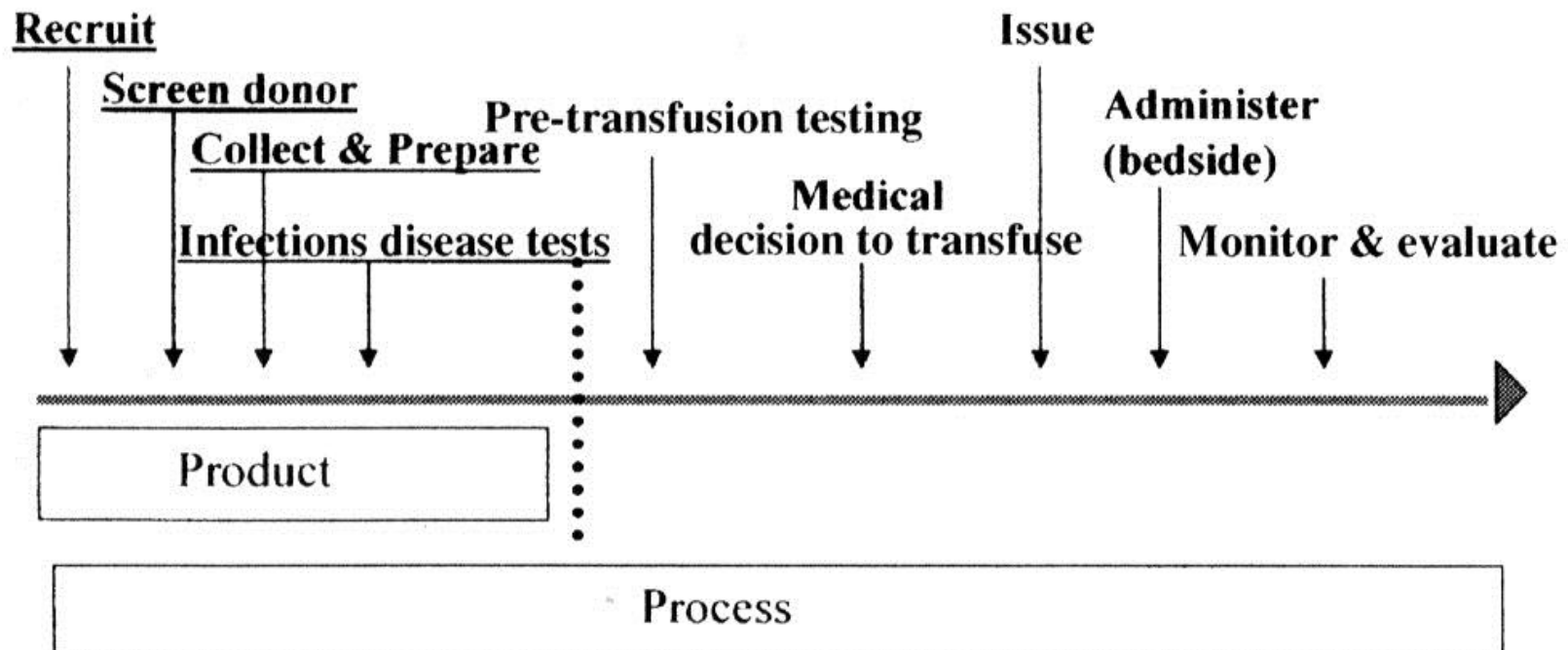




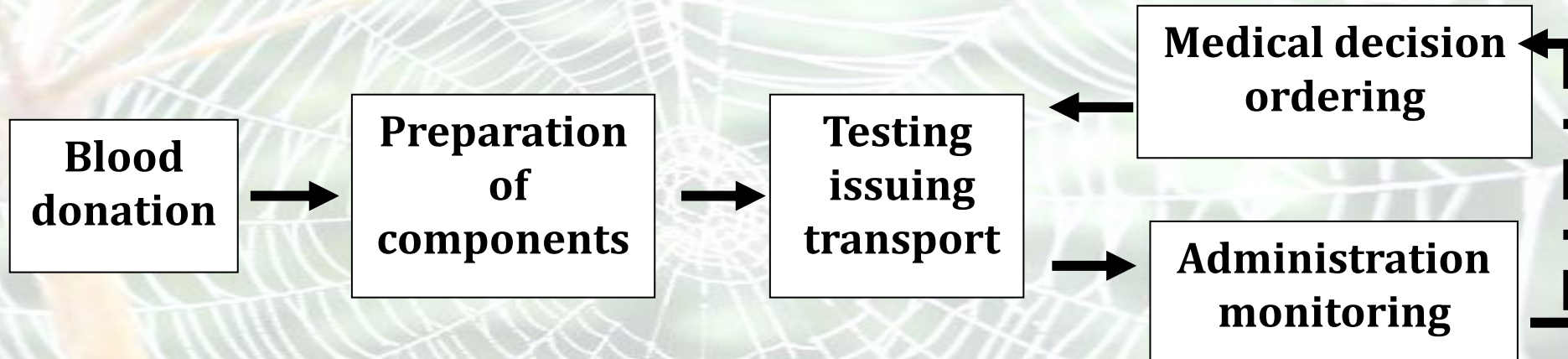


# Transfusion safety is more than blood safety





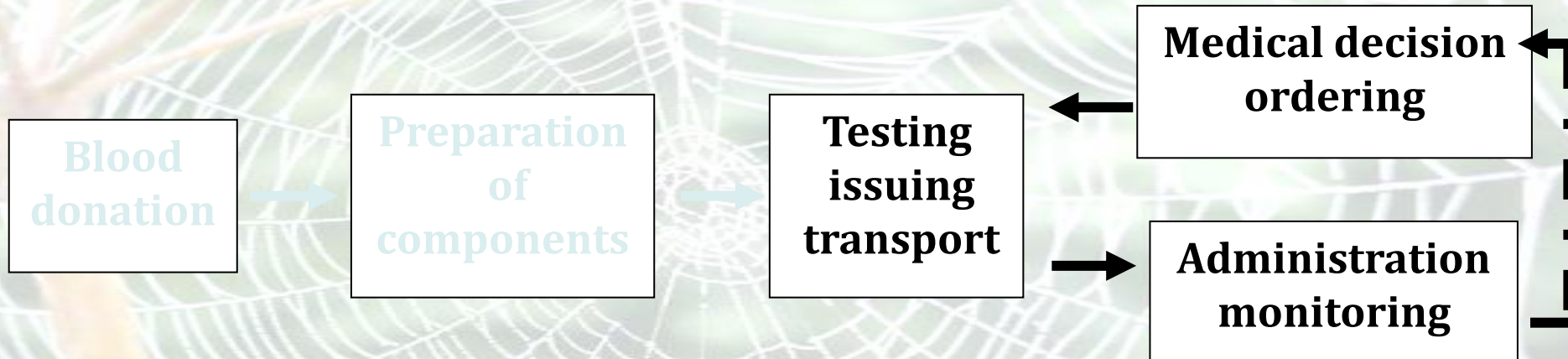
# The Blood Transfusion Chain



# Transfusion safety



## in the Hospital

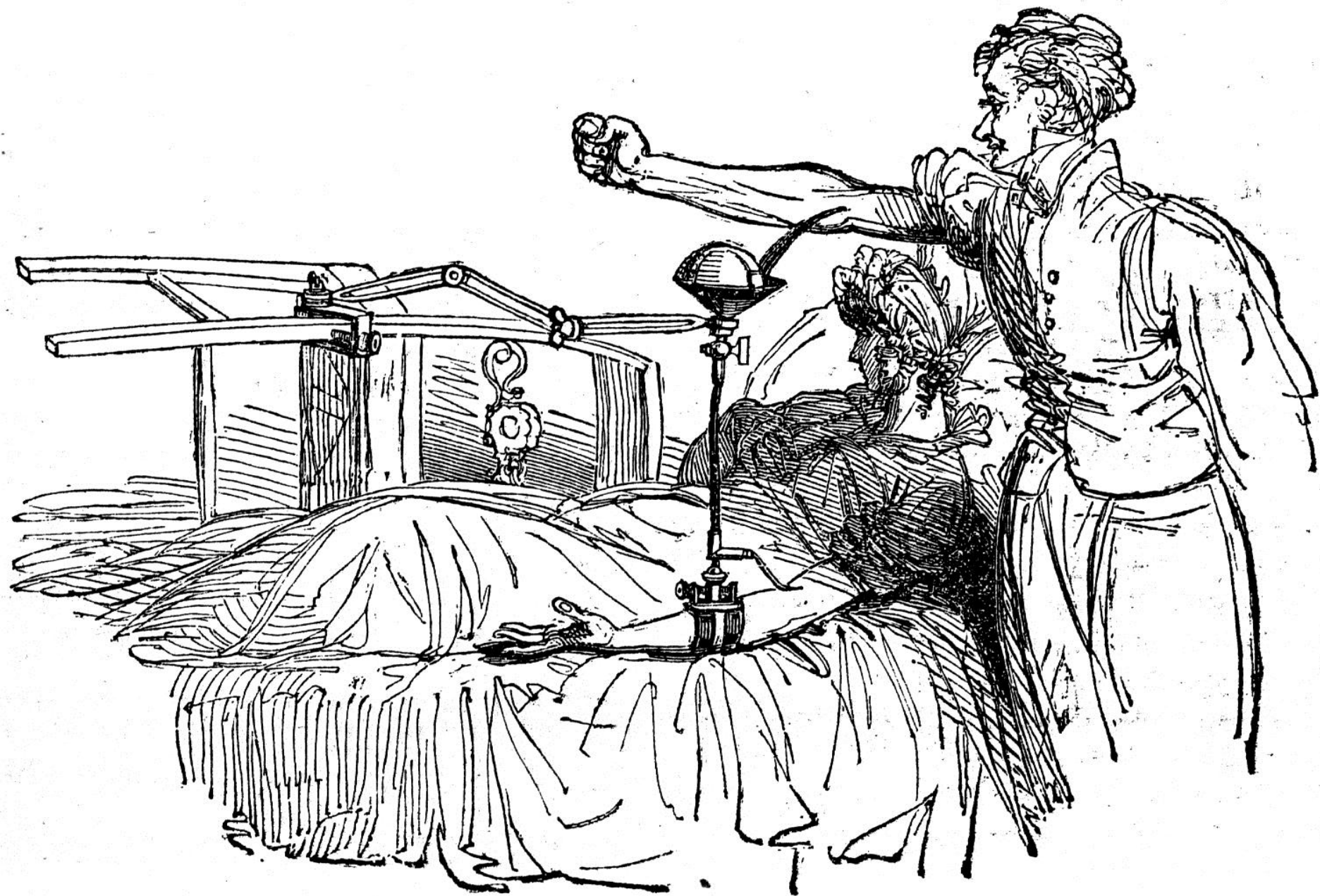


# Transfusion safety: early history



- **17<sup>th</sup> century: animal blood for ...**
- **18<sup>th</sup> century: forbidden by law ( too dangerous)**
- **19<sup>th</sup> century: human blood as live saving therapy**
- **20<sup>th</sup> century: less stringent indications, relatively safe ?**
- **1991: l'affaire du sang → HV**









# 19th century “ Haemovigilance”



## Transfusion of animal blood:

transfusion reaction	52/115 ( 47%)
recovery/improvement	42/104 ( 40%)
death	29/112 ( 26%)

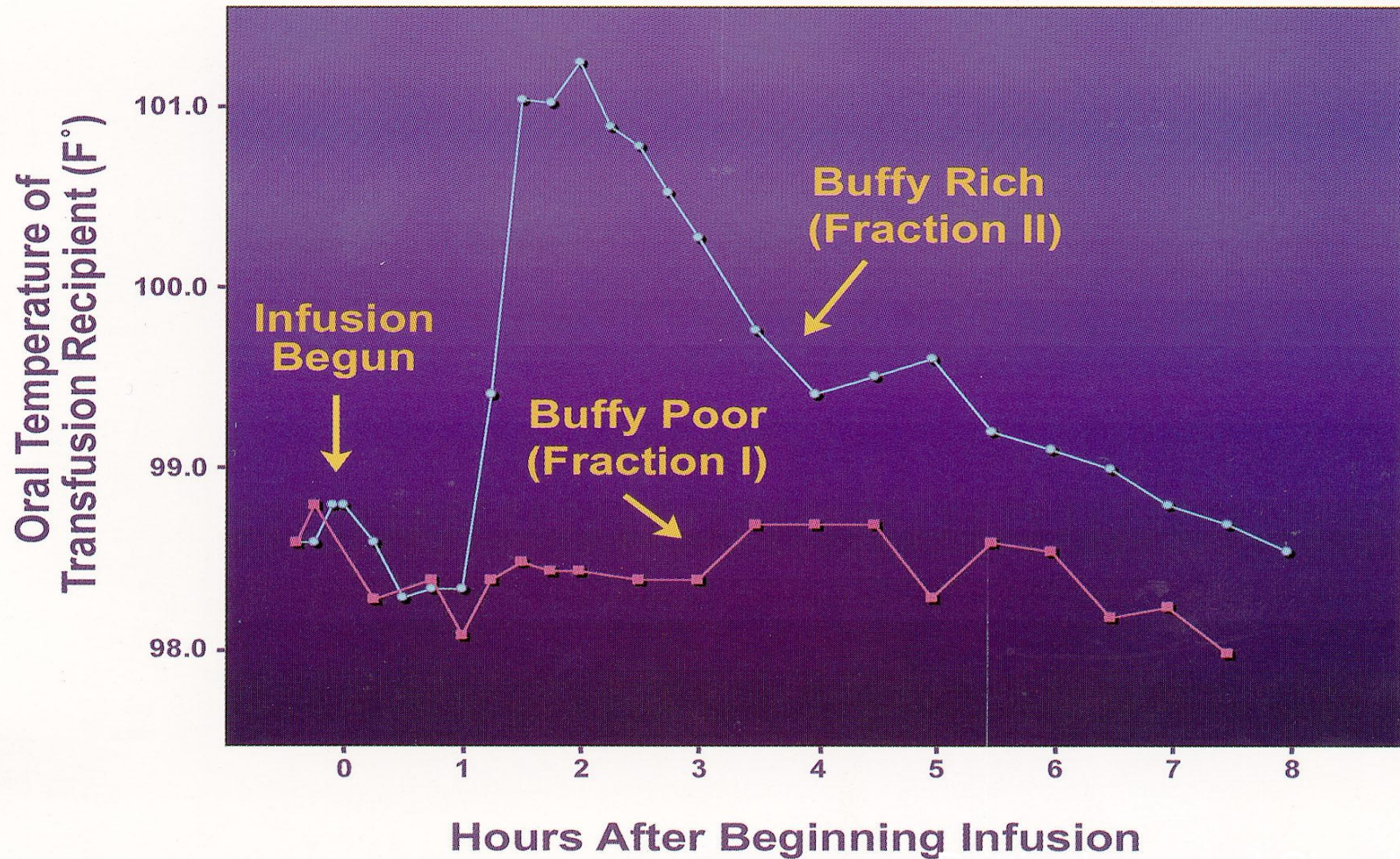
## Transfusion of human blood:

favourable	150/535 ( 45%)
death	150/535 (45%)

*Landois, 1875*



# Leukodepletion and NHFTR



Billingham and Chaplin 1957

IHS Montreal 270412



# Transfusion safety in the pre-HV era



- **< 20th century: blood transfusion dangerous and often with no good indication**
- **> 1950: established therapy, relatively safe?**



# Transfusion safety



## in the Hospital

- 1. Documentation**
- 2. Actions**
- 3. Results**
- 4. Challenges**

# 1. Documentation



- of low risk
- of weak links in the chain
- of non-preventable risks
- of inappropriate transfusions

# Risk of an individual dying (D) in any one year or developing an adverse response (A)



High	> 1:100	(A) Transmission of HIV from mother to child	1:6
Moderate	≥ 1:1000	(D) Smoking 10 cigarettes a day	1:200
Low	≥ 1:10 000	(D) Accident on road	1:8000
Very low	≥ 1:100 000	(D) Playing soccer	1:25 000
		(D) Accident at work	1:43 000
		(D) Homicide	1:100 000
Minimal	≥ 1:1.000 000	(D) Accident on railway	1:500 000
		(A) Vaccination-associated polio	1:1000 000
Negligible	< 1:1.000 000	(D) Hit by lightning	1:10 000 000

*from Calman '96*



# Safety of blood components in Europe ( 2009 data)



**Total SAR** **3471 ( 1/8.282)**  
(Serious Adverse Reactions)

**Attributable to quality  
and safety  
of blood components** **150 (1/200.000) = 4%**

From Ilona Siska, European Commission  
Directorate general for Health and Consumers

# How safe is blood transfusion?



**In most developed countries:**

- **Probably safer than driving in a car**
- ***Main avoidable risks are in the hospital transfusion process***
- **Some risks are not avoidable with our present knowledge**

# 2. Actions



- **Quality management**
- **Better governance**
- **Education, training**
- **Electronic identification**



# 3. Results



- **Less IBCT and AHTR**
- **[Less deaths, NHFTR, TRALI and no more TA-GvHD]**
- ***Better clinical use***

# 4. Challenges





# Challenges 1



- ***HV in developing countries***
- **Prevention of more preventable risks**
- **Non-preventable risks**
- **Unknown and new risks**



# Challenges 2



- **Integration with other QMSs**
- **> blood components**
- **> safety**

# How safe are transfusion alternatives?

- ???
- **Less safe than blood transfusion?**
- **TA vigilance urgently needed!**



# Biovigilance



- **tissues and cells**
- **organs**

# Questions

- ***Bloodtransfusion:***  
***worth the risk?***
- ***Risk of undertransfusion?***
- ***Safer products:***  
***worth the money?***



# To transfuse or not ?

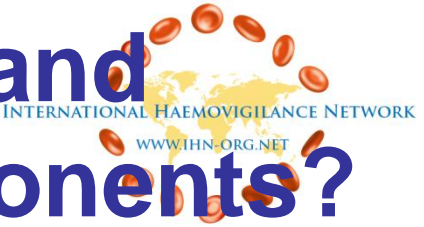


## Causes of peri-operative death per year ( France):

. Blood transfusion	2
. No blood transfusion or too late	100

From Daurat 2005

# How can we improve safe and appropriate use of blood components?

The logo for the International Haemovigilance Network (IHN) is located in the top right corner. It features a stylized globe with orange dots representing blood components. Below the globe, the text "INTERNATIONAL HAEMOVIGILANCE NETWORK" and the website "WWW.IHN-ORG.NET" are visible.

- **Autorisation by experts**
- **Monitoring of requests and feed-back**
- **Projects**
- **Audits**

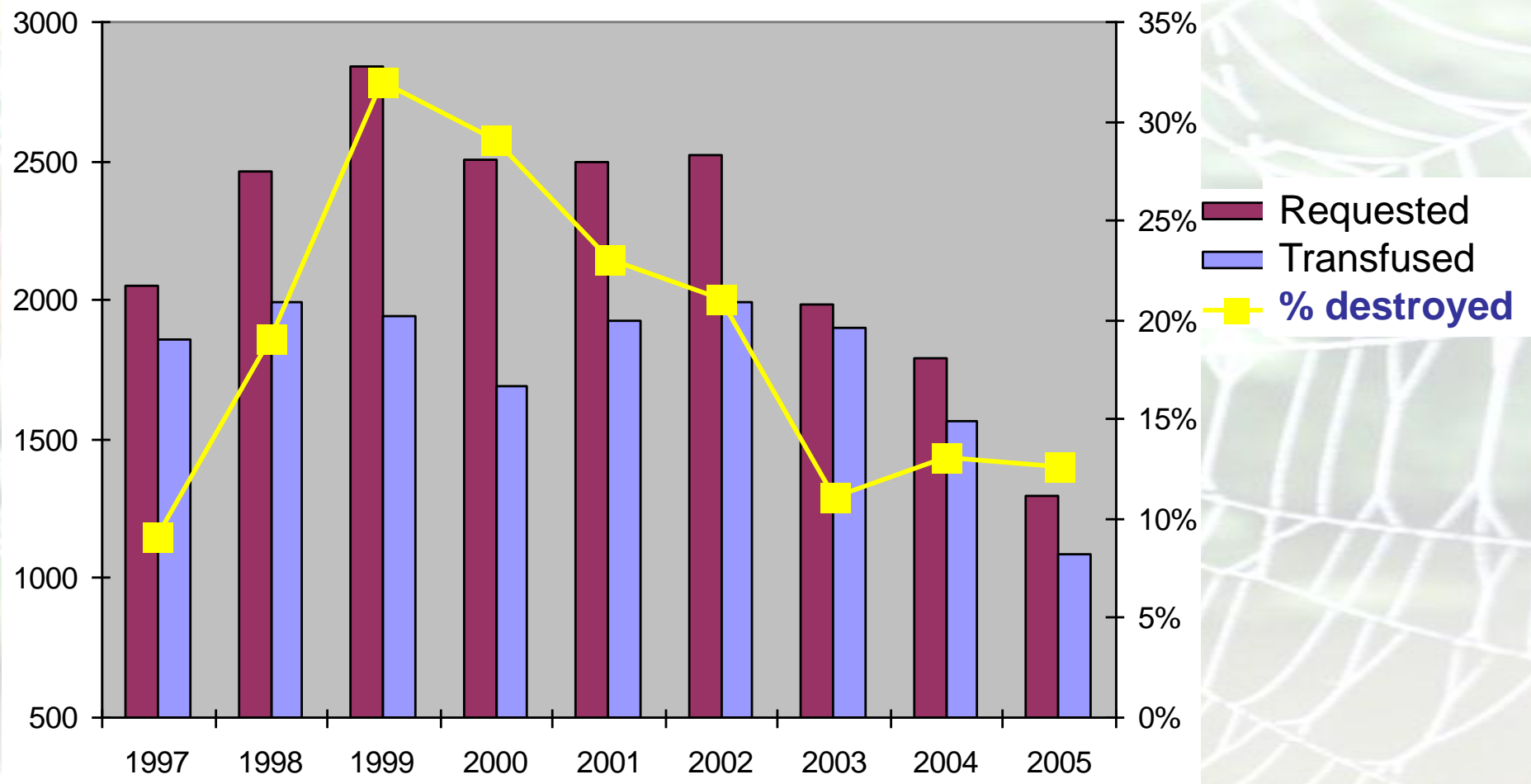


# How can we improve safe and appropriate use of blood components?

The logo for the International Haemovigilance Network (IHN) is located in the top right corner. It features a stylized globe with red blood cells (represented as red discs) orbiting it. Below the globe, the text "INTERNATIONAL HAEMOVIGILANCE NETWORK" and the website "WWW.IHN-ORG.NET" are visible.

- Authorisation by experts
- Monitoring of requests and feed-back
- Projects
- Audits
- ***Quality Indicators***

# Utilisation of plasma: Dept. of Thorax surgery





# QI: Conclusion 1



**Quality Indicators may be an effective instrument to improve the quality of the blood transfusion chain**

# QI: Conclusion 2



## **Success factors:**

- **Electronic registration**
- **Financial stimulus**
- **Transfusion committee**
- **Haemovigilance officer/TP/HTT**



# The Future?



- **Computerisation of the whole blood transfusion chain in the hospital**
- **Electronic request and computerized clinical decision support**

# But Today people still make the difference






# HEMOVIGILANCE

AN EFFECTIVE TOOL FOR IMPROVING TRANSFUSION SAFETY

EDITED BY RENÉ R.P. DE VRIES AND JEAN-CLAUDE FABER



 WILEY-BLACKWELL























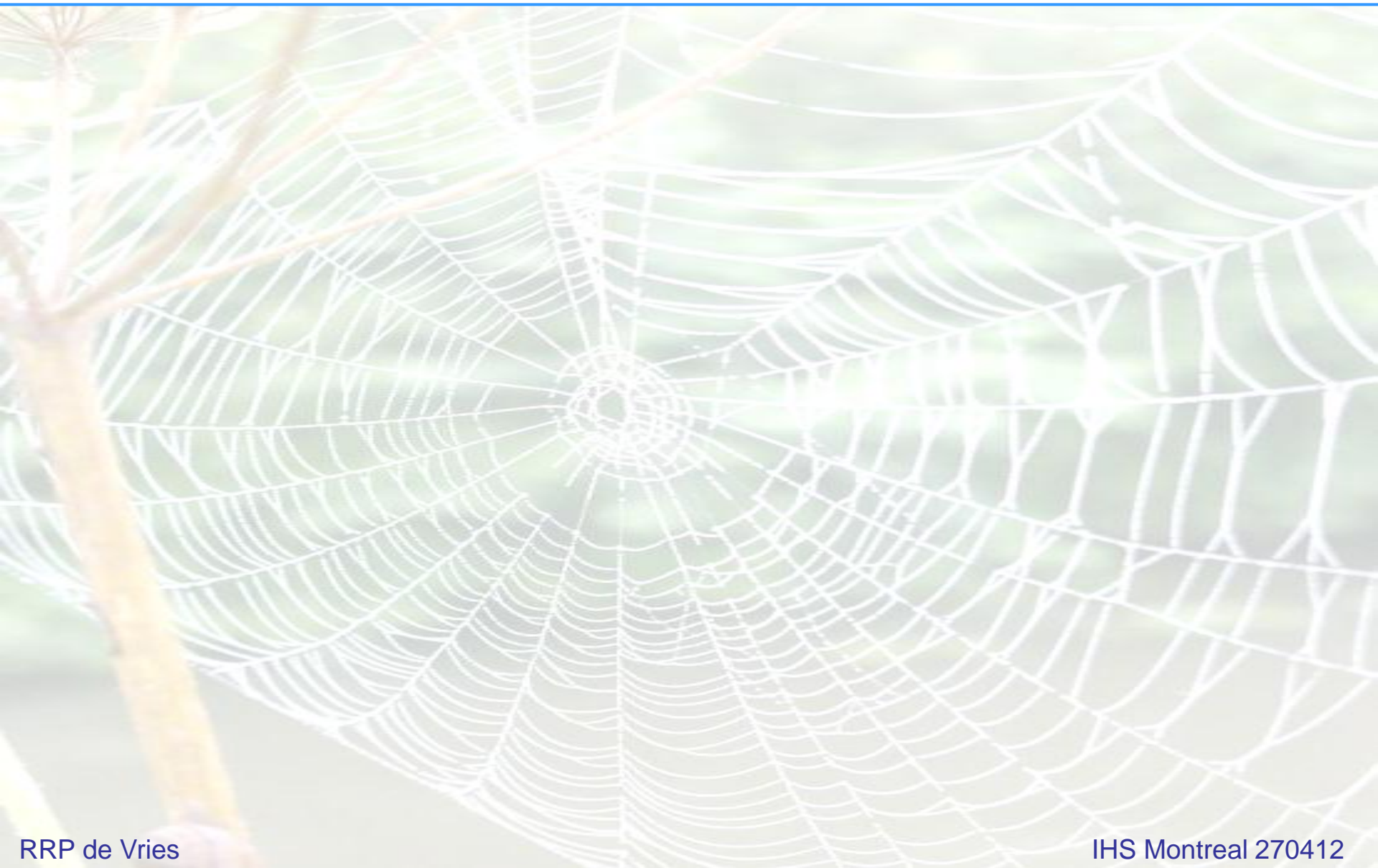




# THE END

Thank you  
for your  
Vigilance



















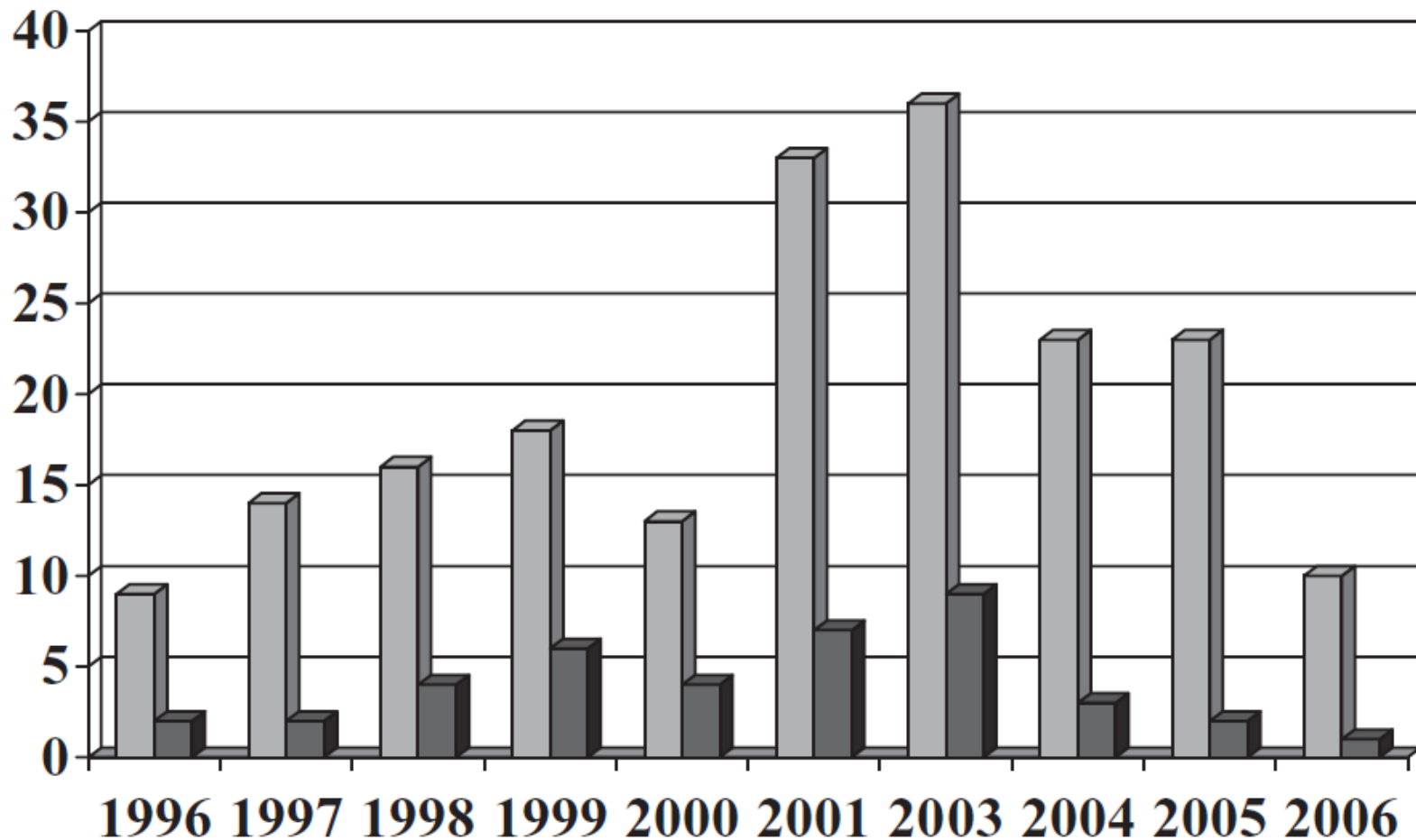
# Results III



**Well functioning  
Haemovigilance systems  
contribute significantly to  
evidence-based blood  
transfusion medicine, in  
particular the introduction of  
measures that improve the  
safety, such as**



# The rise and fall of TRALI documented by SHOT



Chapman et al. Transfusion, 2009; 50: 440-452

IHS Montreal 270412

# IHN





# Undertransfusion is a much bigger risk\*



"Une centaine de patients par an décèdent des conséquences d'une anémie, isolée ou favorisant une ischémie myocardique, au cours ou au décours d'un acte requérant une anesthésie. Ce chiffre est à rapprocher de celui de moins d'un par an contaminé désormais par le VIH ou le VHC en France".

- At least in France

SFAR 2003

IHS Montreal 270412

# ( Quality )Indicator



- **Definition:** measurable element of health care that gives an indication about the quality of care
- **Function:** signaling, monitoring and adjustment
- **Goal:** improvement of quality of care



# Types of indicators 1



**Structure indicator:** *How have I organised it?*

**Process indicator:** *Am I doing it well?*

**Outcome indicator:** *Do I reach the desired result?*

# Types of indicators 2



**Internal indicators:**

**Goal: quality management and improvement**

**External indicators:**

**Goal: external account**

**pm. Benchmarking**



# Structure indicators

- **Transfusion Committee**
- **Haemovigilance officer/HTT**
- **Electronic registration of process indicators**

# Process indicators

- **Waste of blood components**
- **Indication and assessment of the effect of transfusion of**
  - **erythrocytes**
  - **platelets**
  - **plasma**



# Role for TRIP

- **Collect**
- **Analyse**
- **Report (anonymously)**

**Indicators per hospital**

# Safety of alternative vs blood transfusion



**Retransfusion of  
filtered shed blood**  
( Horstmann 2009)

**Blood  
transfusion**  
( TRIP data)

**SAR**

**1:1.000**

**2:10.000**



# Evolving concepts of HV



## 3. more than safety ?

# Questions



***Bloodtransfusion:  
worth the risk?***

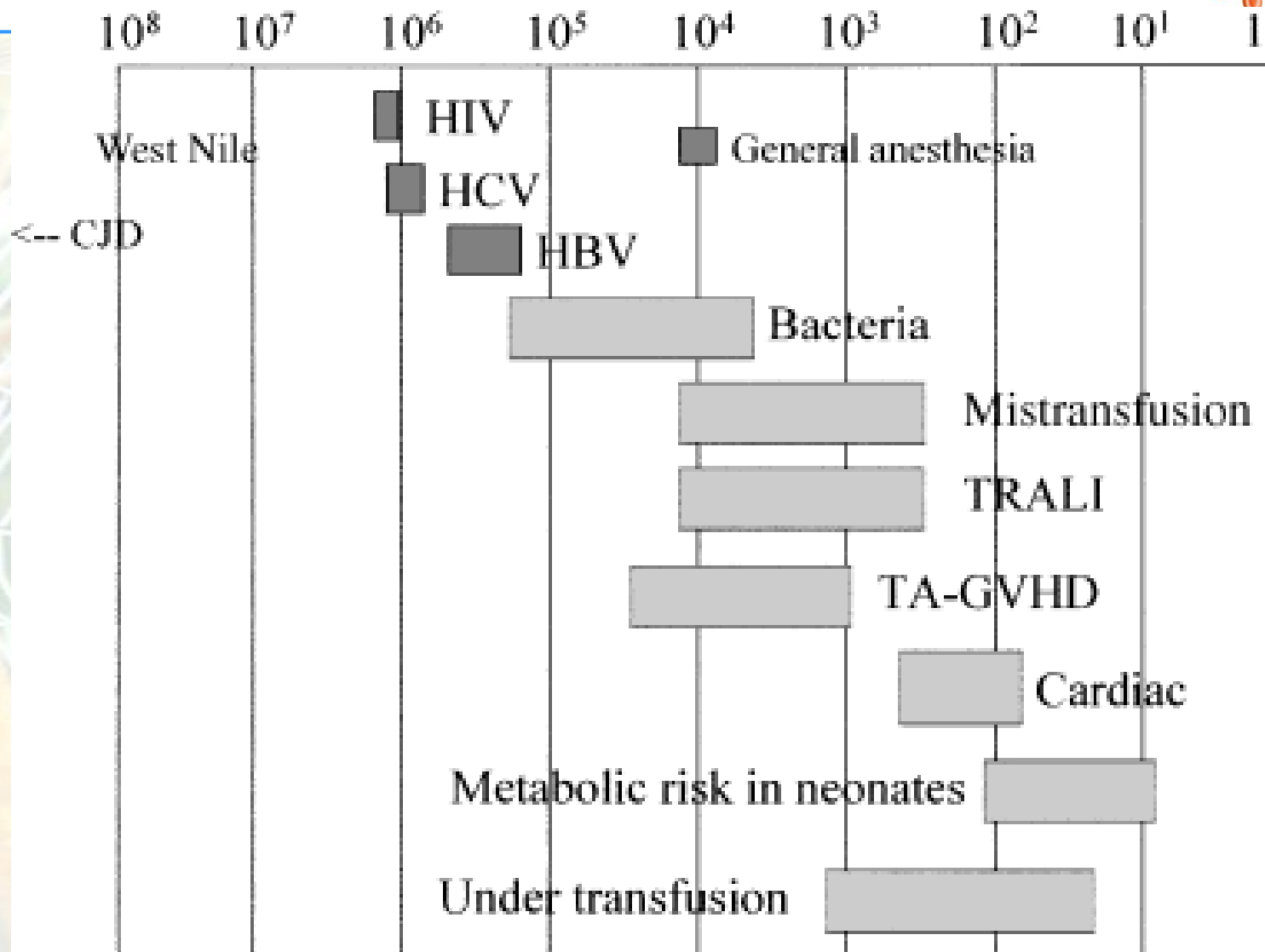
***Safer products:  
worth the money?***



# Evolving concepts of HV



## 4. more than blood components ?





# Dutch Blood components are **very safe**



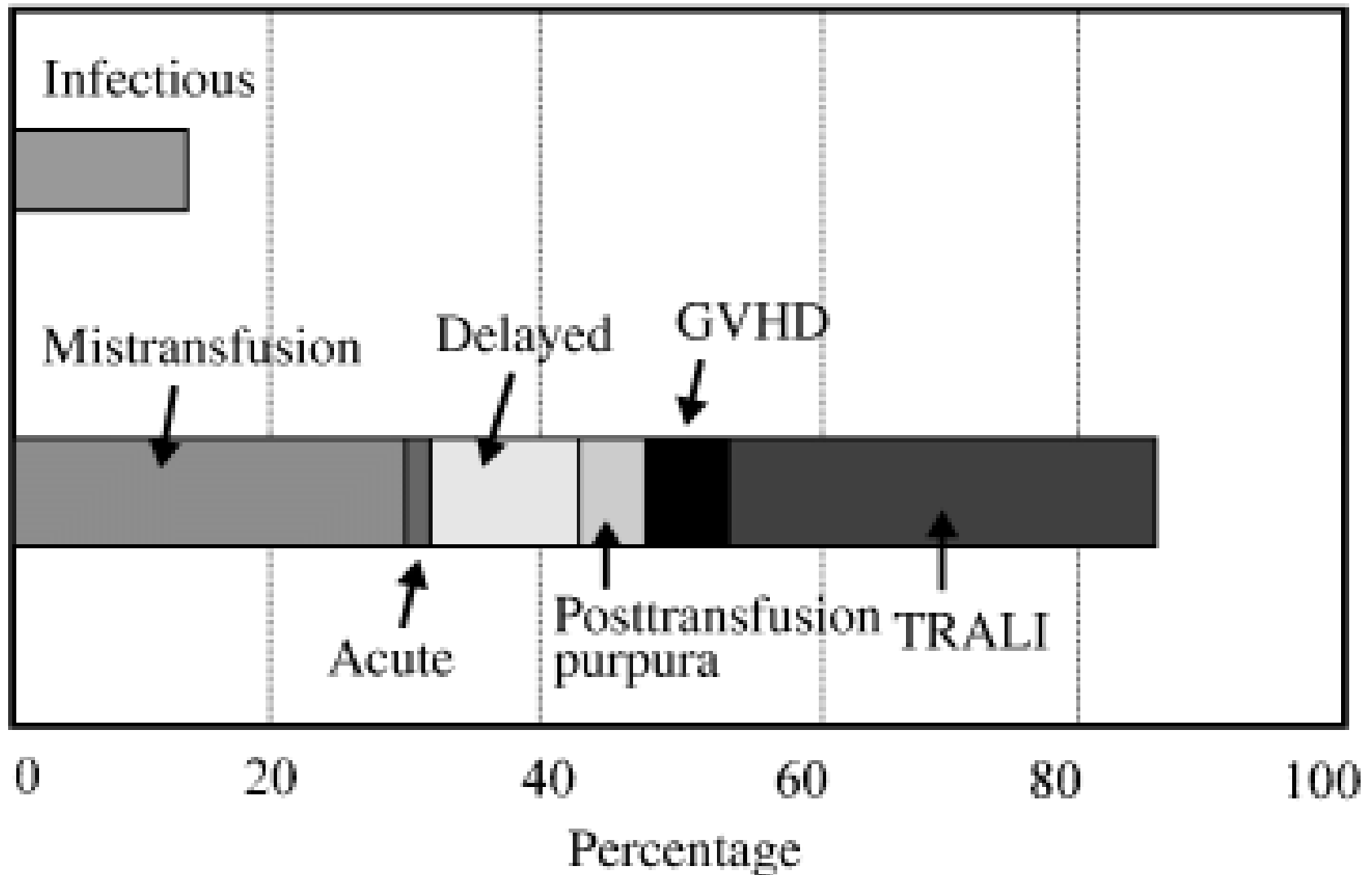
The risk of transfusion-transmitted infection in the Netherlands is nearer to that of being struck by lightening than by being struck by a motor vehicle.

HBV	2 : 1.000.000
HCV	2 : 10.000.000
HIV	1 : 10.000.000

**Haemovigilance systems  
have documented that  
at least in Europe**

- blood transfusion is safe**
- labile blood components are  
extremely safe**






SHOT Data 1996-2001

N = 204 cases

FROM

PRT

WITH LOVE!



# To err is human



**Administrative errors in the hospital  
constitute an important category of  
preventable serious reactions**

# Common language



**The IHN and the *ISBT Working Party for Haemovigilance* have made two important contributions:**

- 1. definitions of adverse reactions and adverse events in patients**
- 2. definitions of complications and adverse events in donors**