

Preventability of serious transfusion reactions

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Content of presentation

1. Introduction of Hemovigilance in the Netherlands
2. Definition of serious transfusion reaction (EU)
3. Potential approaches for preventing transfusion reactions
4. Conclusion



Hemovigilance in the Netherlands

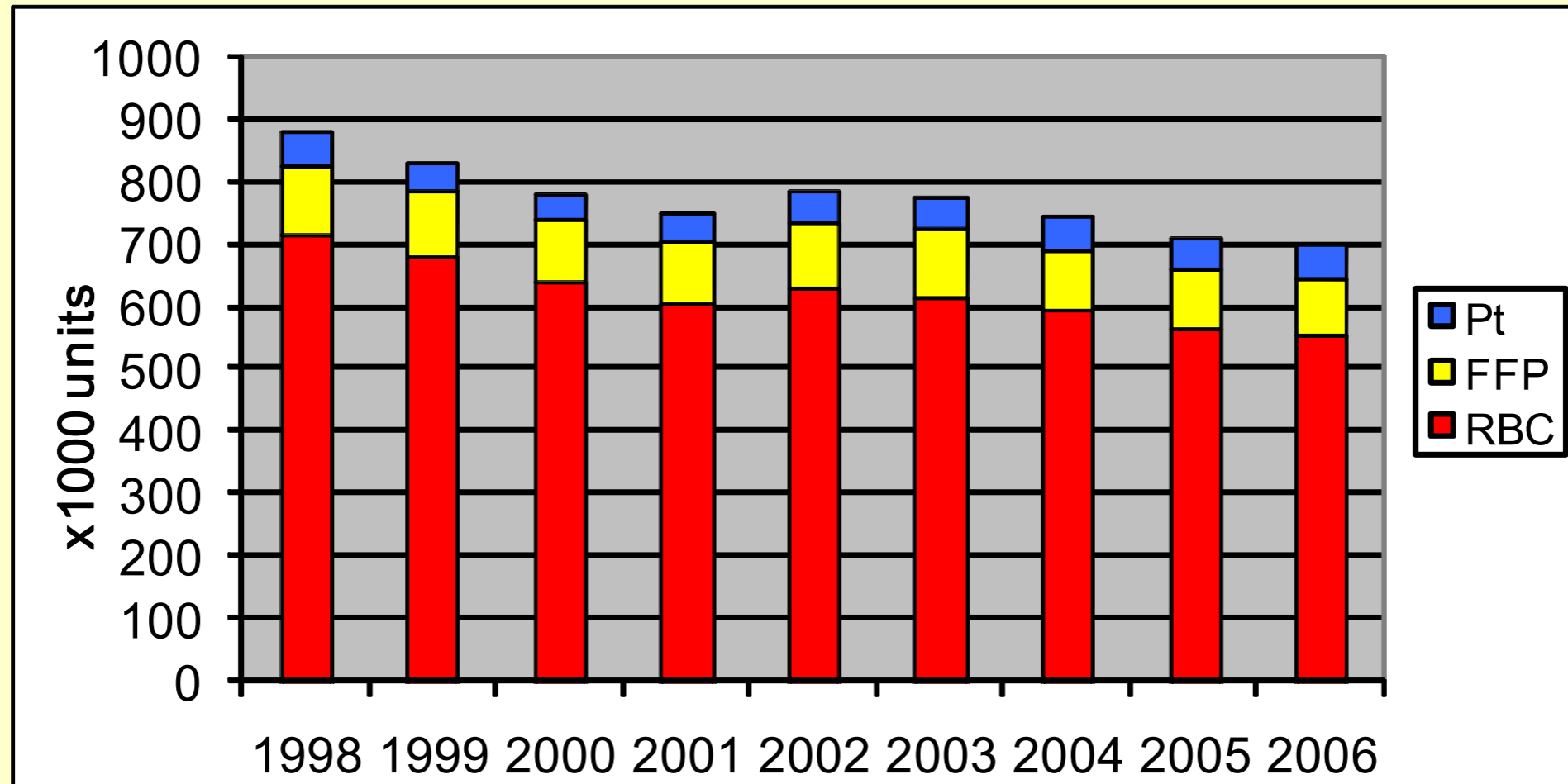
- Voluntary unpaid donors
- Testing for infectious diseases (including minipool NAT for HCV and HIV); malaria antibody test (ex-patients); CMV and Parvo B19-safe available on request
- Universal leukodepletion since autumn 2001 (and exclusion of UK donors)



Hemovigilance in the Netherlands

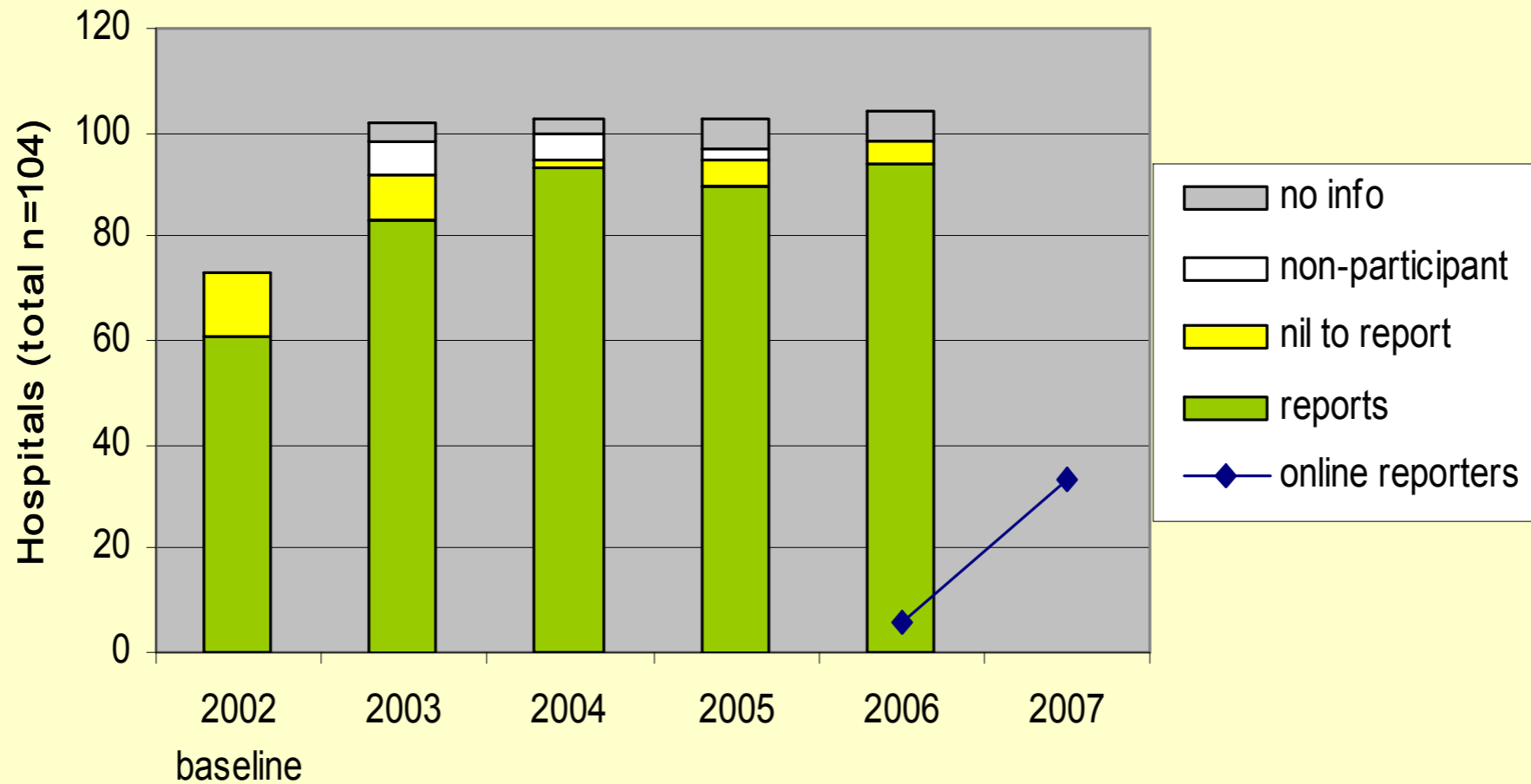
- Exclusion of donors with a transfusion history since February 2005.
- Male-only quarantine plasma for transfusion produced since autumn 2005

Dutch blood use



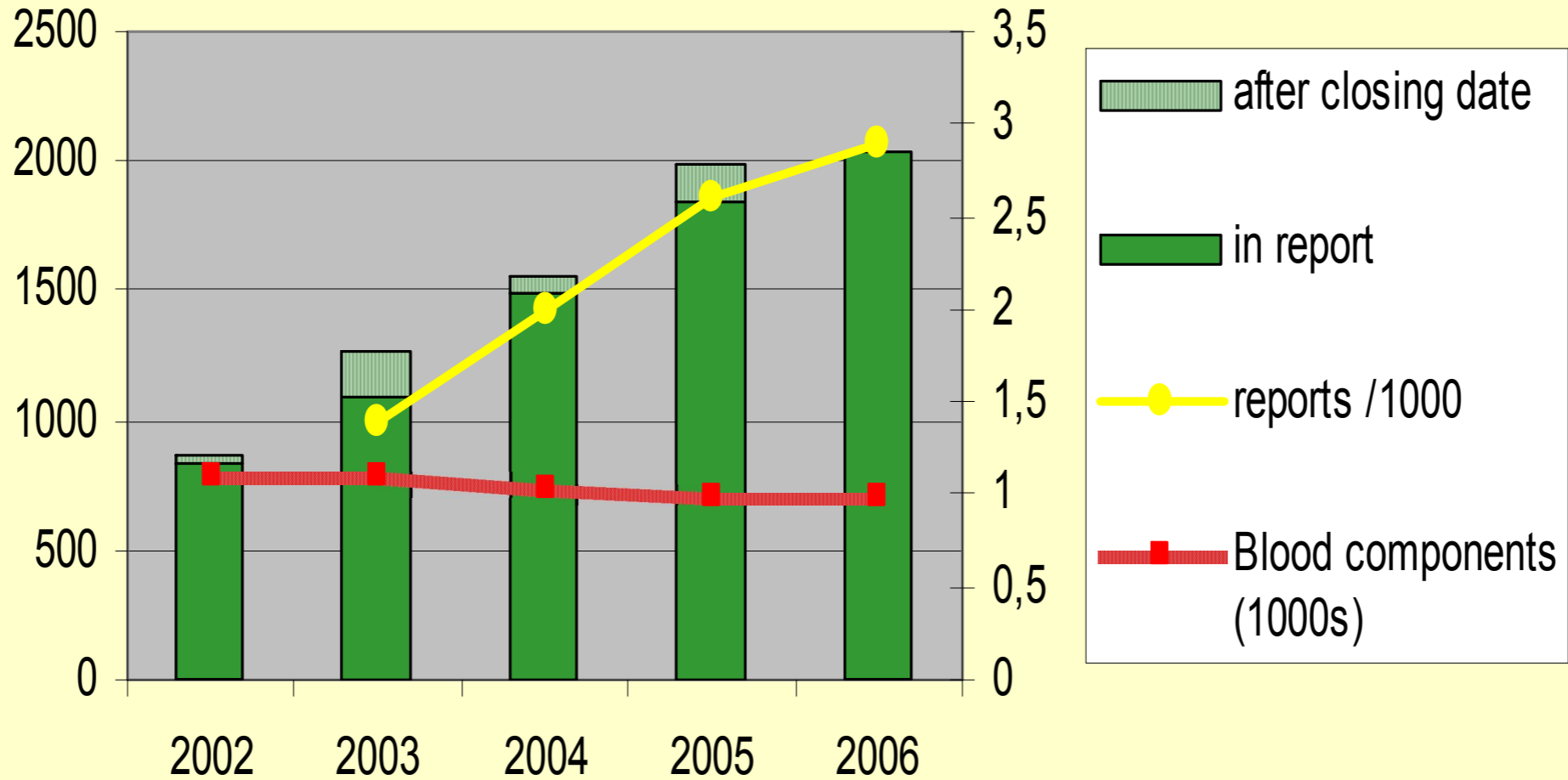


Dutch Hemovigilance reporting by hospitals



TRIP: independent foundation, voluntary reporting, professional standard (all severity levels)

Reports per year






International comparison

Country	Status	Captures	Reports / 1000 units
France (2005)	Mandatory	all	2.8 (0.08)
UK (2005)	Voluntary	serious	0.20 (0.16)
Ireland (2005)	Voluntary	serious	1.22 (0.72)
TRIP (2006)	Voluntary	all	2.9 (0.09)

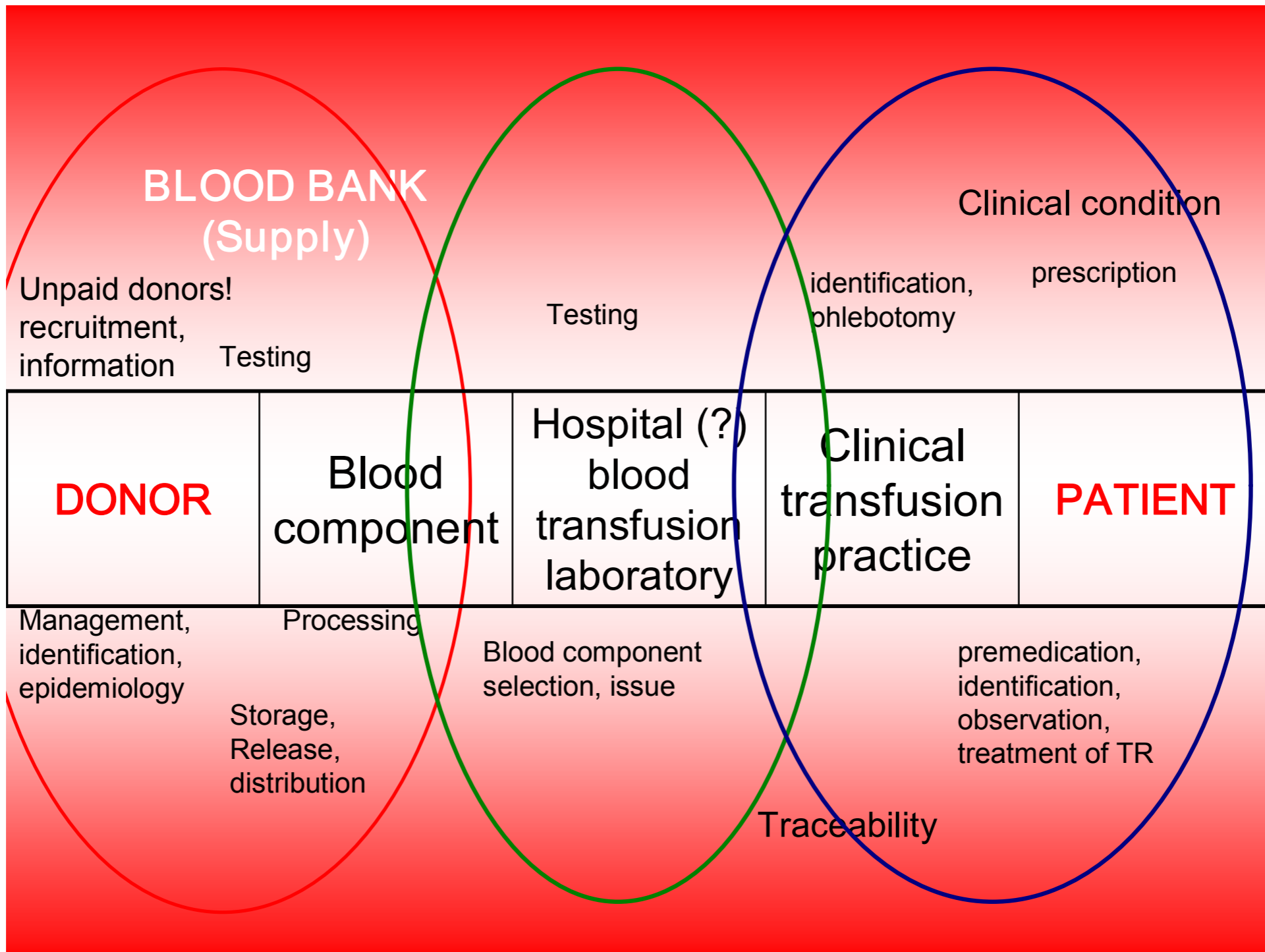
Reaction	2003	2004	2005	2006
NHTR	318	344	435	463
AHTR	8	14	9	17
DHTR	19	14	12	14
TRALI	6	9	17	23
Circulatory overload	7	6	27	34
Anaphylaxis	8	21	26	18
Other allergic reaction	132	171	219	208
Hemosiderosis	0	0	3	5
Bacterial contamination	9	5	10	7
Viral infection	5	7	8	7
T 1-2°C	326	341	375	322
New allo-antibody	244	428	571	603
Other TR	54	64	67	55
Incident				
IBCT	34	37	60	64
Other incident	5	14	53	87
Near miss	31	62	79	76
Pos. bacteria screening	60	10*	13*	27*
TOTAL	1267	1548	1884	2030

Transfusion Reaction (TR)	2006	Serious (possible, likely or certain)	Preventable
NHTR	463	16	
AHTR	17	5	
DHTR	14	8	
TRALI	23	16	
Circulatory overload	34	22	
Anaphylaxis	18	12	
Other allergic reaction	208	9	
Hemosiderosis	5	3	
Bacterial contamination	7	3	
Viral infection	7	2	
T 1-2°C (elective category)	322	0	
New allo-antibody	603	0	
Other TR	55	2	
Incidents			
IBCT	64	2	
Other incident	87	1	
Near miss (elective)	76	0	
Pos. bacteria screening	27*	0	
TOTAL	2030	98	



Definition: Serious Transfusion Reaction

- Results in death
- Is life-threatening
- Requires inpatient hospitalization or prolongation of existing hospitalization
- Results in persistent or significant disability/incapacity





Donor selection

- Donor information
- Donor selection: “male only” FFP



Prevalence and incidence of transfusion associated infections, the Netherlands 1995-2003

	Prev/100 000 new donors	Inc/100 000 repeat donors
HBV	38-86	0.2-2.7
HCV	8-38	0-0.7
HIV-1/2	0-6.4	0-1.7
HTLV-1/2	3.4-5.9	0-0.2
Syphilis	16-34	0.4-3.7



Transfusion-transmissible infections that would have been prevented if unreported risks had been reported during donor screening, 1995-2003

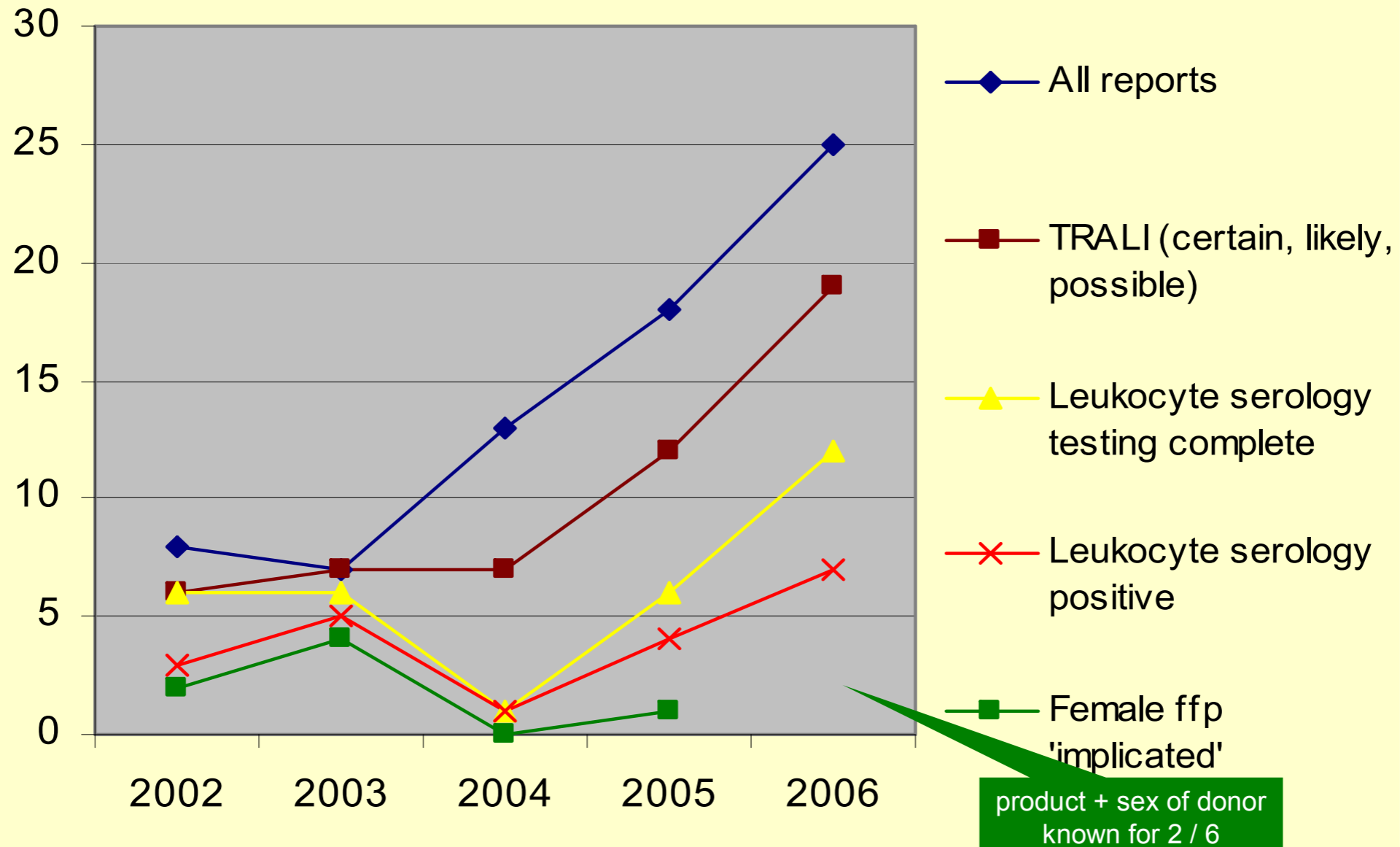
New donors

Repeat donors

Transfusion-transmissible Infections	All infections	Prevented infections	All infections	Prevented infections
Total number of infections	410	95 (23)	168	43 (26)
HBV	222	38 (17)	57	13 (23)
HCV	105	25 (24)	18	5 (28)
HIV-1 and/or -2	7	3 (43)	26	10 (38)
HTLV-1 and/or -II	14	3 (21)	7	1 (14)
Positive syphilis serology	62	27 (44)	60	14 (23)



TRALI reports 2002-6



TRALI

SERIOUS HAZARDS OF TRANSFUSION

SHOT



Bacterial contamination

- Canada: decrease of reports on introduction of improved skin prep and diversion pouch
- NL: 50% reduction in positive bacteria screening of platelets
- Desinfection ineffective against donor bacteraemia



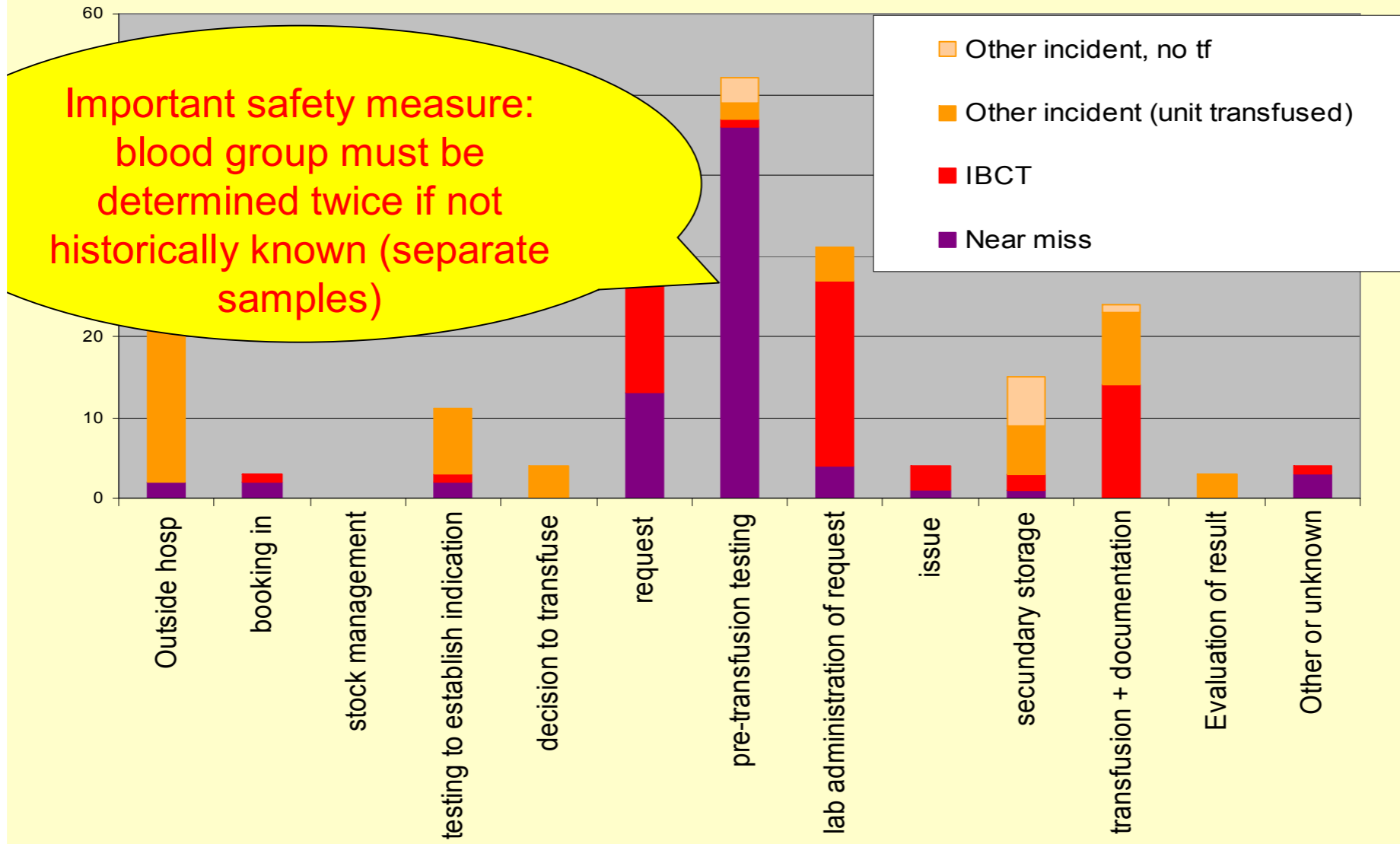
Hospital transfusion chain

- Compatibility testing
- Identification

ERROR PREVENTION

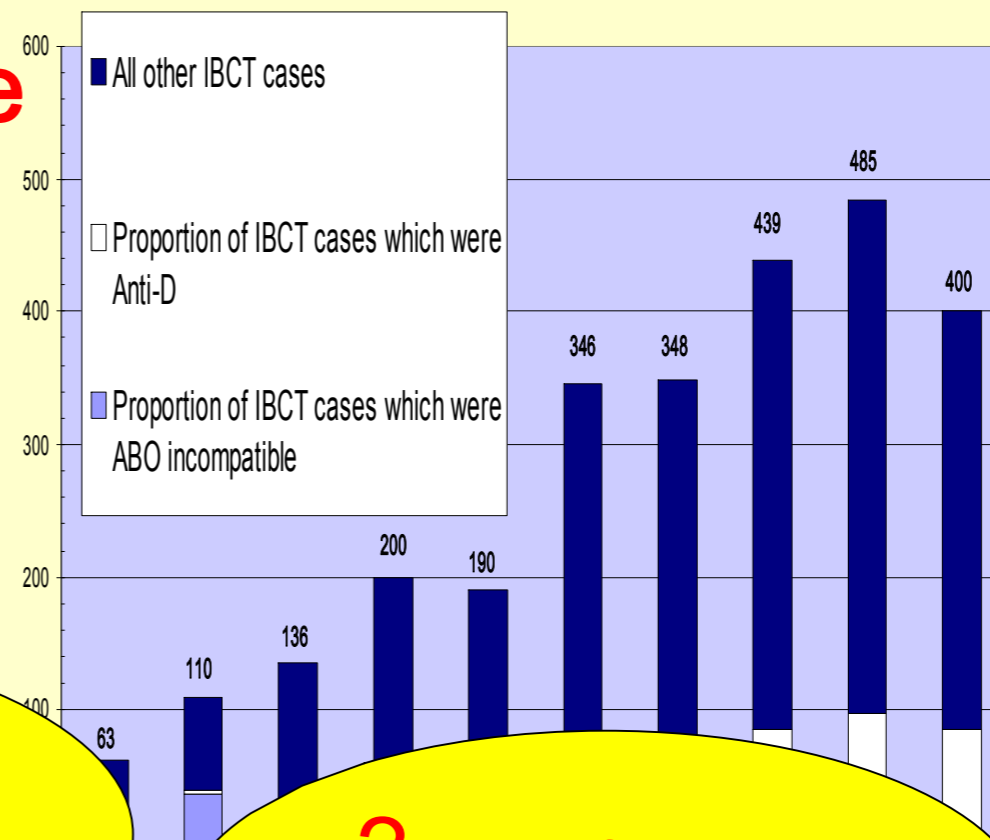


Incidents in 2006: site of first error



2006 KEY FINDING – 2

ABO incompatible transfusions are again lower: 8 cases in 2006



- Training
- Optimising protocols + procedures
- IT systems

? Role of bedside ABO testing

Transfusion Reaction (TR)	2006	Serious (possible, likely or certain)	Preventable ?
TRALI	23	16	6
Bacterial contamination	7	3	3
Viral infection	7	2	2
NHTR	463	16	0
T 1-2°C (optional category)	322	0	0
Anaphylaxis	18	12	0
Other allergic reaction	208	9	0
AHTR	17	5	5
DHTR	14	8	8
New allo-antibody	603	0	0
Circulatory overload	34	22	
Hemosiderosis	5	3	
Other TR	55	2	
Incidents			
IBCT	64	2	
Other incident	87	1	
Near accident (optional)	76	0	
Pos. bacterial screening	27*	0	
TOTAL	2030	98	

More research needed!
 Donor epidemiology
 Role of premedication?
 (secondary prevention)



Clinical transfusion practice

- Circulatory overload
- Hemosiderosis



Transfusion-Associated Circulatory Overload

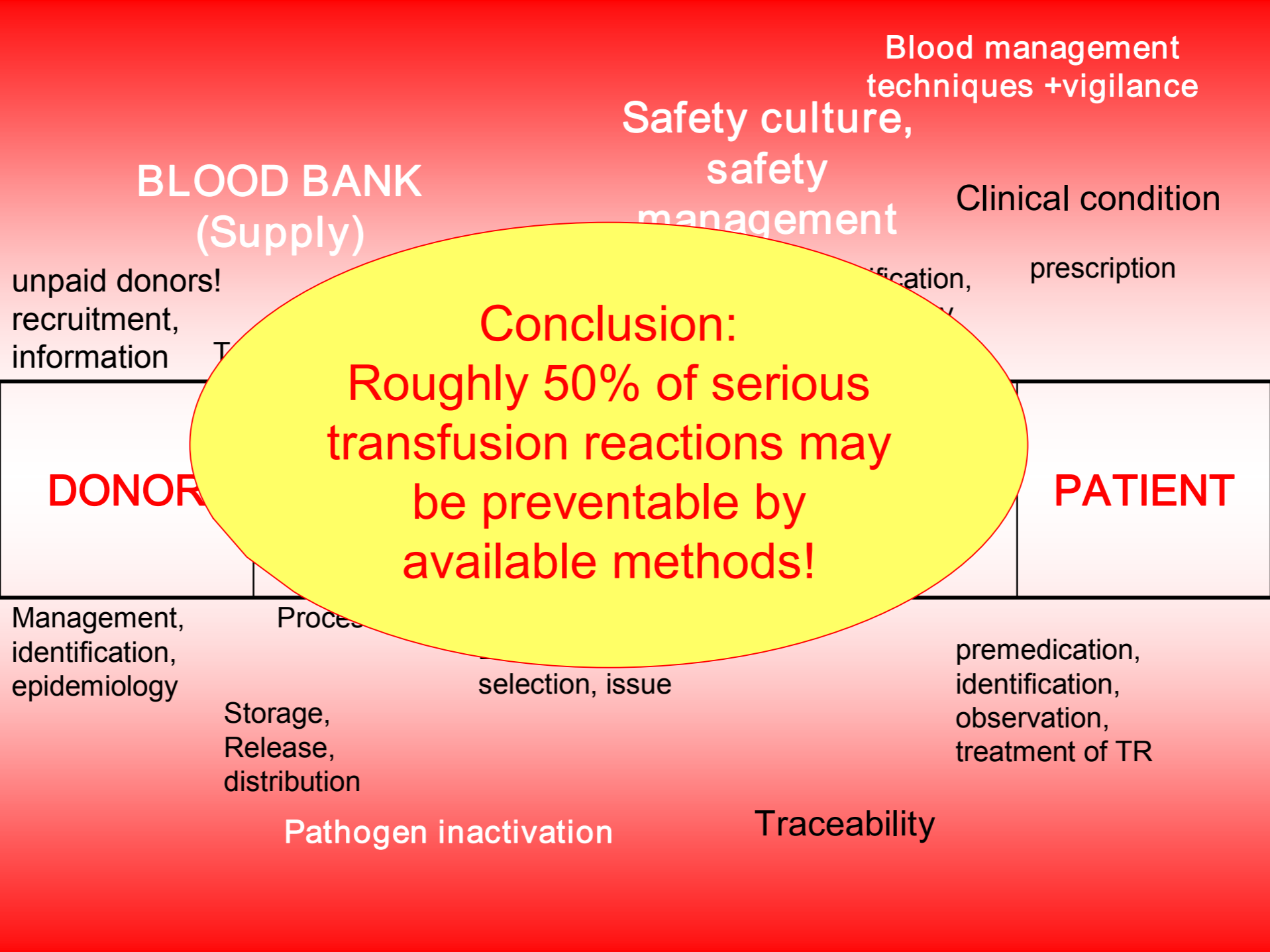
- Increase of reports (Quebec: 1 in 4075 units transfused, 2004), important cause of mortality
- Netherlands: increase in reports
- Prevention:
 - conservative transfusion policy
 - attention to fluid balance in vulnerable patients (minimum volume, diuretics)



Hemosiderosis

- Poorly reported: 5 cases reported in 2006
- Effective prevention now possible with oral medication (ferritin > 1000)

Transfusion Reaction (TR)	2006	Serious (possible, likely or certain)	Preventable ?
TRALI	23	16	6
Bacterial contamination	7	3	3
Viral infection	7	2	2
NHTR	463	16	0
T 1-2°C (optional category)	322	0	0
Anaphylaxis	18	12	0
Other allergic reaction	208	9	0
AHTR	17	5	5
DHTR	14	8	8
New allo-antibody	603	0	0
Circulatory overload	34	22	22
Hemosiderosis	5	3	3
Other TR	55	2	?
IBCT	64	2	2
Other incident	87	1	1
Near accident (optional)	76	0	0
Pos. bacterial screening	27*	0	0
TOTAL	2030	98	52





**Learning from
each other!**