POST-EXPOSURE PROPHYLAXIS NON-COMPLETION AND NON-CONDOM USE IN FRANCE, 2004-2017

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Dat'AIDS

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Background

Introduction: Post-exposure prophylaxis (PEP) completion remains a major challenge in the preventive care for HIV-exposed individuals and involves a unique occasion of sexual counseling. Identifying risks of not fulfilling PEP course and concomitant condom use may improve clinical practice.

Objectives: Our main objective is to identify predictors of PEP completion among individuals demanding PEP. Secondary objectives are to: (i) determine predictors of condom usage in individuals sexually exposed to HIV, and (ii) describe PEP regimen use and their evolution over time.

Methods

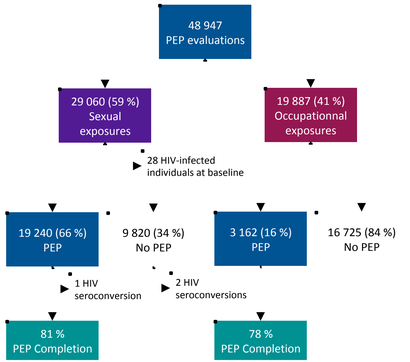
Study settings and design: Retrospective review of electronic medical records (that included a specific form) from the Dat'AIDS cohort of individuals evaluated for PEP after sexual or occupational exposures to HIV between January 2004 and December 2017. The Dat'AIDS cohort gathered data from 22 French HIV-infection care centers involved in PEP prescription.

Statistical analysis: We assessed clinically relevant predictors (Odd-ratios [OR]) and their probabilities (Pr) of both PEP completion and condom use in a Bayesian multivariable analysis.

Results

Study Flowchart

During the study period, 48 947 exposures to HIV were analyzed, of which 29 060 were sexual exposures (59%) and 19 887 were occupational exposures (41%). These exposures are related to 45 459 individuals, of whom 6% (n=2 687) had multiple exposures during the fourteen-year study period.



Patients' characteristics

Group	Occupational exposure	Sexual exposure	Total
n (%) or median (IQR)	19 887	29 060	48 947
Male	6 252 (31%)	20 045 (69%)	26 297
Median age, years	31 (25-40)	29 (24-38)	30 (24-39)
First PEP evaluation			
Emergency department	3 261 (18%)	10 082 (35%)	13 347
HIV infection care center	14 969 (82%)	18 978 (65%)	33 947
Source's HIV status			
Negative	3 438 (17%)	1 035 (3%)	4 474
Positive	2 360 (12%)	3 370 (12%)	5 730
Unknown	14 087 (71%)	24 655 (85%)	38 743
Could be tested	3 769 (27%)	710 (3%)	4 479
Tested HIV-positive	43 (1%)	27 (4%)	70
PEP prescription	3 162 (16%)	19 240 (66%)	22 402
Heterosexual female	*NA*	9 015 (31%)	9 015
Heterosexual male	*NA*	9 688 (33%)	9 688
MSM	*NA*	10 357 (36%)	10 357
Reported condom use	*NA*	14 100 (52%)	14 100
Intercourse with a sex worker	*NA*	3 085 (11%)	3 085
Rape	*NA*	3 007 (10%)	3 007
Injury type			
Prick	10 795 (62%)	*NA*	10 795
Cut	2 670 (15%)	*NA*	2 670
Splash	3 908 (23%)	*NA*	3 908
Depth of injury			
Superficial	11 845 (62%)	*NA*	11 845
Moderate	6 355 (34%)	*NA*	6 355
Deep	764 (4%)	*NA*	764

IQR, Interquartile Range; MSM, Men who have Sex with Men; PEP, Post-Exposure Prophylaxis.

Trends in PEP regimen use from 2004 to 2017

Overall, 22 402 individuals (46%) effectively received PEP: twelve different PEP regimens were prescribed to at least 50 individuals, with TDF/FTC being the preferred backbone (75%). The third drug varied with time: PI/r was progressively replaced by a NNRTI or an INSTI since 2015 (*see Figure*).

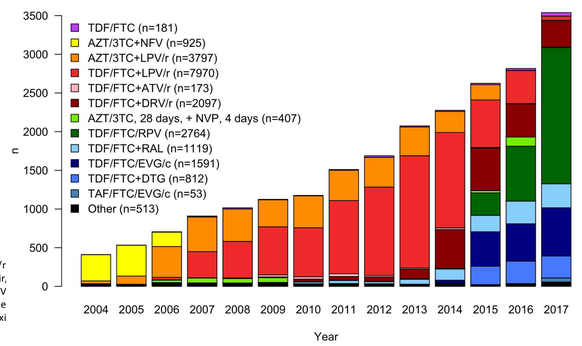


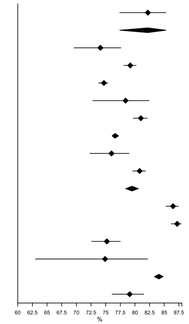
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ATV/r, Atazanavir/ritonavir; AZT, Zidovudine; DRV/r Darunavir/ritonavir; DTG, Dolutegravir; EVG/c, Elvitegravir, cobicistat; FTC, Emtricitabine; LPV/r, Lopinavir/ritonavir; NFV Nelfinavir; NVP, Nevirapine; RAL, Raltegravir; RPV, Rilpivirine TAF, Tenofovir alafenamide; TDF, Tenofovir disoproxi fumarate; 3TC, Lamivudine.

Completion rates were not associated with PEP regimen

PEP regimen was not statistically associated with PEP adherence; however, a downward trend in PEP completion rates could be noted for some regimen (*see Figure*).

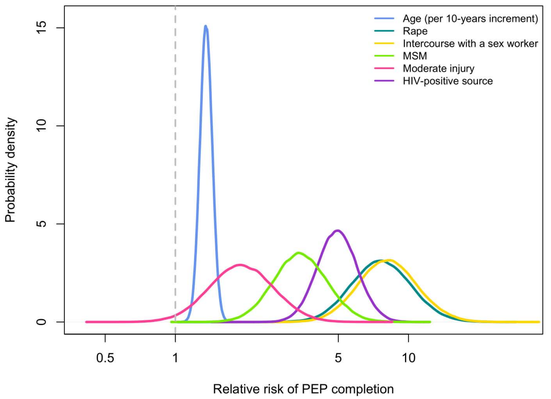
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PEP regimen	PEP completion (95% CI)
TDF/FTC (n=181)	82.2 (77.4-85.3)
2 NRTIs (n=181)	**82.2 (77.4-85.3)**
AZT/3TC+NFV (n=925)	74.1 (69.6-77.6)
AZT/3TC+LPV/r (n=3797)	79.2 (78.1-80.2)
TDF/FTC+LPV/r (n=7970)	74.7 (73.8-75.4)
TDF/FTC+ATV/r (n=173)	78.4 (72.8-82.4)
TDF/FTC+DRV/r (n=2097)	81.0 (79.7-82.1)
IP + 2 NRTIs (n=14962)	**76.6 (76.1-77.2)**
AZT/3TC, 28 days, + NVP, 4 days (n=407)	76.0 (72.3-79.0)
TDF/FTC/RPV (n=2764)	80.8 (79.6-81.8)
NNRTI + 2 NRTIs (n=3171)	**79.5 (78.4-80.6)**
TDF/FTC+RAL (n=1119)	86.5 (85.3-87.4)
TDF/FTC/EVG/c (n=1591)	87.2 (86.2-87.9)
TDF/FTC+DTG (n=812)	75.2 (72.6-77.5)
TAF/FTC/EVG/c (n=53)	74.9 (63.0-82.2)
INSTI + 2 NRTIs (n=3575)	**84.1 (83.3-84.8)**
Other (n=513)	79.1 (76.1-81.5)



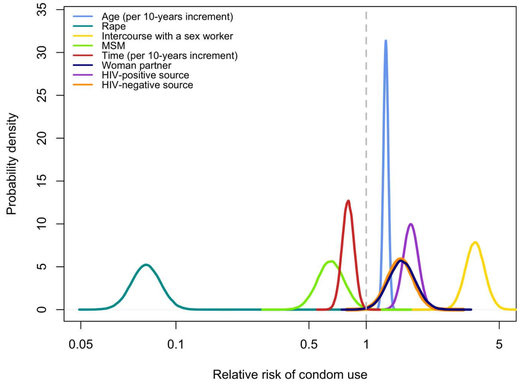
Predictors of PEP completion

Overall, **20% of individuals discontinued their PEP regimen within 20 days**.
Factors associated with PEP completion included: Age, MSM, intercourse with a sex worker, rape, moderate depth of occupational injury and known HIV-infected source patient (*see Figure showing the distribution of the relative risk of PEP completion for each predictor*).
PEP early discontinuation was attributed to: individuals' own choice (65%), adverse events (26%) and other causes (9%).
Discontinuations due to adverse events could not be attributed to a specific drug or PEP regimen.



Predictors of condom use

Among the 29 060 sexual exposures (36% MSM and 64% heterosexual), condom-less sex was reported in 48% cases.
Condom use decreased with the year of exposure, MSM and rape. Condom use increased with age, in the case of an intercourse with a sex worker, or a woman partner, and knowledge of the serological status of the partner, whether positive or negative (*see Figure showing the distribution of the relative risk of condom use for each predictor*).
These predictors were similar to those related to PEP adherence and were related to HIV risk perceptions.



HIV testing and seroconversions

- 28 individuals were already HIV-positive at baseline (sexual exposures): they presented for PEP for the first (n=20), second (n=7) or fourth time (n=1) during the study period.
- A HIV positive test at the baseline was thus more frequent in individuals who presented for PEP at multiple times on the study period than for those who sought PEP for the first time (Fisher's exact Test, p<0.001).
- 3 individuals seroconverted for HIV during follow-up (sexual exposures): 1 discontinued PEP after two days due to adverse events, and the 2 others did not receive PEP as they were late presenters (>72 hours)
- At the end of follow-up, **HIV serological testing completion rate was 31%**.

Conclusions

We showed that some groups of individuals at risk of contracting HIV infection had not completed the whole PEP course mainly due to decreased perceived risk or also to a lack of appropriate counseling. Of note, these group factors were intermingled with determinants of high-risk sexual behaviors. As these individuals were mostly young adults, understanding their underlying HIV risk perceptions changes is critical for implementing targeted counseling as an integral component of PEP care. We suggest that targeted interventions and their impact on adherence should be studied further to improve PEP care efficiency.