Surveillance of post-exposure prophylaxis for occupational exposures to HIV in health care workers in France, 1999-2001

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Background

Since 1995, the French Ministry of Health has recommended to use antiretroviral drugs (first zidovudine and at the moment a 3-drug regimen) as post-exposure prophylaxis (PEP) following exposures to HIV in health care workers (HCW).

A hospital sentinel surveillance was set up in July 1999 to monitor:
- characteristics of HCW seeking advice for PEP
- use and toxicity of PEP
- follow-up testing in the first 6 months after exposure

Methods

Criteria of inclusion:
- known or possible occupational exposure to HIV (are excluded all exposures to a source known or identified after exposure as HIV-)
- consultation for PEP advice in the first week after exposure
- HCW consent
- prescription or not of PEP

3 anonymous standardised forms:
- inclusion (HCW demographics data, exposure information, source patient information and PEP regimen initiated).
- 1-month follow-up (modifications to the regimen, reasons for stopping, reports of adverse symptoms or biological abnormalities)
- 6-month follow-up (HCW serological follow-up since baseline).

About 100 voluntary hospitals participate to the surveillance. Emergency, infectious disease and occupational physicians filled the forms.

For analysis, exposures were classified as high, intermediate and low exposures according to depth of injury and material involved:
- high: e.g. deep or moderate puncture with a needle used in a vein or artery, deep cut with a scalpel used in surgery operating room
- intermediate: e.g. superficial puncture with a needle used in a vein or artery, deep or moderate puncture after an intramuscular or subcutaneous injection or with a suture needle
- low: e.g. superficial puncture after an intramuscular or subcutaneous injection or with a suture needle, mucocutaneous contact, bite

Results

Between July 1999 and December 2001, 3356 HCW were notified for seeking advice for PEP.

1. *Characteristics of exposures*

71% were female of whom 2% were pregnant.

Occupation of HCW were as follow: 41% of nurses, 16% of physicians/surgeons, 12% of nurses' assistants, 10% of housekeepers, 6% of laboratory staff, 5% of dentist personnel and 10% of others.

Type of exposure	Percutaneous injuries	83%	
	needlesticks		*68%*
	cuts		*11%*
	superficial scratches		*3%*
	bites		*1%*
	mucocutaneous injuries	17%	
Exposure severity	high	14%	
	intermediate	34%	
	low	52%	
Source patient status	HIV+	890 (27%)	
	HIV unknown	2466 (73%)	

Time between exposure and seeking advice

< 4 hours: 69% 4 – 24 hours: 21% 24 – 48 hours: 6% 48 hours: 4%

Median time was 2 hours (range, 0-170) but was longer for low exposures than for high exposures.

2. *PEP prescription for 1 month*

PEP was prescribed in 1106 HCW (33%) but rate of prescription varied according to HIV source status and exposure severity (Table 1).

Table 1: Percentage of HCW receiving PEP according to HIV source status and exposure severity

Source status	Exposure severity			Total
	high	intermediate	low	
HIV+	118/123 96%	196/228 86%	263/539 49%	577/890 65%
HIV unknown	148/335 44%	240/915 26%	141/1216 12%	529/2466 22%
Total	266/458 58%	436/1143 38%	404/1755 23%	1106/3356 33%

PEP regimen has changed over time (Table 2). The proportion of 2-drug and 3-drug regimen with indinavir has decreased while 3-drug regimen with nelfinavir and 4-drug regimen with 2 PI° has increased.

Table 2: Prescription of PEP by regimen and semester of exposure

	2nd semester 1999	1st semester 2000	2nd semester 2000	1st semester 2001	2nd semester 2001
	N=181	N=282	N=230	N=211	N=202
	%	%	%	%	%
2-drug regimen	18	19	16	12	11
3-drug regimen with nevirapine*	4	2	7	3	4
3-drug regimen with indinavir	28	23	18	12	6
3-drug regimen with nelfinavir	43	49	49	48	63
3-drug regimen with efavirenz	2	1	1	3	1
3-drug regimen with 3 NRTI	0	2	4	10	5
4-drug regimen with 2 PI°	2	2	4	10	8
Other/unknown	3	2	1	2	2

PI: protease inhibitor NRTI: nucleoside reverse transcriptase inhibitor
* most often short nevirapine regimen (4 days)
° ritonavir used as a booster of the other protease inhibitor

3. *One-month follow-up was available for 459 treated HCW (42%).*

Of HCW with 1-month follow-up, 75% reported adverse symptoms and 12% biological abnormalities (Table 3). The most frequent symptoms were general and gastro-intestinal symptoms. Frequency of symptoms varied according to regimen and was significantly lower for 3-drug-regimen with 3 NRTI (45%).

Table 3: Percentage of HCW with 1-month follow-up reporting adverse symptoms or biological abnormalities by regimen

	N	*Adverse symptoms (%)*	*Biological abnormalities (%)*
2-drug regimen	61	*70*	*7*
3-drug regimen with nevirapine*	27	*85*	*19*
3-drug regimen with indinavir	67	*81*	*15*
3-drug regimen with nelfinavir	230	*78*	*13*
3-drug regimen with efavirenz	9	*78*	*0*
3-drug regimen with 3 NRTI	29	*45*	*7*
4-drug regimen with 2 PI°	26	*65*	*12*
Other/unknown	10	*80*	*10*
Total	459	*75*	*12*

PI: protease inhibitor NRTI: nucleoside reverse transcriptase inhibitor
* most often short nevirapine regimen (4 days)
° ritonavir used as a booster of the other protease inhibitor

PEP was completed in 84% of cases whatever the regimen prescribed. PEP was prematurely discontinuated in 11% for side effects (in 5% by the physician, mostly for cutaneous rashes, high elevation of AST/ALT or important gastro-intestinal symptoms).

4. *Serological follow-up was available at 3 or 6 months for 24% of HCW.*

No HIV seroconversion was reported.

Conclusion

The high percentage of exposures to a source of unknown HIV status was explained by the criteria of exclusion (exclusion of exposures to a HIV-negative source).

The time from exposure to advice was rapid and satisfactory regarding the preventive effect of PEP.

PEP prescription was generally in line with official guidelines, except for low or intermediate exposures to a source of unknown HIV status where PEP was not recommended. For the 2nd semester 2001, the most common PEP regimen prescribed was a 3-drug regimen with nelfinavir, which is in accordance with future updated recommendations.

The main limitation of this surveillance is the difficulty to monitor toxicity and efficiency of PEP since the rate of follow-up was low. A lookback study is ongoing to determine the proportions of under reporting and loss to follow-up.

Nevertheless, as already reported, side effects were frequent and sometimes severe.

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