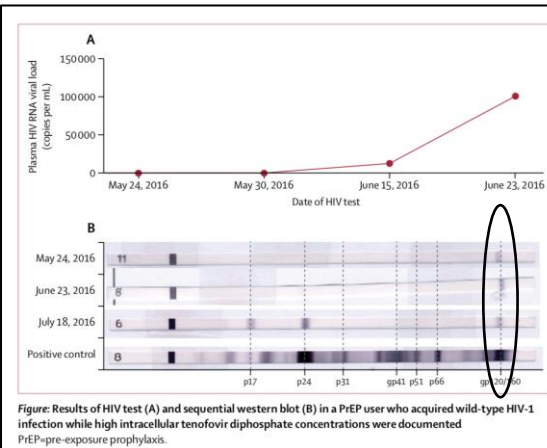
Hoornenborg et al (2017) Lancet HIV 4: e522-e528

A review of reported cases of HIV pre-exposure prophylaxis failure with resultant breakthrough HIV infections

KW To, SS Lee

Rising rates of recent preexposure prophylaxis exposure among men having sex with men newly diagnosed with HIV: antiviral resistance patterns and treatment outcomes

Nicolò Girometti^a, Sheena McCormack^{a,b}, Victoria Tittle^a, Alan McOwan^a, Gary Whitlock^a, on behalf of the 56 Dean Street Collaborative Group

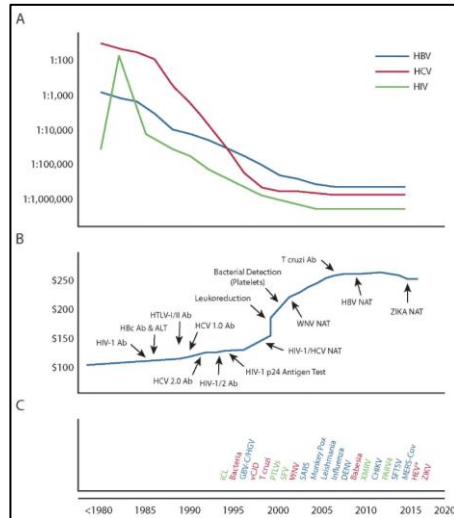




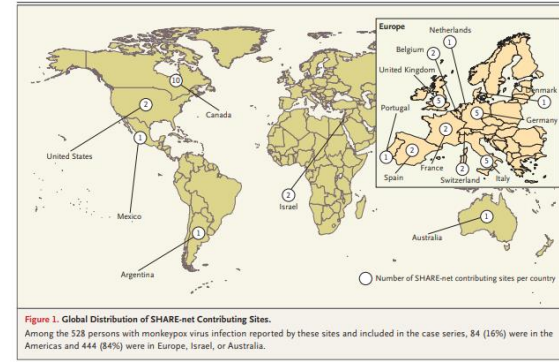
MSM deferral trajectory: can we go forward?

- Are we worried about accepting people with potential higher TTI risk profiles (rise syphilis, detection PrEP)?

Not so much for the TTI we test for (HBV, HCV and syphilis), but **YES** in case of new TTIs especially if they are not fully prevented by condoms.



Busch et al (2019) Blood 133: 1854-1864



- MSM 98%
- HIV-positive 41%
- PrEP use 57%
- Sexual risk DHQ

Thornhill et al (2022) NEJM 387: 679-691

MPX-meter

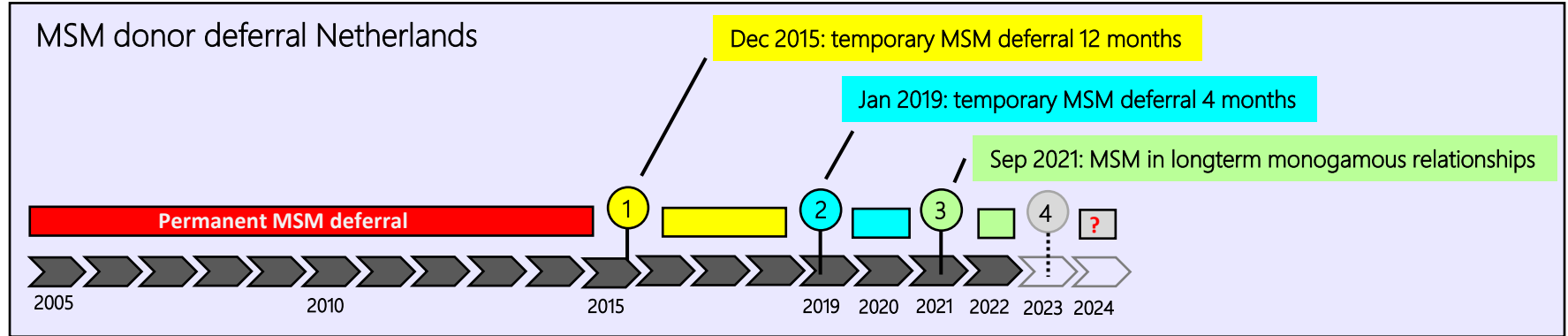
Sept 21, 2022

61,061 cases

108 countries



Trajectory of MSM deferral criteria in the Netherlands: can we go forward?



January 2023: Eligibility of sexually active MSM who consistently practised safe sex during the last 4 months. Definition of safe sex is most likely based on consequent condom use with anal sex.

POSTPONED – Main driver for the decision is Monkeypox.

With regards to PrEP – Targeted donor education and of course TTI monitoring



Thank you for listening

Sanquin Research: BLOOD-BORNE INFECTIONS

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For Life.

