

# Lookback studies to assess viral risks

## The French experience 2000-2012

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For the French haemovigilance network-EFS

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# Why perform lookback studies ?

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- ✓ **Population level** : observational approach of the transfusion infectious risk
  
- ✓ **Patient level** :
  - identify TTI in recipients and propose the infection monitoring
  - avoid secondary infections
  
- ✓ **Blood product level** :
  - evaluate transmissibility and infectivity (lowest infectious dose)
  - provide data to determine an optimal BD screening strategy

# When perform lookback studies ?

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- ✓ Donor tested positive with a potential previous donation in the WP
- ✓ Donor who previously donated found positive after introduction of a new screening testing
- ✓ Donor identified as infected after the discovery of post transfusion infections in recipients

# Donor haemovigilance network in France

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## Systematic and comprehensive epidemiological surveillance of all donors

- Implemented in 92 in the whole country including overseas territories
- Performed jointly by NBS (EFS), Army blood service (CTSA), National Institute of Health (InVS), NRC (INTS), French national drug safety agency (ANSM)

## Electronic questionnaires (since 2010)

### *Quarterly*

- N donations, status of blood donors (FTBD, RBD)
- For each positive (Syp, HIV, HBV, HCV, HTLV) donor : gender, age, status, ethnicity, risk factors

### *Annual* : Whole blood donor population :

- total number of donors, distribution according to gender and age

### *National centralization of data*

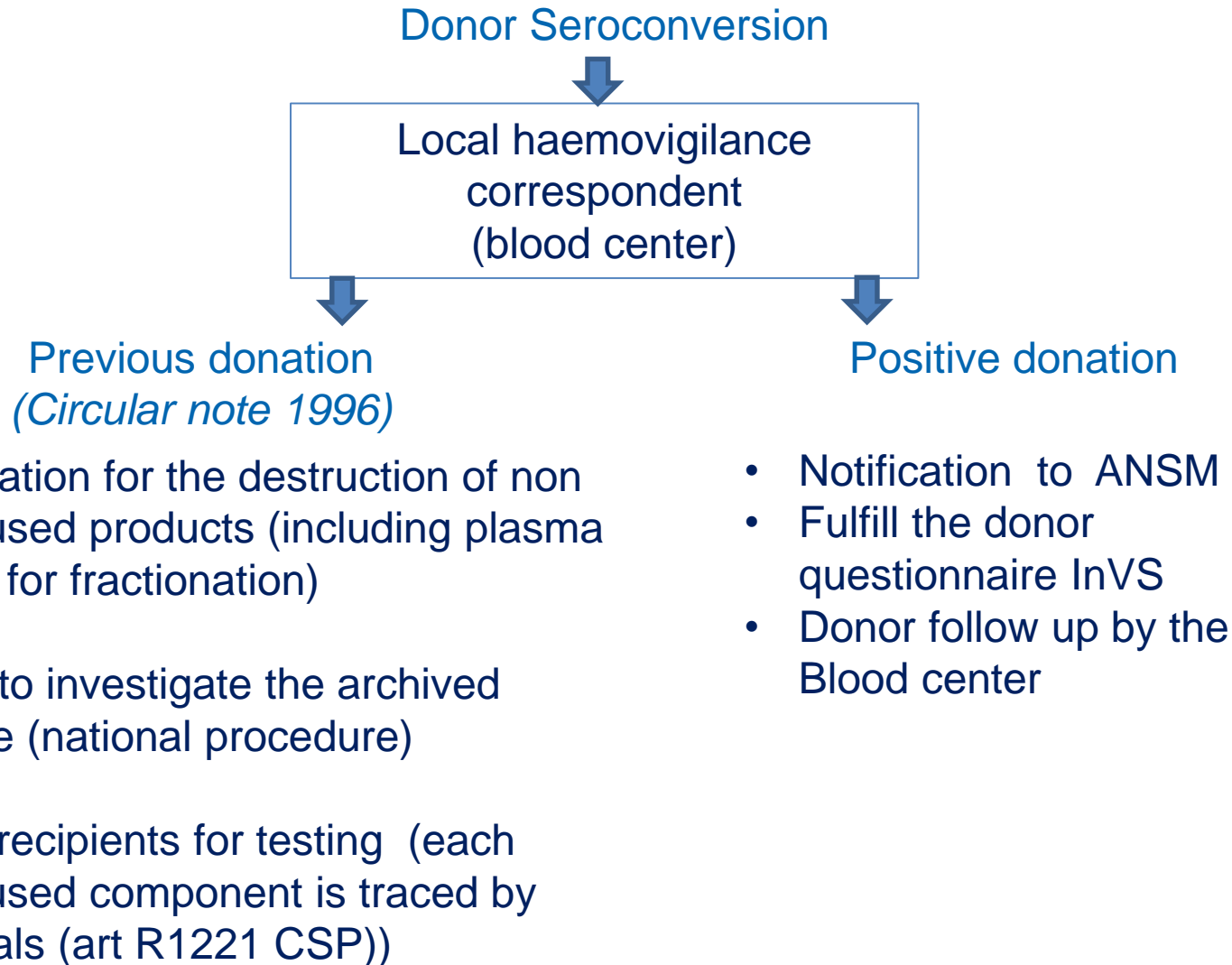
## Goals

- Surveillance of the transmissible infection prevalence and incidence rates
- Identification of risk factors
- Estimation of residual risk

Completed by a biorepository collection of all donations archived for 5 years (3 years from 2016)

# Donor-triggered lookback procedure in France

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# Lookback study in France 2000-12

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## Objectives

- Establish the characteristics of seroconverted donors
- Collect data on
  - Previous negative donation
  - Transfused products (including fractionated plasma products)
  - Follow up of donors
  - Follow up of recipients
- Evaluation of the overall lookback procedure

# Lookback study in France 2000-12

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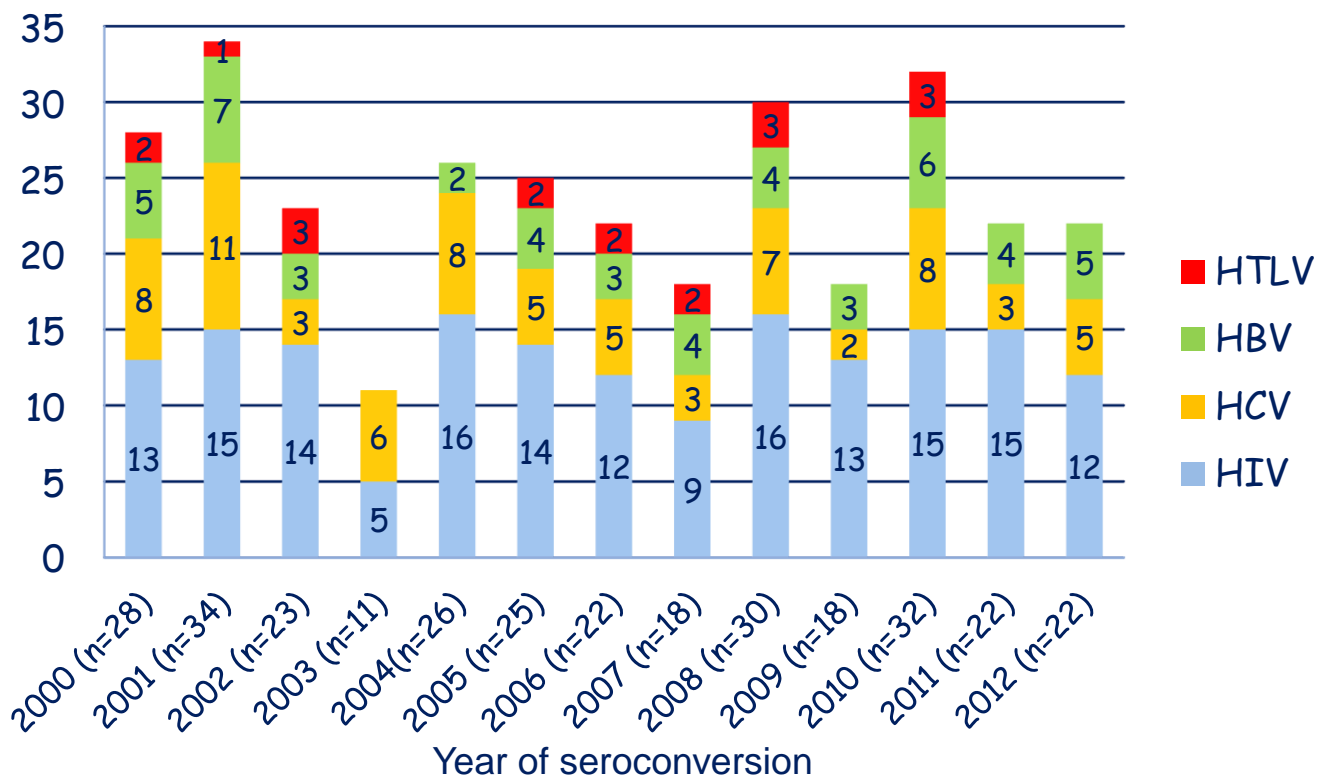
## Method

- National retrospective comprehensive study
- Donors from EFS and CTSA
- Study period : 2000 to 2012
- Inclusion criteria
  - seroconversions
    - HBV (HBsAg, DNA , excluding anti-HBc),
    - HCV (HCV Ab, RNA),
    - HIV (HIV Ab, RNA)
    - HTLV (HTLV Ab)
  - interdonation interval < 3 years (incidence cases and compatible with the storage duration of archived sample)
- Questionnaire to all the hemovigilance correspondents of blood centers

# Lookback study in France 2000-12

## Results (1)

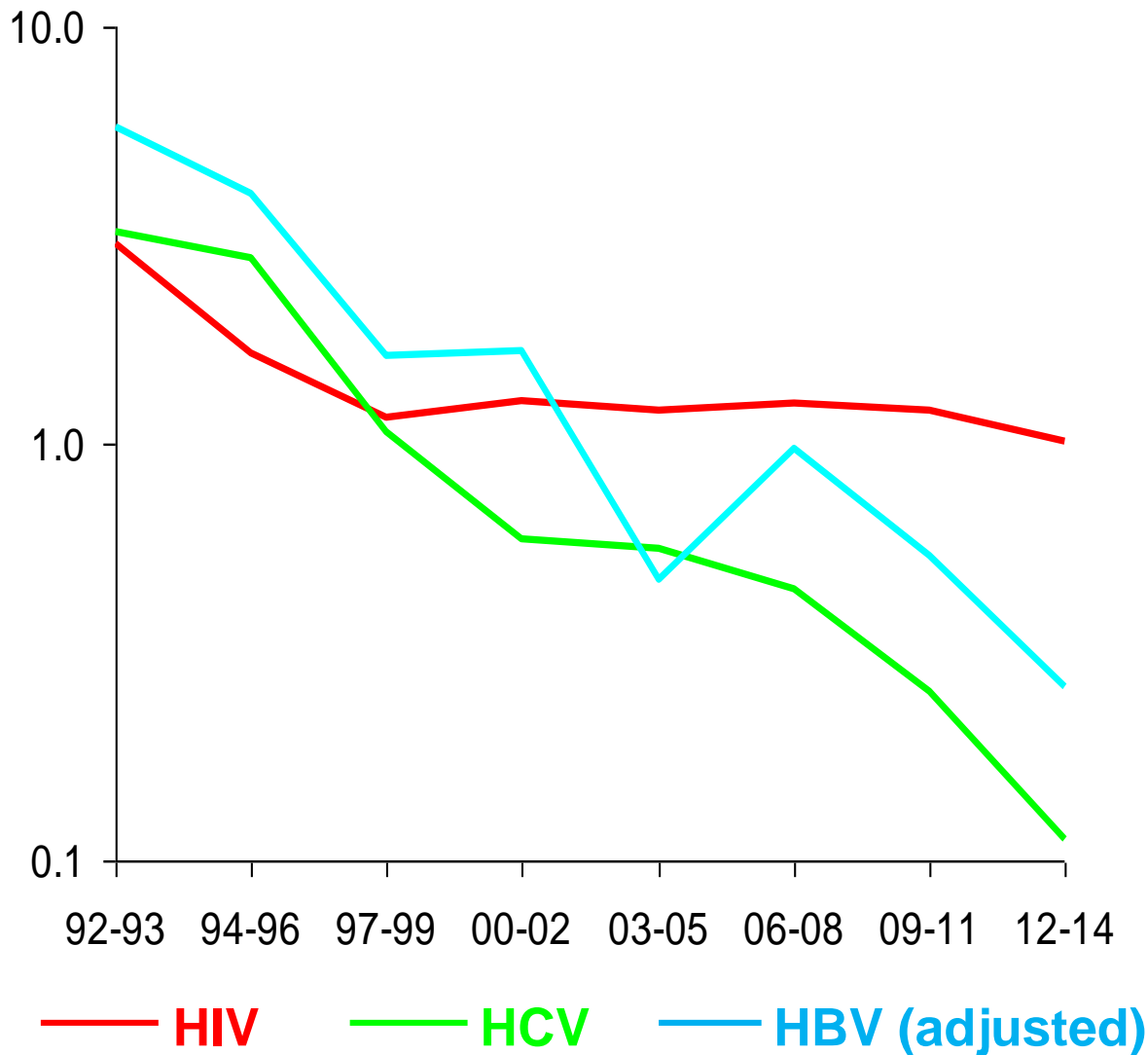
	HIV	HCV	HBV	HTLV	total
Reported	178 (54,3%)	76 (23,2%)	50 (15,2%)	24 (7,3%)	328
Included (reponses to the questionnaire)	169 (95%)	74 (98,7%)	50 (100%)	18 (75%)	<b>311</b> <b>(94,8%)</b>





# HIV, HCV and HBV Incidence rate in blood donors, France (1992 – 2014)

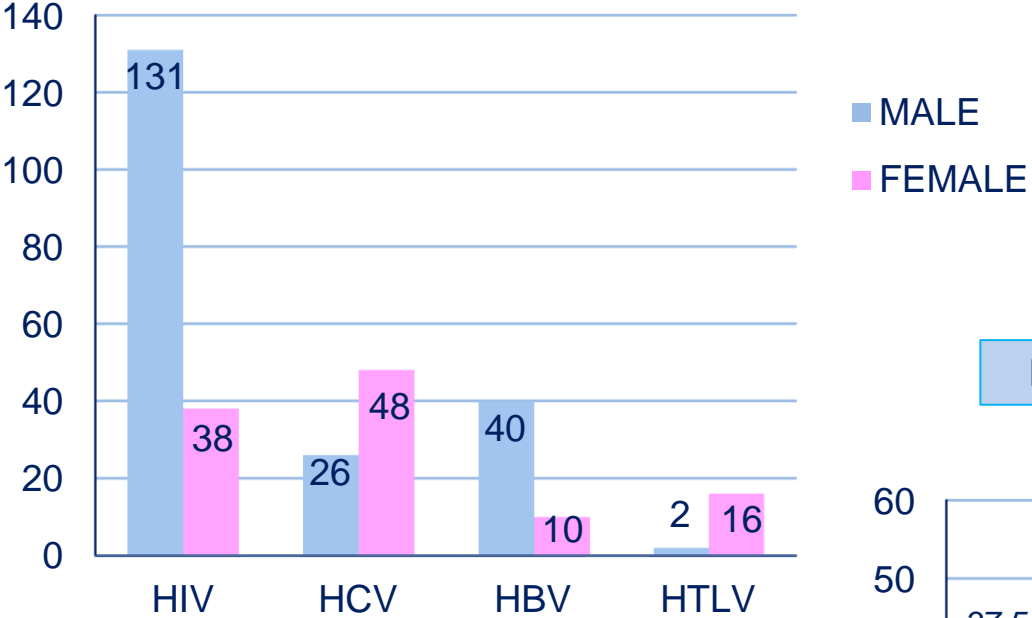
p. 100 000 P-Y



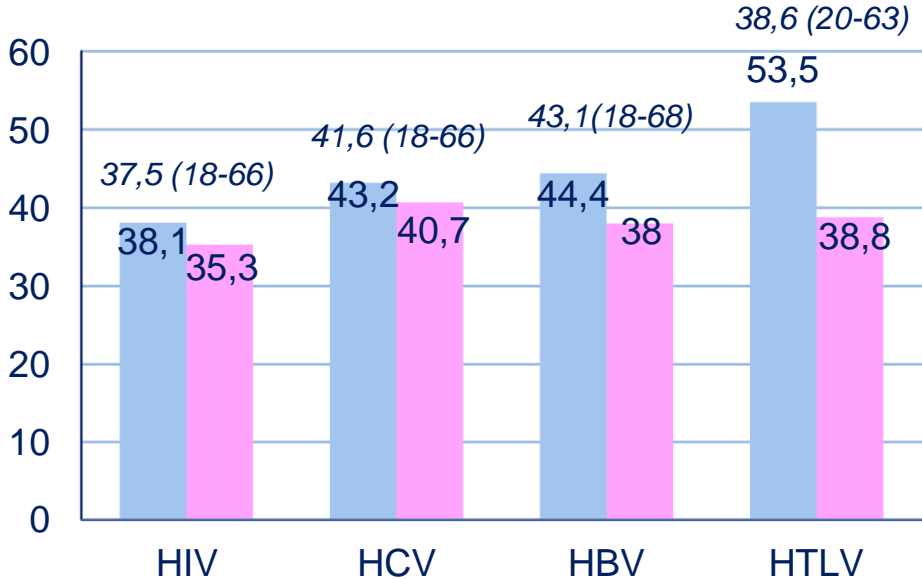
# Lookback study in France 2000-12

## Results (2)

Total number of SC according to the gender



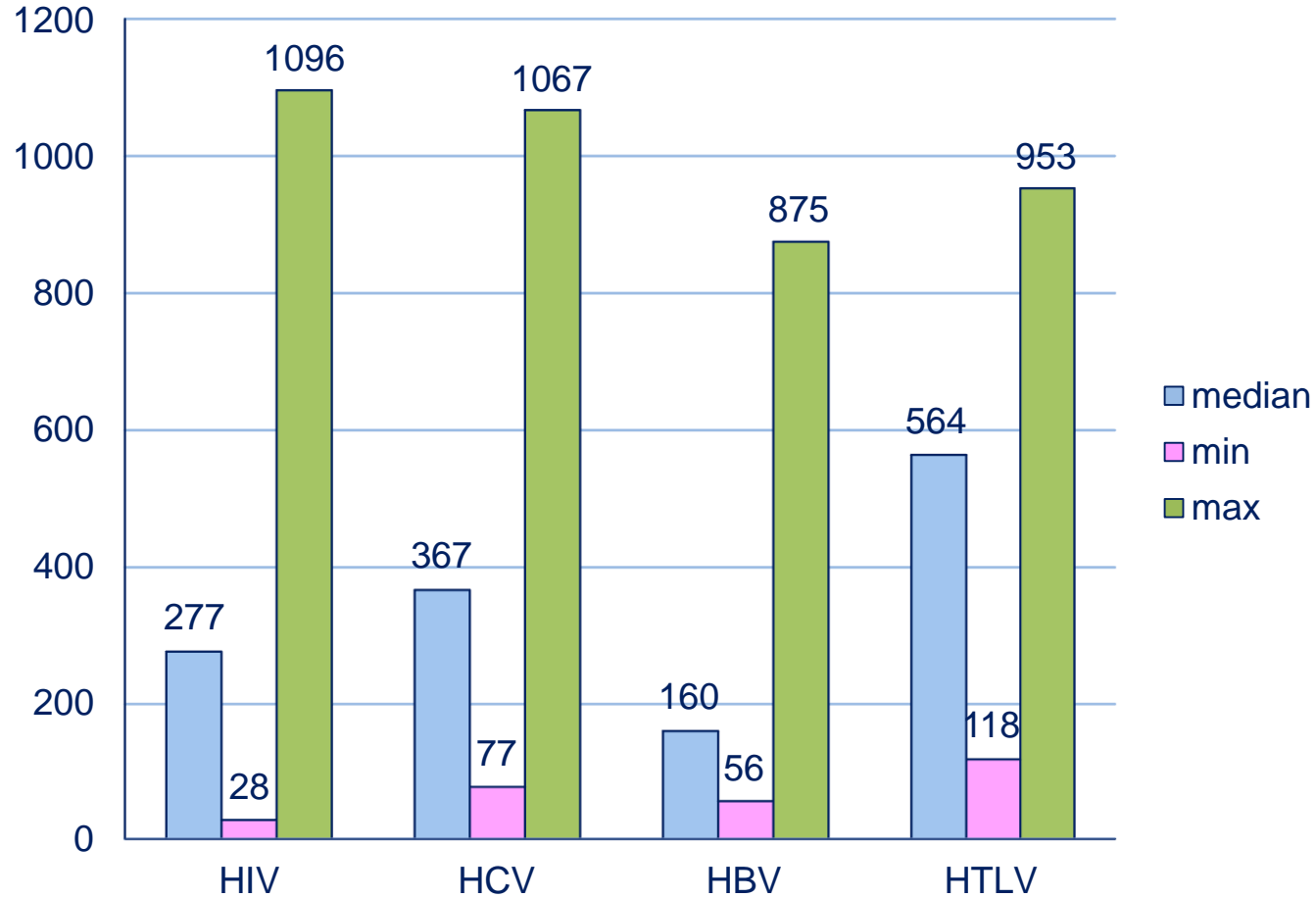
Mean age (years) according to the gender



# Lookback study in France 2000-12

## Results (3)

Interdonation intervals (days)




# Lookback study in France 2000-12

## Results (4)

post donation follow up

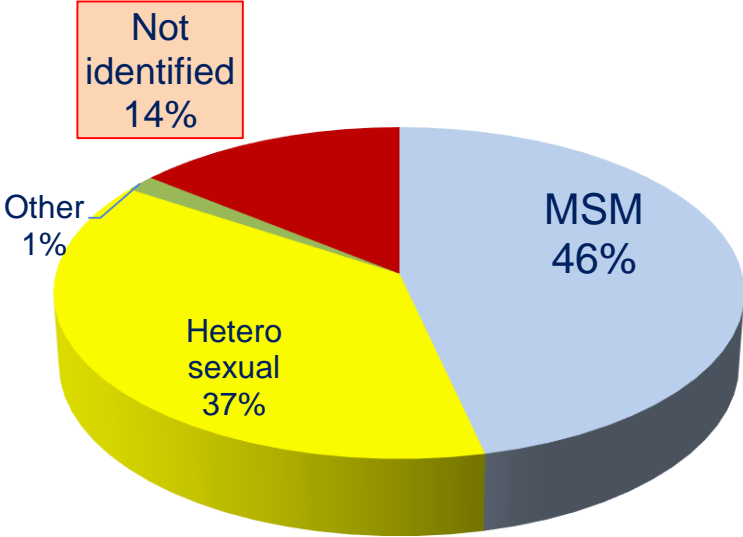
Donors	HIV	HCV	HBV	HTLV	total
Included	169	74	50	18	<b>311</b>
Followed-up	167 (99%)	64 (86%)	42 (84%)	16 (89%)	289 (93%)
Information on risk factor	165 (99%)	59 (92%)	38 (90%)	16 (100%)	278 (96%)
Identified risk factor	145 (88%)	44 (75%)	22 (58%)	14 (87%)	225 (81%)



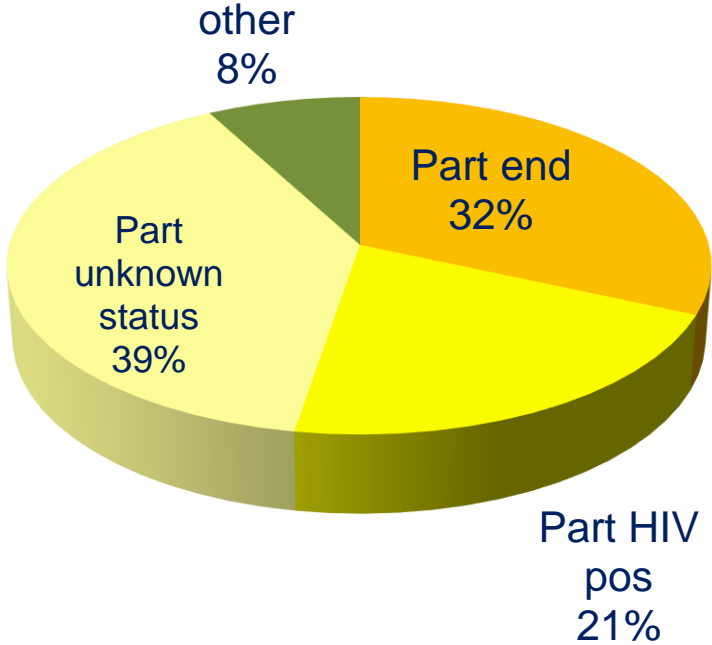
# Lookback study in France 2000-12

## Results (4)

Risk factors for HIV  
(n=165)



127 Men

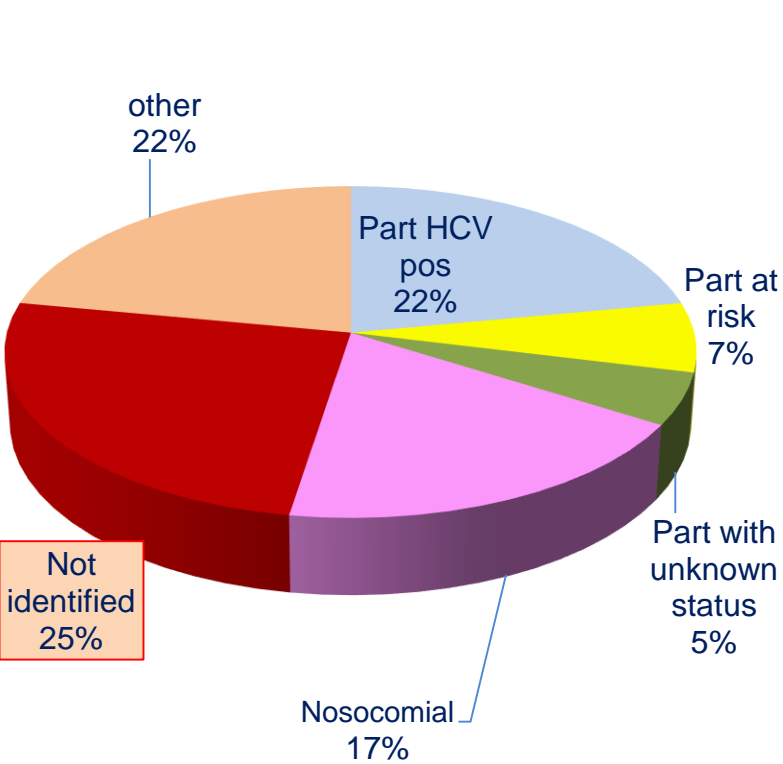


38 Women

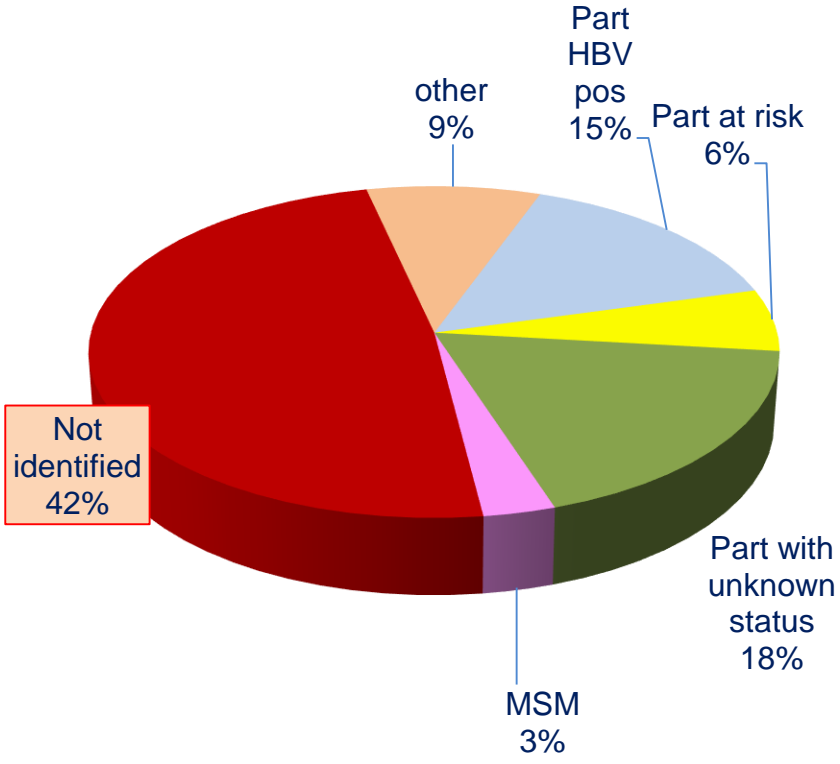
# Lookback study in France 2000-12

## Results (4)

Risk factors for HCV  
(n=59)



Risk factors for HBV  
(n=38)



# Lookback study in France 2000-12

## Results (5)

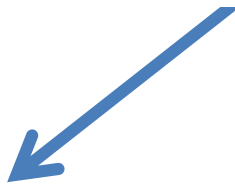
- Lookback data available for 236 (75.9%) of the 311 included cases (lack of some records)



Archived sample (previous donation)

Investigation on repository sample	Done	Not done	No information
TOTAL (n=236)	202 (86%)	15 (6%)*	19 (8%)

\* donation excluded from a potential contamination of the recipient (risk factor after negative donation or positive donation profile in agreement of recent infection)



3 WP HBV-DNA positives only  
donations collected before 2010 (HBV ID-NAT Implementation )  
No HIV, HCV, HTLV positive

# Lookback study in France 2000-12

## Results (6)

### Recipient lookback

Blood products were transfused for 200 donors from 236 to 231 recipients

	Donors	Transfusions	Recipients						
			total	tested	died	No information	Not traced	% traced	% tested (NS)
HIV	135	116	133	39	51	29	14	89%	29%
HCV	53	44	51	10	17	20	4	92%	19%
HBV	36	30	37	16	8	10	3	92%	43%
HTLV	12	10	10	4	4	1	1	90%	40%
<b>TOTAL</b>	<b>236</b>	<b>200</b>	<b>231</b>	<b>69</b>	<b>80</b>	<b>60</b>	<b>22</b>		
				30%	35%	26%	9%		



1/69 positive (HBV)



# 3 HBV pre seroconversions donors

Year	Donor				Recipient	
	Gender/ age	Interdonation interval (days)	HBV-DNA repository sample	risk	Blood component	infected by transfusion
2000	M/37	72	na	heterosexual	RBC	No (already positive) Died before testing
2005	M/59	95	Pos <6IU/ml	Not traced	RBC	No (test negative)
2006	M/42	74	Pos <6IU/ml	Not identified	RBC Plasma for fractionation destroyed	<b>YES</b> (matched viral sequences*)

# Outcome of lookback : Summary

328 « recent » seroconversions reported (2000-2012)

311 (94,8%) investigated

17 No responses

75 recordings not available

33

No information

278 (89,3%)

information on RF

236 (75.9%)

Recorded repository samples

15 not done

53 RF not identified

225 (81%)

RF identified

202 (84.5%)

investigated

19 no information

3 (1,5%)

HBV DNA pos

200 donations transfused

231 recipients

69 (30%) tested

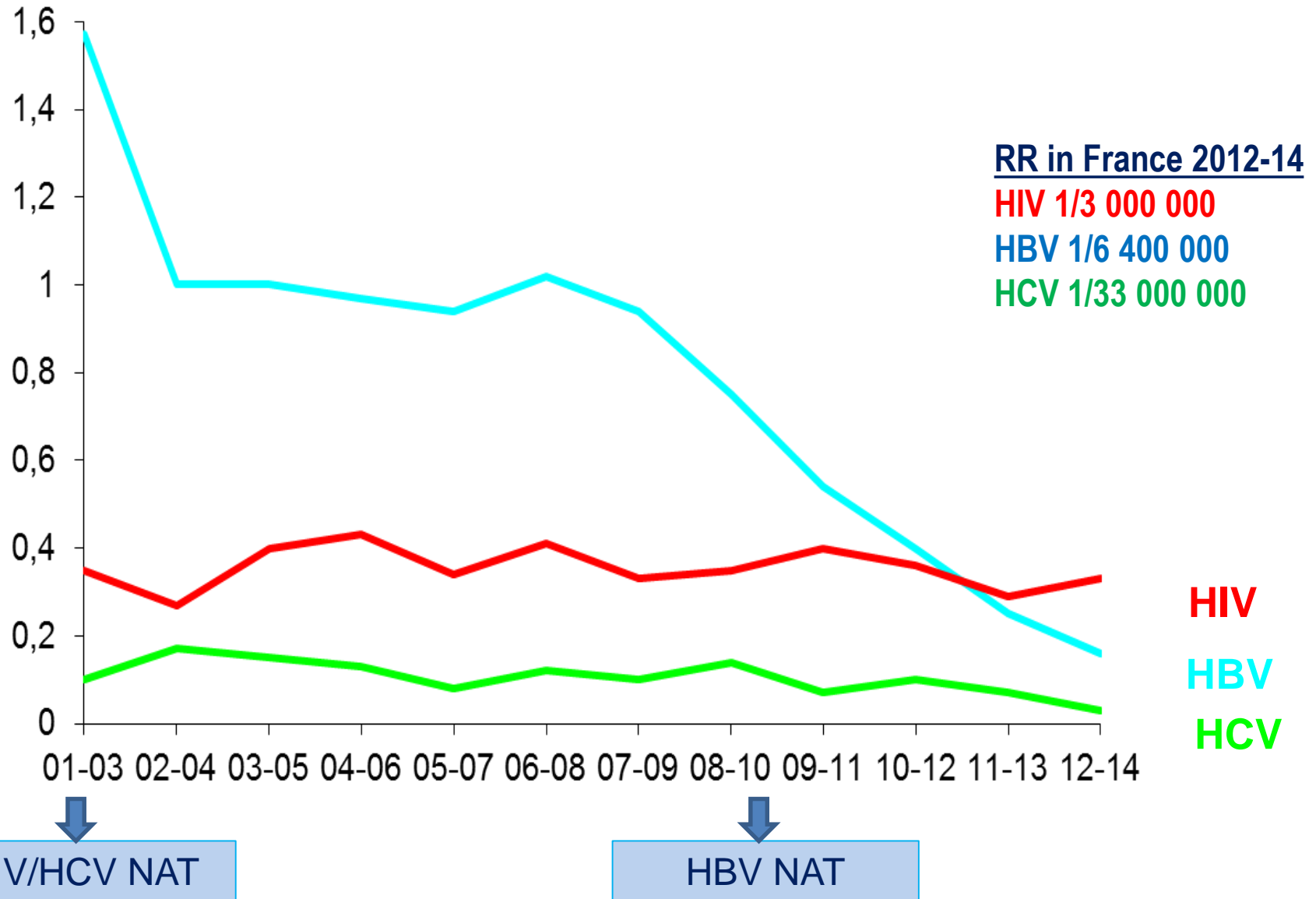
80 (34.6%) died  
60 (26%) no info  
22 (9.5%) not investigated

1 (1,7%) HBV DNA pos

Donors

Recipients

# Transfusion residual viral risk in France (2001-2014)



# Conclusion (1)

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- Characteristics of French blood donors who recently seroconverted for established viruses
  - More than 50% infected by HIV
  - 4 times more males for HIV and HBV- females more frequent for HCV and HTLV
  - 46% of HIV pos males were MSM in spite of exclusion criteria
  - HIV are slightly youngest
  - Mean interdonation delays ranged between 5 to 18 months but very short delays was observed  
(28 days for one newly HIV infected donor NAT only positive no information on recipients)

## Conclusion (2)

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➤ In spite of experienced and standardized hemovigilance procedures, some information are not available

- 19% of seroconverted BD with follow up did not declare risk factors (12% for HIV to 42% for HBV)

*Need for improving the compliance of seroconverted donors at post donation interview?*

- 24% of lookback studies : failures in archiving data

*Need for computerizing and centralizing data to perform appropriate retrospective studies ?*

## Conclusion (3)

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- Lookback procedures need an intensive work but are poorly efficient
- Low yield of archived samples testing (0 positive since the implementation of HBV NAT) due to the low viral RR in France and the high performance of assays used for blood screening
- Low yield of recipient lookback tracing (30% tested) and testing (no additional infection in comparison with the testing of repository sample)

*Go towards a revision of recipient lookback testing strategy based on a better risk assessment ?*

- *stage of infection of the donor, chronology of events , test results of donor archived sample,*
- *Targetted on the background of the recipient*

# ACKNOWLEDGEMENTS

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Thanks for your attention

