A Matter of Time: Factors Associated with Delayed nPEP Initiation

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BACKGROUND

- Nonprofessional Post-Exposure Prophylaxis (nPEP) provides protection against HIV acquisition in case of risk exposure, but a prompt start is crucial: according to the last Italian and European guidelines, nPEP should be prescribed within the first 24 hours since exposure (preferably in the first 4 hours) in order to maximize its effectiveness.
- However, individuals sometimes present late to the Emergency Department (ED) and the prophylaxis is started with a relevant delay, with possible consequences on its efficacy.
- Aim of this study is to describe factors associated with nPEP start time for users who accessed our ED asking for prophylaxis, assessing both time between risk exposure and ED arrival and waiting time in ED before first medical assistance and nPEP prescription.

METHODS

- Retrospective Monocentric Observational Study, including all individuals who accessed our Emergency Department asking for nPEP between Jan 2011 and Feb 2024.
- Demographic data, information about type of exposure, sexual orientation and additional risky behaviors, previous nPEP courses and HIV testing, HIV serostatus of source individual and ED arrival time (hour, day and month) were collected.
- Unadjusted and adjusted binary regression analyses were performed to test factors associated with an early ED presentation, within the first 24 hours after risk exposure according to guidelines.
- Poisson regression analysis was performed to test factors associated with longer waiting time in ED before medical attention and nPEP prescription.

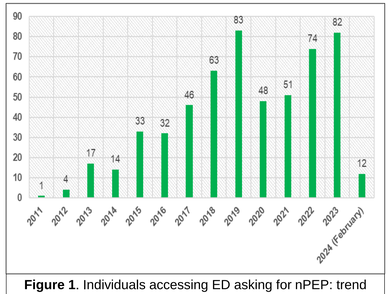


Figure 1. Individuals accessing ED asking for nPEP: trend over years.

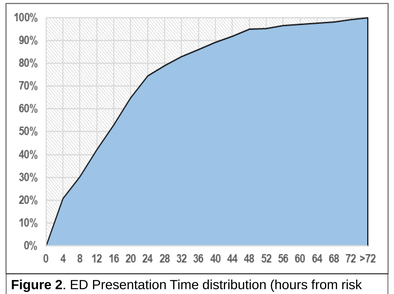


Figure 2. ED Presentation Time distribution (hours from risk exposure) and cumulative perchentage.

Among 560 individuals, 74.1% presented to ED and started nPEP in the first 24 hours after risk exposure. **Previous HIV testing** and ED access during the **weekend** are associated with **early nPEP initial**, while having sex under the effect of **alcohol or recreational drugs** is related to higher risk of **delayed start. No factor is associated with longer waiting time in ED.**

RESULTS

- A total of 560 individuals accessed our ED between Jan 2011 and Feb 2024 asking for nPEP: 415 (74.1%) arrived within 24 hours since risk exposure, 112 (20%) in the first 4 hours.
- Overall median ED arrival time was 14.88 hours (IQR 5.52-24.48), while median time between risk exposure and nPEP start was 16.56 hours (IQR 6.96-25.92).

			Overall (N=560)	Arrived within 24 hours (N=415)	Arrived after 24 hours (N=145)
Sex, n (%)	Male		522 (93.2)	389 (93.7)	133 (91.7)
	Female		36 (6.4)	25 (6.0)	11 (7.6)
	TGW		2 (0.4)	1 (0.3)	1 (0.7)
Age, years, median (IQR)			32.1 (26.9-39.4)	31.9 (27.0-39.7)	32.4 (26.6-38.2)
Born in Italy, n (%)			457 (81.6)	349 (84.1)	108 (74.5)
Sexual orientation, n (%)	MSM		382 (68.2)	286 (68.9)	96 (66.2)
	MSW/WSM		163 (29.1)	117 (28.2)	46 (31.7)
	Not applicable		15 (2.7)	12 (2.9)	3 (2.1)
Type of exposure, n (%)	Anal, receptive		239 (42.7)	176 (42.4)	63 (43.4)
	Anal, insertive		151 (26.9)	112 (27.0)	39 (26.9)
	Vaginal, insertive		81 (14.5)	59 (14.2)	22 (15.2)
	Vaginal, receptive		24 (4.3)	15 (3.6)	9 (6.2)
	Oral		44 (7.9)	37 (8.9)	7 (4.8)
	Ocular		6 (1.1)	4 (1.0)	2 (1.4)
	Nonsexual		15 (2.7)	12 (2.9)	3 (2.1)
Condomless intercourse, n (%)			247 (45.3)	172 (42.7)	75 (52.8)
Semen/ano-genital mucosa contact, n (%)			283 (60.2)	212 (61.3)	71 (57.2)
Additional risk factors, n (%)	None		353 (63.0)	268 (64.6)	85 (58.6)
	Sex work		104 (18.6)	82 (19.8)	22 (15.2)
	Sex under alcohol or recreational drugs		60 (10.7)	33 (7.9)	27 (18.6)
	Violence		19 (3.4)	14 (3.4)	5 (3.5)
	Group sex/Cruising sex venue		18 (3.2)	14 (3.4)	4 (2.7)
	PHI		6 (1.1)	4 (0.9)	2 (1.4)
HIV status of source individual, n (%)		Unknown	411 (73.4)	303 (73.0)	108 (74.5)
		Positive	122 (21.8)	94 (22.7)	28 (19.3)
		On PrEP	27 (4.8)	18 (4.3)	9 (6.2)
Previous nPEP course, n (%)			98 (17.5)	81 (19.6)	17 (11.7)
Previous HIV testing, n (%)			434 (77.6)	333 (80.4)	101 (69.7)
Accessing Emergency Department during weekend, n (%)			266 (47.6)	216 (52.1)	50 (34.7)
Accessing Emergency Department during summer months, n (%)			137 (24.5)	107 (25.8)	30 (20.7)

Table 1 Population main demographic and behavioural features, stratified by ED presentation time since risk exposure.

- At a multivariate analysis previous HIV testing (aOR 1.82, 95% CI 1.12-2.94, p=0.015) and access on weekend days (aOR 2.02, 95% CI 1.34-3.05, p=0.001) were significantly associated with early ED arrival, while having sex under the effect of alcohol and/or recreational drugs was associated with a higher risk of late presentation and nPEP delayed start (aOR 0.43, 95% CI 0.24-0.48, p=0.005).

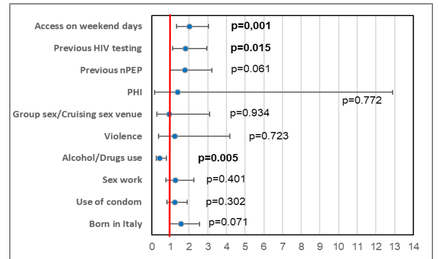


Figure 3. Binary regression analysis showing factors associated with early (<24 hours) ED presentation (adjusted odds-ratios, aOR). Results are adjusted for all the items listed.

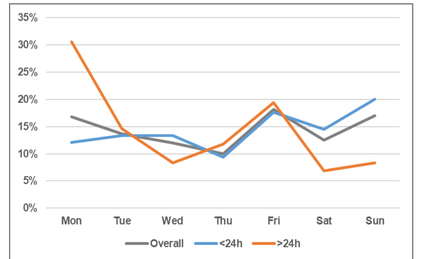


Figure 4. ED accesses: distribution over the days of a week.

- Italian nationality (aOR 1.57, 95% CI 0.96-2.55, p=0.071) and previous nPEP courses (aOR 1.77, 95% CI 0.97-3.21, p=0.061) were associated with early ED presentation, even if at limit of statistical significance.
- Overall median waiting time in ED was 1.44 hours (IQR 0.72-2.40). At a multivariate Poisson regression analysis, no factor was associated with longer waiting time.

			IRR	95%CI	p
Age			0.99	0.96-1.03	0.687
Sex	Female		1	Ref	
	Male		1.11	0.30-4.19	0.876
	TGW		0.68	0.00-0.24	0.980
Born in Italy			0.82	0.38-1.77	0.617
Sexual orientation	MSW/WSM		1	Ref	
	MSM		0.89	0.45-1.75	0.733
	Nonsexual		0.74	0.09-6.38	0.783
Use of condom			1.08	0.57-2.05	0.804
Additiona l risk factor	None		1	Ref	
	Sex work		1.12	0.50-2.51	0.791
	Sex under alcohol or recreational drugs		1.15	0.44-3.00	0.772
	Violence		0.89	0.13-5.89	0.904
	Group sex/Cruising sex venue		1.25	0.25-6.24	0.786
	PHI		0.75	0.02-24.9	0.874
HIV status of source individual		Unknown	1	Ref	
		Positive	0.95	0.44-2.03	0.886
		PrEP	0.76	0.14-4.22	0.756
Previous nPEP			0.84	0.35-2.01	0.692
Access during weekend			0.94	0.50-1.75	0.837
Access during night shift			0.83	0.43-1.61	0.581
Access during summer months			0.85	0.40-1.82	0.684

Table 2. Poisson regression analysis investigating features associated with longer waiting time in ED.

CONCLUSIONS

- Most individuals in this study presented to ED within 24 hours since biological exposure and nPEP was initiated soon, but there are still some users for who prophylaxis prescription was postponed for a delayed presentation to ED.
- This work confirms how use of alcohol and recreational drugs during sexual intercourses represents an important risk factor for HIV acquisition not only in terms of dangerous exposure, but also for delayed nPEP start.
- Previous HIV testing is associated with early nPEP initial, probably because some people undergo regular screening for sexual transmitted infections, and could be more “educated” on possible prophylaxis strategies.
- Sexual intercourses on weekend days seem to be associated with anticipated nPEP start: daily working routine might be a barrier to prompt ED access, leading to a possible risk underestimation.
- According to our study, no factors influence waiting time in ED: it should be shortened, but delayed nPEP start seems to be related only to users’ late ED arrival, probably because of an inappropriate risk perception.

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