Missed opportunities for Pre-Exposure Prophylaxis (PrEP) and outcomes of people acquiring HIV with previous or recent PrEP use.

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Background

- With NHS PrEP now available for those at risk, this has contributed to the decline in HIV transmissions and will be key to reaching the WHO target of achieving zero new infections by 2030.[1]
- There is a small number of people who have acquired HIV with a history of previous PrEP use either due to intermittent adherence or being undiagnosed at PrEP initiation.[2]
- We aimed to identify missed opportunities for people newly diagnosed with HIV who attended our local sexual and reproductive health (SRH) services, and to determine the HIV outcomes associated with people acquiring HIV with previous or recent PrEP use.

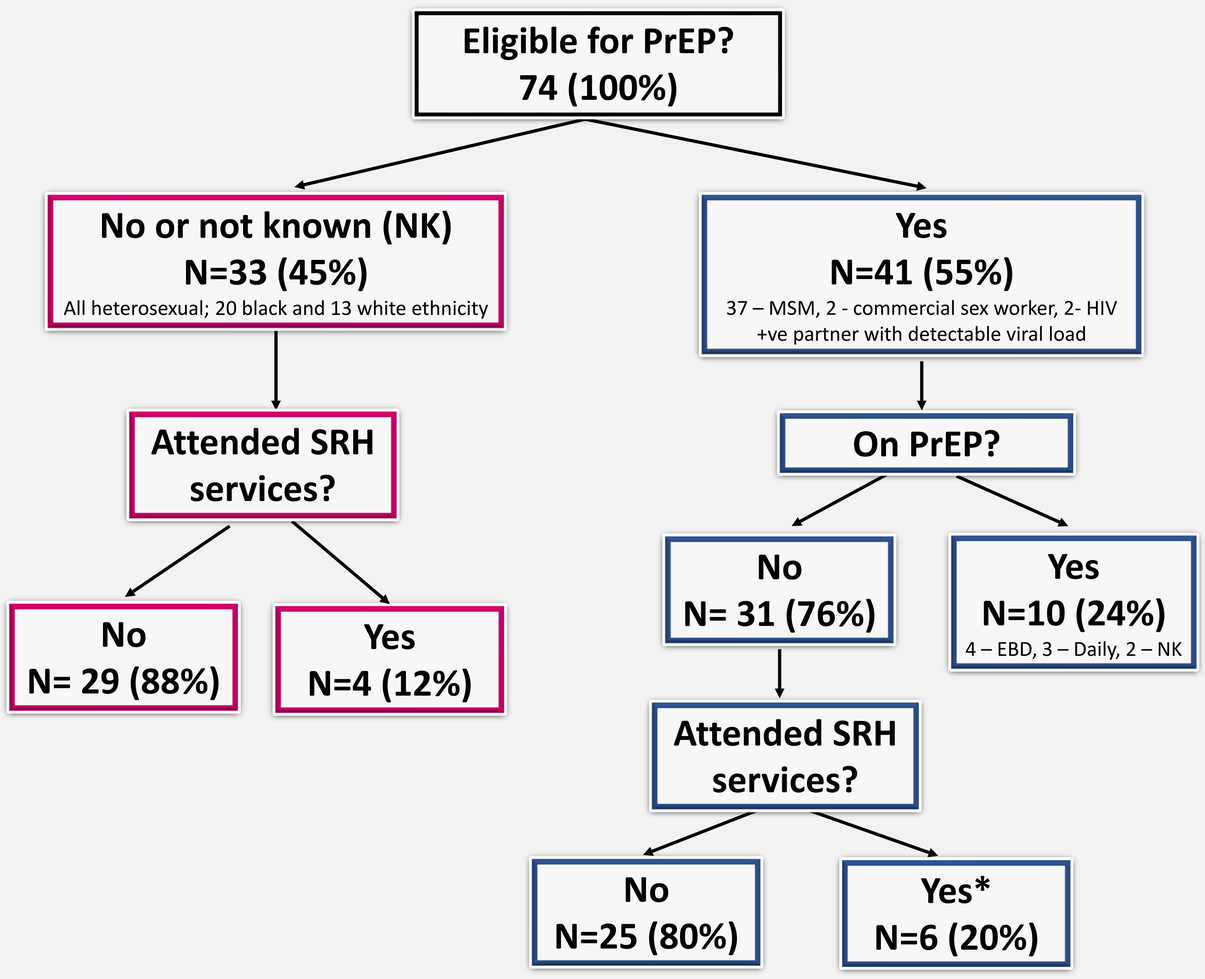
Method

- A retrospective case note review was conducted on all new HIV diagnoses in last 2 years.
- Data collected included:
  - Patient demographics
  - Eligibility for PrEP +/- missed opportunity
  - PrEP dosing and adherence
  - Date of last negative HIV test
  - HIV outcomes - virological suppression, resistance and antiretroviral choice

Results

- There were 74 new HIV diagnoses; 59 (80%) male, 30 (40%) black ethnicity with a median age of 37 years (19-68).
- 41 (55%) people were eligible for PrEP but only 10 were known to have accessed PrEP and 6 people attended SRH services but were not offered PrEP. Of the remaining 33 people - 20 were heterosexual of black ethnicity and it was not possible to ascertain whether they were eligible for PrEP from the notes (Figure 1).
- Of the 10 people with recent PrEP use, 90% were put on a 2nd generation integrase or protease inhibitor and following ART initiation 80% of people achieved virological suppression. No one developed nucleoside reverse transcriptase inhibitor (NRTI) resistance (Table 1).
- The reasons for PrEP failures can be seen in Table 2. Two people stopped PrEP due to side effects; headaches, vomiting, fatigue and renal toxicity concerns. For the remaining, adherence concerns were reported - taking event based dosing (EBD) incorrectly and difficulty accessing services.

Figure 1: PrEP eligibility



*6 people eligible for PrEP had attended SRH services but not given PrEP. 2 attended during the IMPACT trial being full and referred to IwantPrEPnow. 2 attended during COVID where baseline bloods were done with follow up but subsequently tested positive, 2 people refused PrEP with 1 deeming themselves to be low risk.

Table 1: HIV outcomes of those with a previous history of PrEP use	N (%)
Number of people	10 (100%)
ART choice	
Protease inhibitor therapy:	
• gTruvada/ darunavir/ ritonavir	2
• Abacavir/ lamivudine/ raltegravir/ Rezolsta	1
• Symtuza	1
Integrase inhibitor therapy:	
• Biktarvy	3
• gTruvada/ dolutegravir	2
• Genvoya	1
Baseline resistance	
• Wildtype	6
• NNRTI mutations (E138A, V179T)	2
• Viral load too low to amplify (VL<20, VL:490)	2
Baseline CD4 count (cells/µL)	
• 200-350	4
• 350-500	5
• >500	2
Virological outcomes at 4/52 follow up	
• Virological suppression achieved (VL<20)	8
• 5 log drop in VL achieved (baseline VL >1 million)	1
• Pending results	1

Table 2: Reason for PrEP failure	N (%)
Number of people	**10 (100%)**
Adherence concerns • Ran out of PrEP • Occasional days off or breaks reported with daily dosing • Event based dosing taken incorrectly: - Two tabs day 1, one tab day 2 and 3rd day missed - Two tabs 2 hrs before sex and 2 tabs 8-10 hrs after sex	**6 (60%)**
System failures • Difficulty accessing PrEP (lives in UAE) • Patient using friend's HIV medication • Patient worries about immigration • Patients ran out of PrEP before accessing SRH services for repeat prescription • Patient delayed starting PrEP, multiple appointments taken for PrEP bloods, booked to start PrEP and then never started	**5 (50%)**
Side effects • Tiredness • Kidney toxicity concerns • Vomiting and headaches	**2 (20%)**

Conclusion

- Our data highlights several missed opportunities for starting same-day PrEP which potentially may have prevented HIV acquisition. If PrEP is not issued on the day, adequate follow up must be ensured.
- Reassuringly those who acquired HIV with recent PrEP use have achieved good virological control without NRTI mutations. Counselling on potential side effects, EBD dosing and ongoing HIV risk are essential.
- Better documentation of HIV risk within people of black ethnicity is needed, including sexual history and recent travel to determine eligibility for PrEP.
- Despite NHS PrEP being available over 2 years, our data shows we are still failing to meet the demand of PrEP not only in men who have sex with men but also in other key at risk groups.

References

1. O'Halloran C, Sun S, Nash S, Brown A, Croxford S, Connor N, Sullivan AK, Delpech V, Gill ON. HIV in the United Kingdom: Towards Zero 2030. 2019 report. December 2019, Public Health England, London.
2. Ambrosioni J, Petit E, Liegeon G, Laguno M, Miro J. Primary HIV-1 infection in users of preexposure prophylaxis. Lancet HIV 2021; 8:e166–e174.

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