Prevención de errores ABO

Jornada de HV

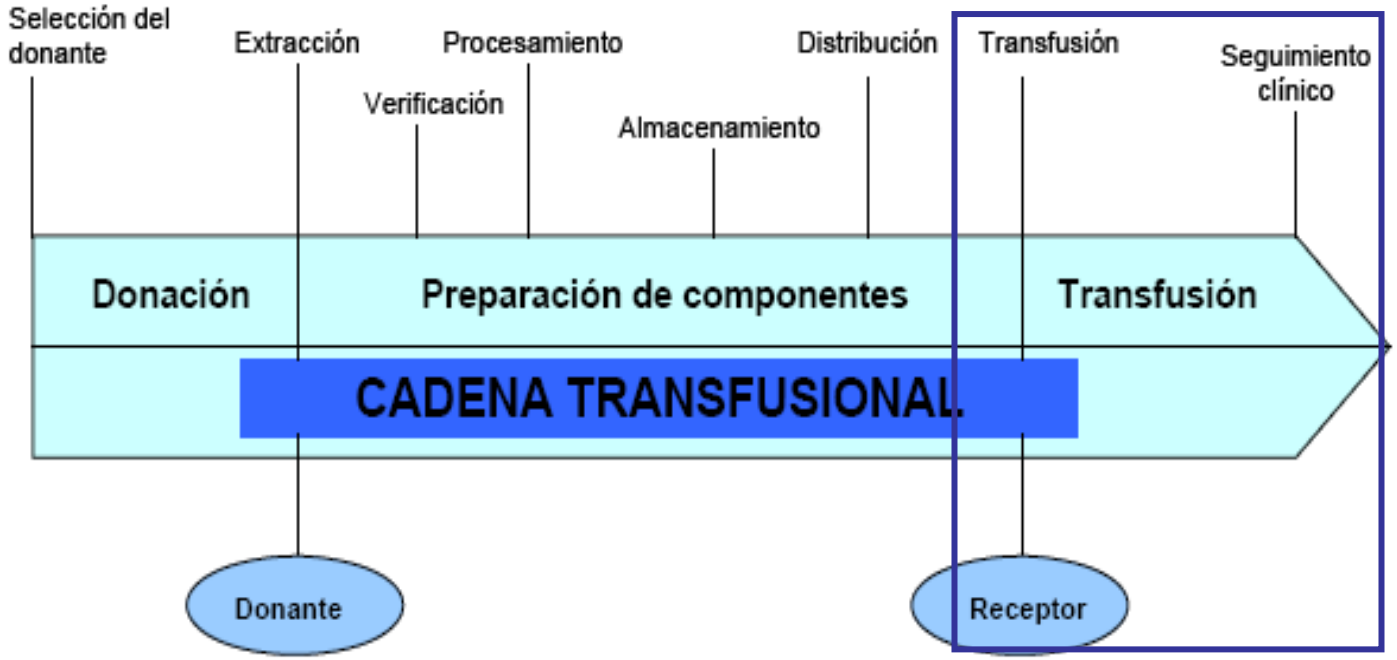
Ministerio de Sanidad

Mayo 2009

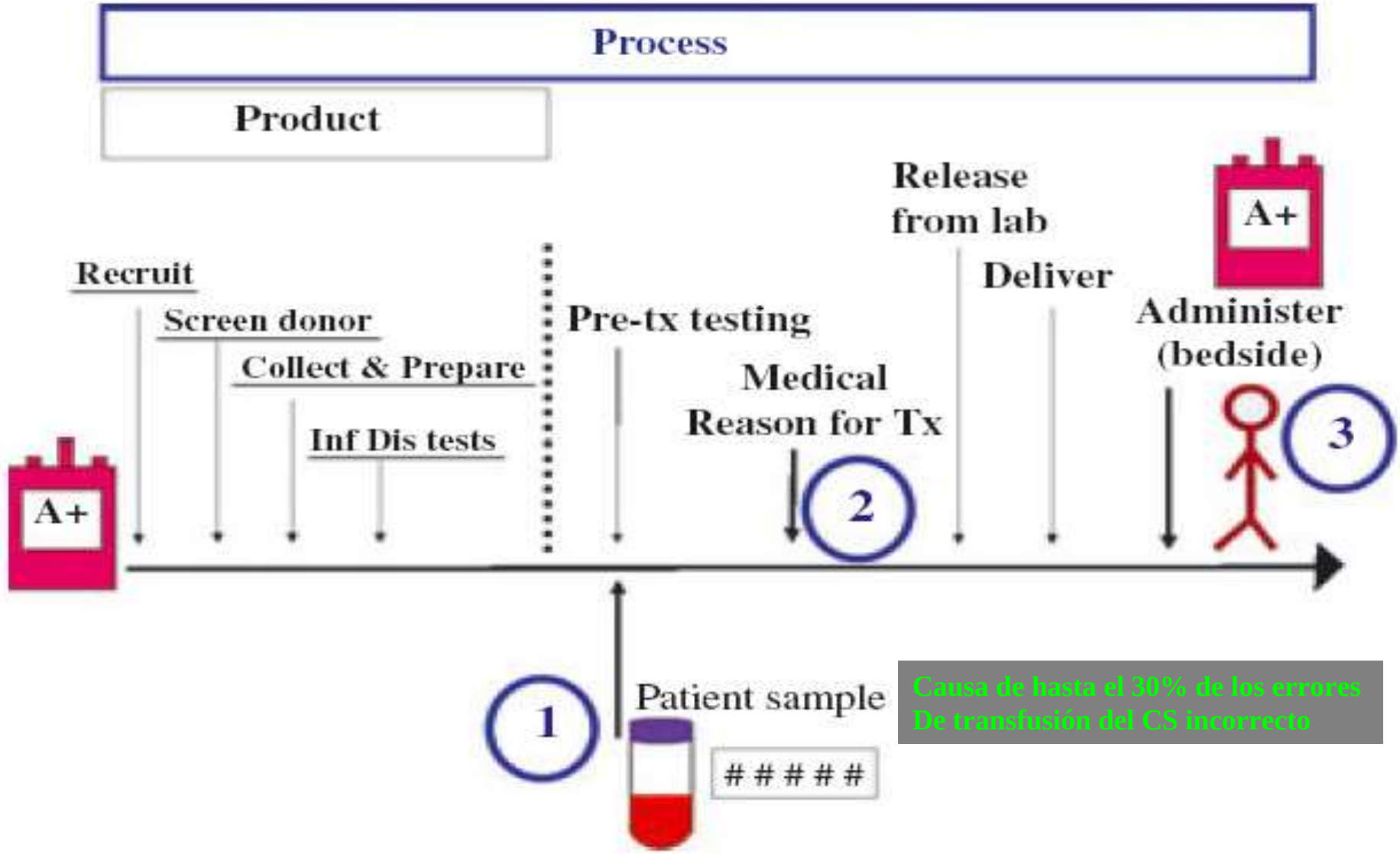
M. Corral Alonso
S. De Transfusión. HUS

Errores ABO

Se asocian a la identificación errónea del enfermo durante el proceso global de la transfusión



Dzik W.H. British J Haematology 2006; 136: 181- 190



¿Qué factores contribuyen a que se produzcan errores?

- El proceso de la transfusión es complejo
- Falta de formación
- Los errores humanos son inevitables

¿Dónde se producen los errores En el proceso de la transfusión?

- **En el enfermo**
  - en la toma de muestra
  - en el momento de la administración
- **En la muestra**
  - en el momento de la flebotomia
  - en el reetiquetado
  - en el trasvase de resultados
- **En el CS**
  - etiquetado erróneo
  - selección errónea

Errores de muestras

Studies…

- International, multi-center trial
  - 1 in every 165 samples or 6.1 per 1000 mislabeled in some way (1.2 – 17/1000)
  - 1 in 1986 samples (0.5 per 1000) had wrong blood in the tube (0.3 – 0.9 per 1000)

Dzik, Murphy, Andreu et al. An international study of the performance of sample collection from patients. Vox Sang (2003)85;40-47

Errores de muestras

Murphy, MF et al. Current performance of patient sample Collection in the UK.
Transfusion Medicine 2004; 14: 113-121

En 27 hospitales (445726 muestras revisadas)
- 3,2% de las muestras fueron rechazadas:
  49,5 % por falta de información

Sangre errónea en el tubo
- media de frecuencia 1/ 1501
- mediana corregida: 1/ 1303

Tubes for pretransfusion testing should be collected by blood bank staff and hand labelled until the implementation of new technology for improved sample labelling. Results of a prospective study

J. R. Gonzalez-Porras, I. F. Graciani, M. Alvarez, J. Pinto, M. P. Conde, M. J. Nieto & M. Corral

Transfusion Service, Department of Hematology, University Hospital of Salamanca, Salamanca, Spain

Vox Sanguinis 2008; 95 (1): 52-56

Table 1 Characteristics of the 6446 blood bank samples

Characteristics	No.
Type of label	
Hand-written	4960
Preprinted	1479
Unlabelled	7
Phlebotomist	
Clinical staff	4196
Blood bank staff	2250
Situation	
Routine	5822
Emergency	624
Hospital	
A	5421
B	1025

A: Hospital Clinico; B: Hospital Virgen Vega.

Vox Sanguinis 2008; 95 (1): 52-56

Table 2 Causes of inappropriately labelled blood bank samples after evaluating 6446 blood bank samples

	No. (%[a])	Frequency of Inappropriately labelled samples (%)	Rate of inappropriately labelled samples (1 in n samples)
Mislabelled			
Date or signature missing	352 (84·3)	5·5	1/18
Name, medical record number or date of birth missing	50 (12)	0·7	1/129
Unlabelled samples	7 (1·7)	0·1	1/920
Misspelled name	2 (0·5)	0·03	1/3223
Mismatched information between sample and requisition	2 (0·5)	0·03	1/3223
Illegible	2 (0·5)	0·03	1/3223
Miscollection			
Wrong blood in tube (WBIT)	2 (0·5)	0·06[b]	1/2243[c]
Total	417 (100)	6·45	1/16

[a]Percentage of the total of inappropriately labelled samples.

The frequency of inappropriately labelled samples was determined as: (the simple ratio of inappropriately labelled samples in each category to total samples) ×100.

The rate of inappropriately labelled samples was expressed as 1 in n, where n is derived from the total of samples divided by the number of errors in each category.

[b]The 'true' frequency of WBIT is the number of observed miscollections divided by the number of repeat samples multiplied by the silent factor (1·4388).

[c]The 'true' rate of WBIT is the observed WBIT (2) multiplied by the silent factor (1·4388). The total sample (6446) is then divided by true WIBT (2·87).

Vox Sanguinis 2008; 95 (1): 52-56

MUESTRAS PRE-TRANSFUSIONALES. 2008

CONTROLADAS

- ✓ **Muestras totales :** *8220*
- ✓ Con etiqueta manuscrita: *6008 (73.1%)*
- ✓ Con etiqueta pre-impresa: 2212 *(26.8%)*

NO CONFORMES (IC-TRA-08)

- Totales ..... 590 *(6.9%)*
- E. manuscrita *8.9%*
- E. preimpresa *91.1%*

! Las etiquetas pre-impresas entrañan mayor riesgo de error al producirse un acto mecánico !

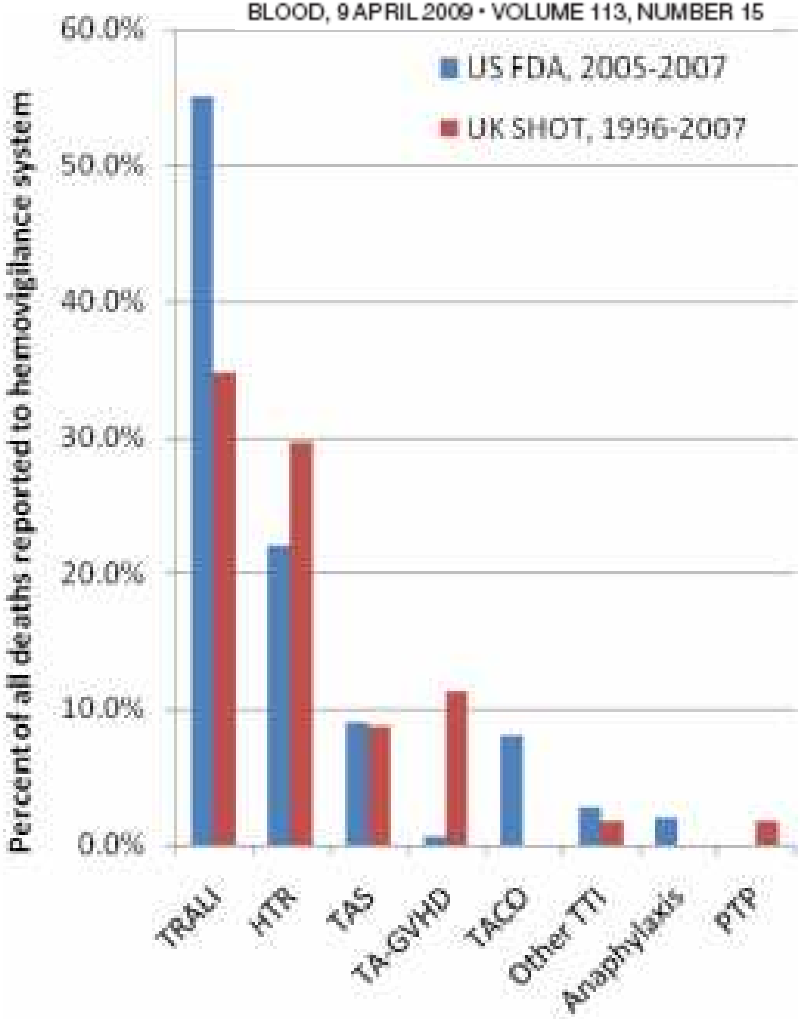


Figure 1. Causes of allogeneic blood transfusion–related deaths as a percentage of all deaths reported to SHOT (1996-2007)[4] or the FDA (2005-2007).[1] The figure shows the causes of death that accounted for at least 1% of all deaths in either of these 2 reports.[1,4] Transfusion-associated circulatory overload (TACO) was not specifically captured, and anaphylaxis not specifically reported, by the United Kingdom SHOT surveillance system in 1996 to 2007.[4] There were no deaths due to posttransfusion purpura (PTP) reported to the US Food and Drug Administration (FDA) from 2005 to 2007.[1] TA-GVHD indicates transfusion-associated graft-versus-host disease.

Blood 2009; vol.113: 16

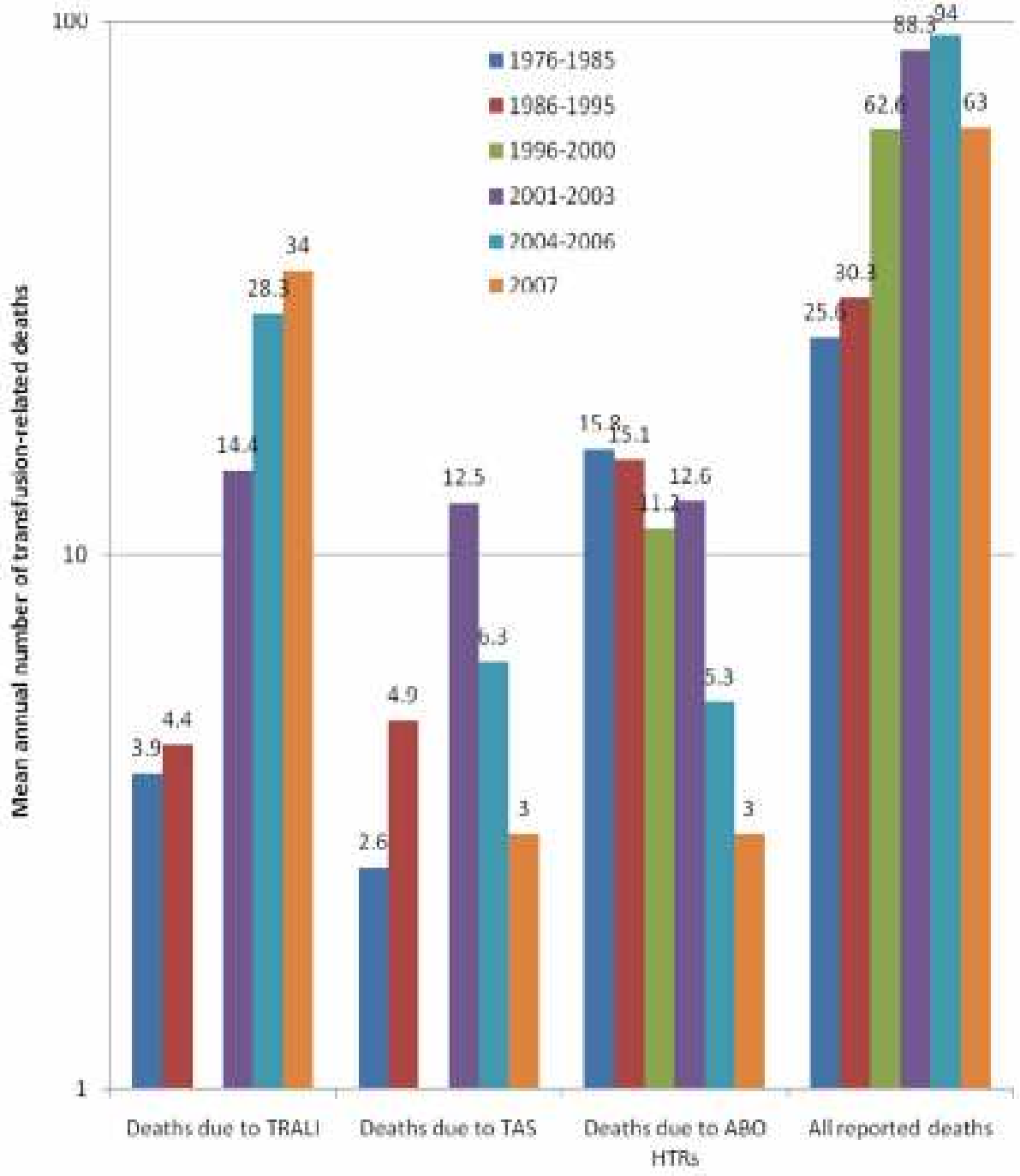
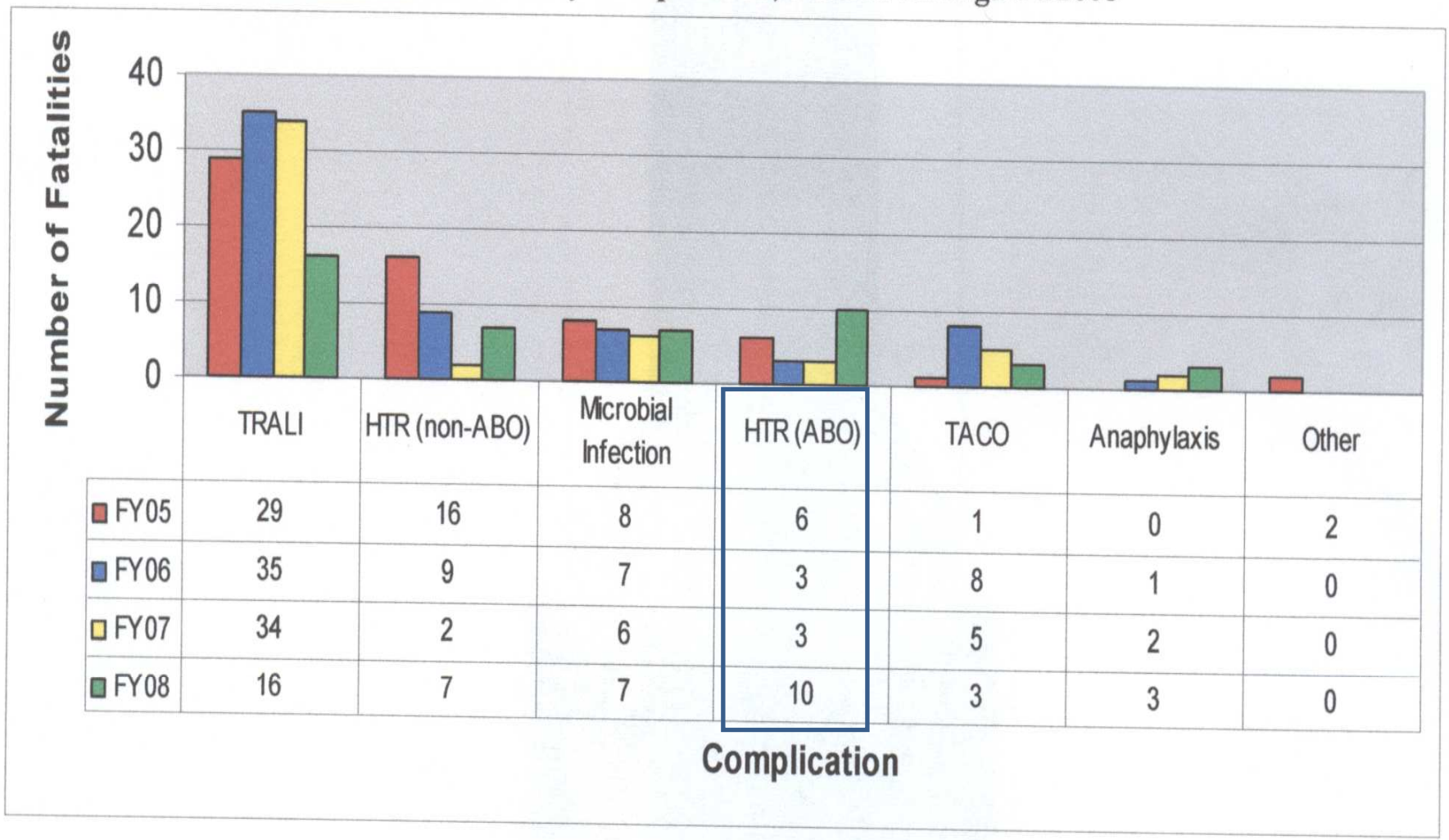


Figure 2. The 3 leading causes of known and reported allogeneic blood transfusion-related deaths, based on data reported passively to the US FDA over 32 years (1976-2007).[1,6] For each of the 5 periods for which data have been made available, the figure shows the mean annual number of deaths deemed to be due to TRALI, TAS, or ABO hemolytic transfusion reactions (HTRs), along with the mean total number of deaths reported to the FDA plotted on a logarithmic scale. Deaths reported to the FDA include donor fatalities, recipient fatalities in which allogeneic blood transfusion (ABT) was not deemed to be the likely or major cause of death, and recipient fatalities due to TRALI, TAS, ABO HTRs, as well as other transfusion complications. Data on TRALI and TAS are not available for the period 1996 to 2000.

Figure 1: Transfusion-Related Fatalities by Complication, FY2005 through FY2008



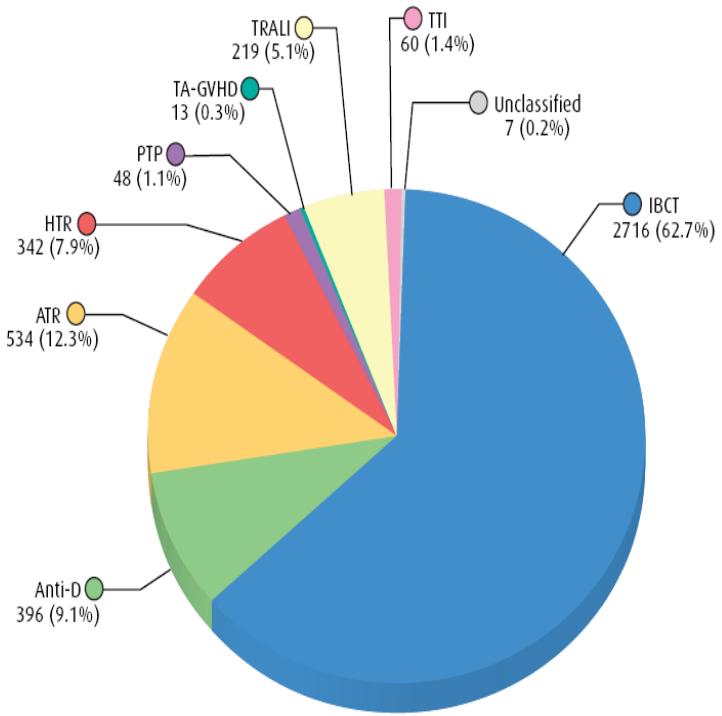
	TRALI	HTR (non-ABO)	Microbial Infection	HTR (ABO)	TACO	Anaphylaxis	Other
FY05	29	16	8	6	1	0	2
FY06	35	9	7	3	8	1	0
FY07	34	2	6	3	5	2	0
FY08	16	7	7	10	3	3	0

Center for Biologics Evaluation and Research 2008 FDA annual report

INGLATERRA: INFORME SHOT.

1996-2007

Notificaciones acumuladas: 4334

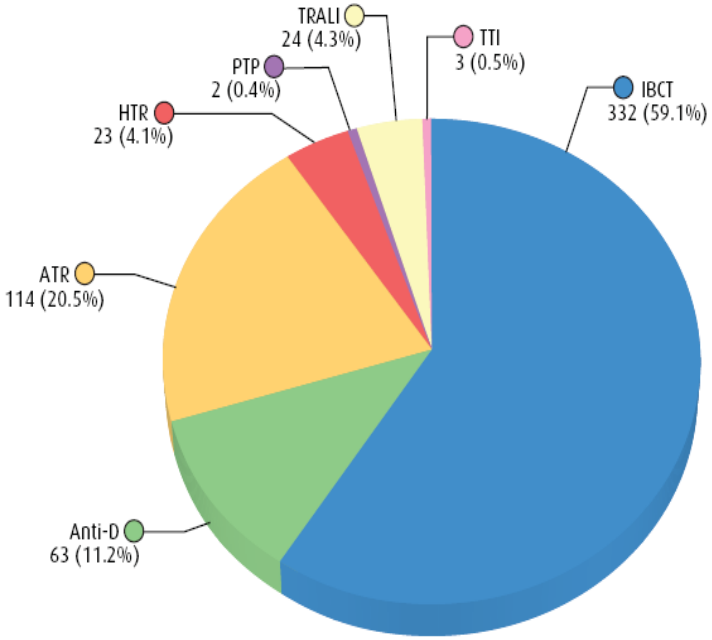


115: Exitus
376: Morb.

2007

Notificaciones: 561

Nº CS totales 2007: 2.914.228



IBCT: 59,1%

SHOT Summary 2007

IBCT cases.

The total number of blood components issued from the blood transfusion services of the UK for the financial year of 2006/7 decreased to 2,873,488. However, a comparison of the reporting rate allowing for the decrease in component usage shows that reporting has increased to 11.4 cases per 100,000 components transfused in 2007 compared with 10.6 in 2006. The detailed subdivision of the cases is shown in the main report. The table below allows a direct comparison with categories from 2006.

Type of event	Number 2006	Number 2007
'Wrong blood' events where a patient received a blood component intended for a different patient or of an incorrect group	54	46
Other pre-transfusion testing errors (excluding erroneous Hb)	28	20
Blood of the incorrect group given to recipients of ABO or D mismatched PBSC, bone marrow or solid organ transplant	8	5
Transfusion of blood of inappropriate specification or that did not meet the patient's special requirements	108	93
Inappropriate or unnecessary transfusions	51	50
'Unsafe' transfusion where there were handling or storage errors	74	118
Total	**323**	**332**

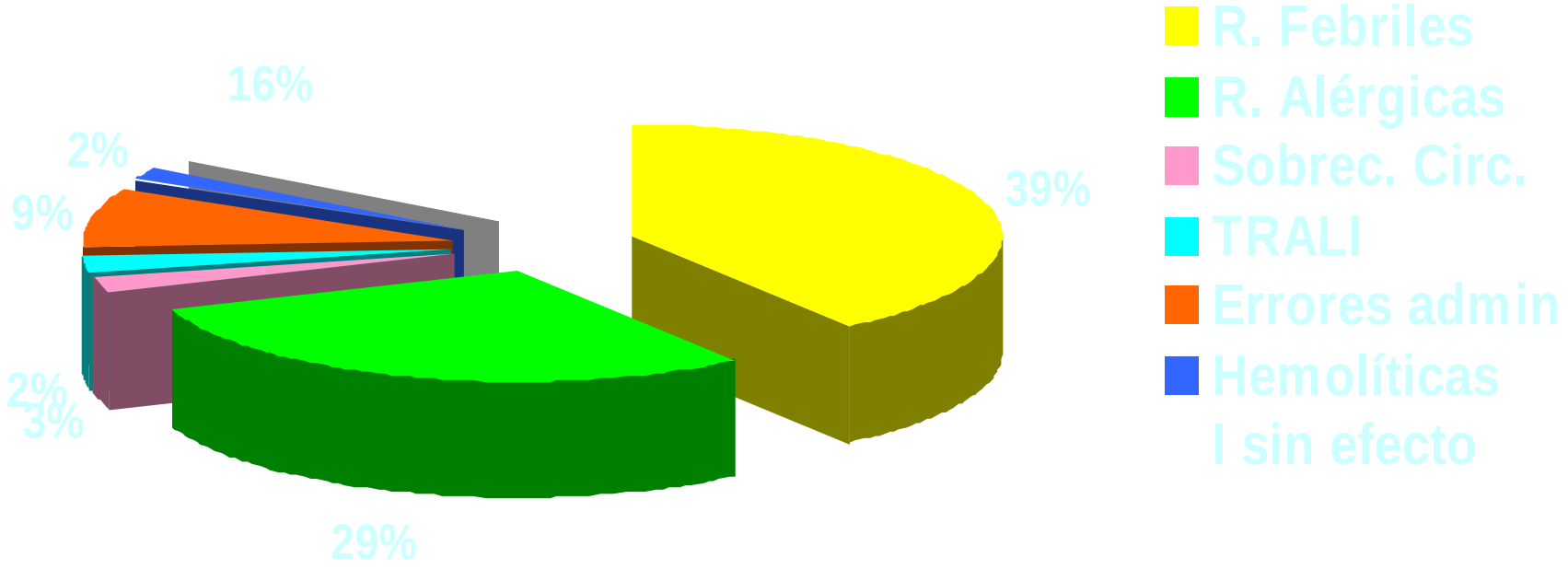
HEMOVIGILANCIA. MSC

Con un total de 1622 incidentes, (no incluidas notificaciones con imputabilidad "0" ni sospecha de transmisión viral), la distribución por tipo y el porcentaje respecto al total, así como su comparación con el año precedente, son los reflejados en la siguiente tabla:

	2006		2007	
	N	%	N	%
Reacciones adversas* (sospecha)				
Reacciones febriles	527	35,1	618	38,1
Reacciones alérgicas	462	30,8	449	27,7
Reacción hemolítica	52	3,5	49	3,0
Edema pulmonar cardiogénico	28	1,9	39	2,4
Lesión pulmonar aguda relacionada con la transfusión	32	2,1	32	2,0
Aloinmunizaciones	23	1,5	24	1,5
Sospecha de infección bacteriana transmitida por transfusión	15	1,0	17	1,0
Púrpura postransfusional	2	0,1	1	0,1
Hemosiderosis	2	0,1	3	0,2
Sospecha de infección parasitaria transmitida por transfusión	1	< 0,1	3	0,2
Otras	–	–	7	0,4
Reacciones adversas (subtotal)	***1144***	*76,2*	***1242***	*76,6*
Error en la administración de componentes	***114***	*7,6*	***134***	*8,3*
Casi incidentes	***243***	*16,2*	***246***	*15,2*
TOTAL	**1501**		**1622**	

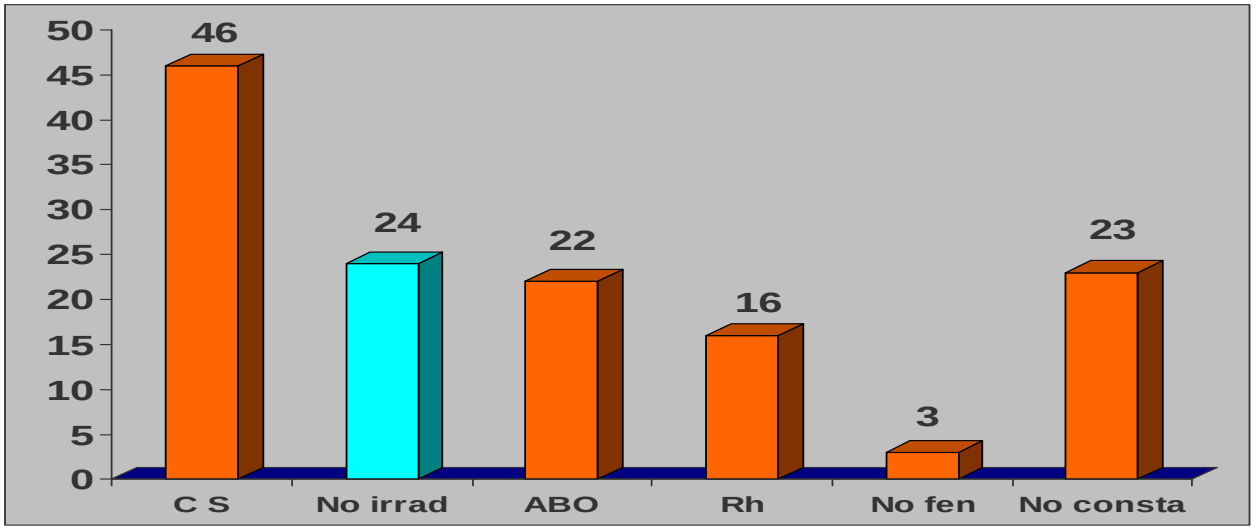
* no incluidas reacciones con imputabilidad 0 ni sospecha de transmisión viral

HEMOVIGILANCIA. MSC: 2007



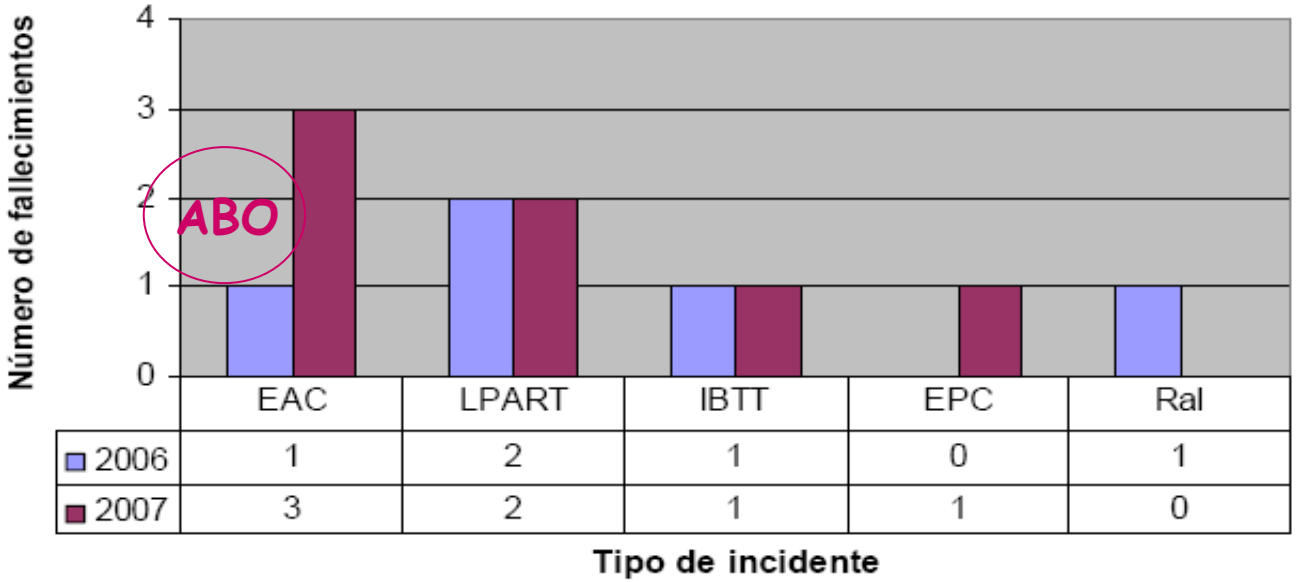
N° Total de Componentes transfundidos : 2.390.436
Efectos adversos comunicados : 1622 (0,6 ‰) - Graves: 11%
- Leves: 86%

MSC-2007: ERRORES DE ADMINISTRACIÓN



ABO: 3 muertes

HEMOVIGILANCIA. MSC-2007



Notificados: 10

7: Probable o seguro

3: Posible

Mortalidad RT por errores ABO

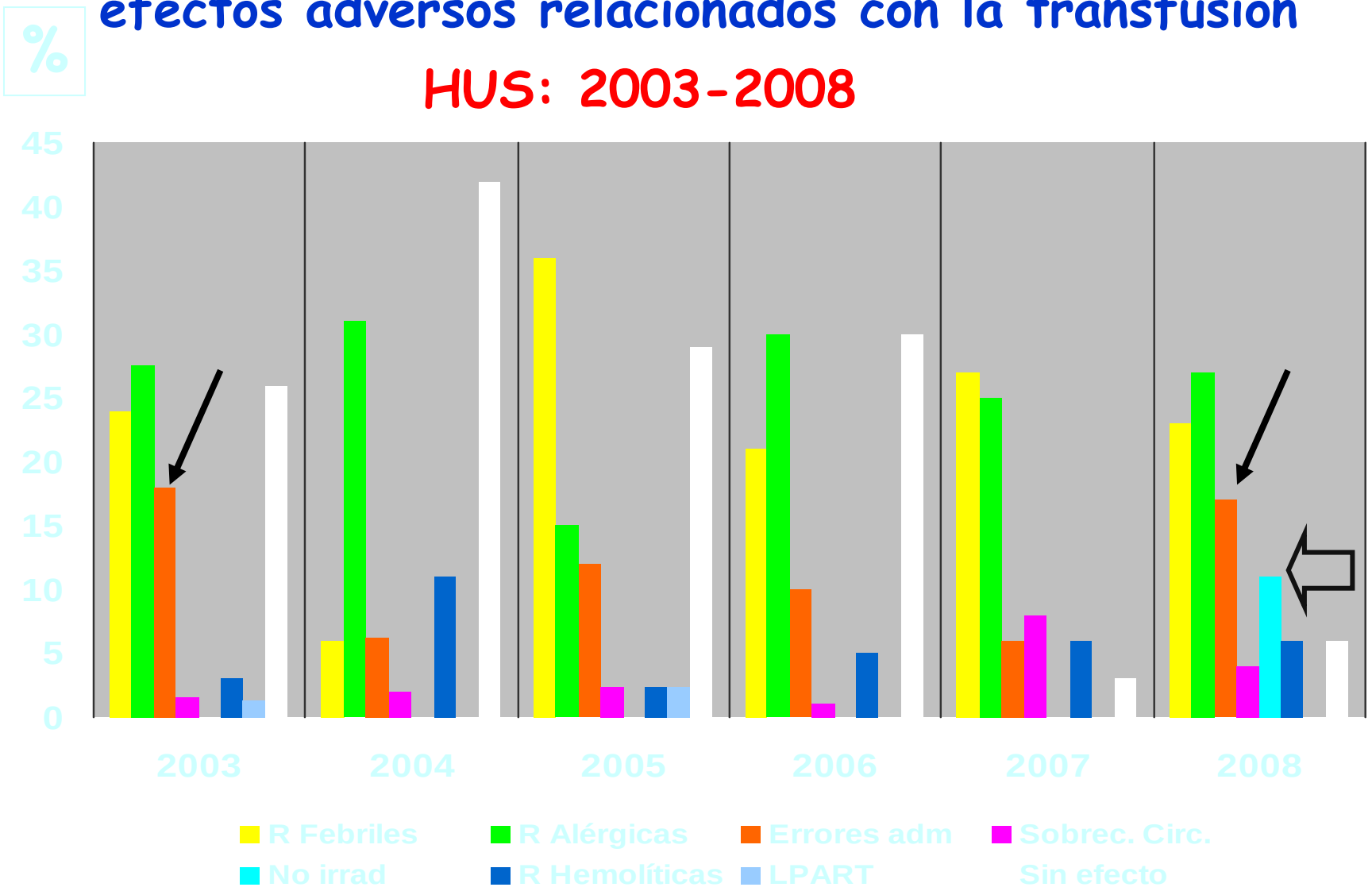
Table 1. ABT-related mortality based on deaths reported to three major hemovigilance systems

Country	Type of surveillance system	Reporting period	ABT-related mortality*
France	Hemovigilance/mandatory reporting[2]	1994-1999	5.6
United Kingdom	Hemovigilance/voluntary reporting[3]	1996-2004	3.5
United States	Passive reporting of deaths[1]	2007	2.3

*Number of deaths per million components transfused (in France[2] or the United States[1]) or issued for transfusion (in the United Kingdom[3]).

BLOOD, 9 APRIL 2009 • VOLUME 113, NUMBER 15

EVOLUCIÓN DE LA COMUNICACIÓN de efectos adversos relacionados con la transfusión



R. HEMOLÍTICAS

MSC- 2007. HTR: 3%

- Casos: 49
- Graves: 12 (29%)
- ABO: 12 (3 grav 4)
- Otro ac: 33

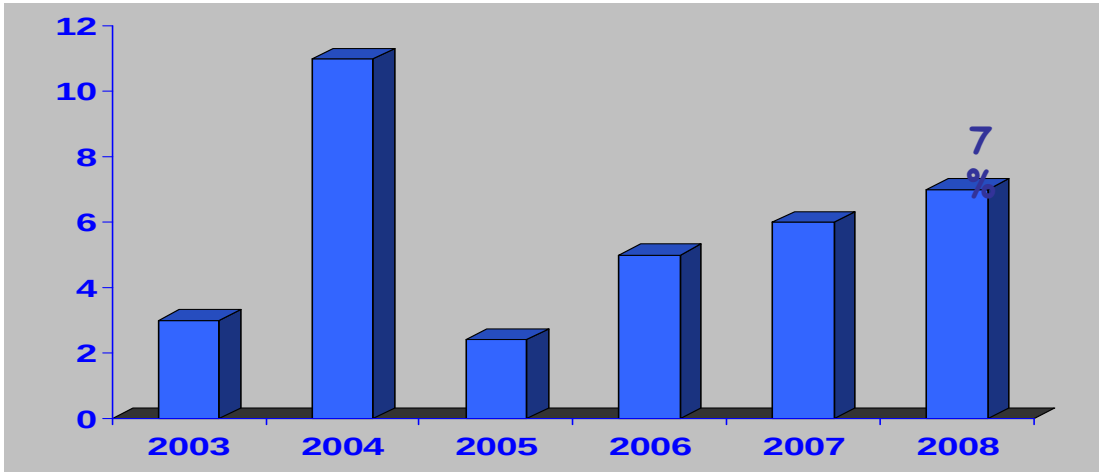
SHOT- 2007. HTR: 4,1%

- Casos: 23
- -Agudas: 3; 1: grave: PQ ABO incompatibles
- Retardadas: 20; 4: graves

HUS: 7%

3 casos. Retardadas

Detectadas en S de T



ESTADISTICAS DE ERRORES

Linden, Paul, & Dressler, 1992
- 1 en 12,000 transfusiones
- 1 en 33,000: transfusión de CH ABO-incompatible
- 1 en 600,000 to 800,000 transfusiones: muerte

Linden, Wagner, Voytovich, & Sheehan, 2000
- 1 en 19,000 transfusiones
- 1 en 2,000,000 transfusiones: muerte

Williamson, Cohen, Love, et al., 2000
- 1 en 16,000 transfusiones in UK

Fuentes de error
- Identificación errónea de muestra o enfermo
- Flebotomia errónea
- Liberación del CS equivocado

Errores transfusionales

Factores que contribuyen al error en la muestras

- nombres iguales o similares
- uso de etiquetas preimpresas
- manejo simultáneo de varias muestras
- interrupciones en el proceso
- prisas
- órdenes telefónicas

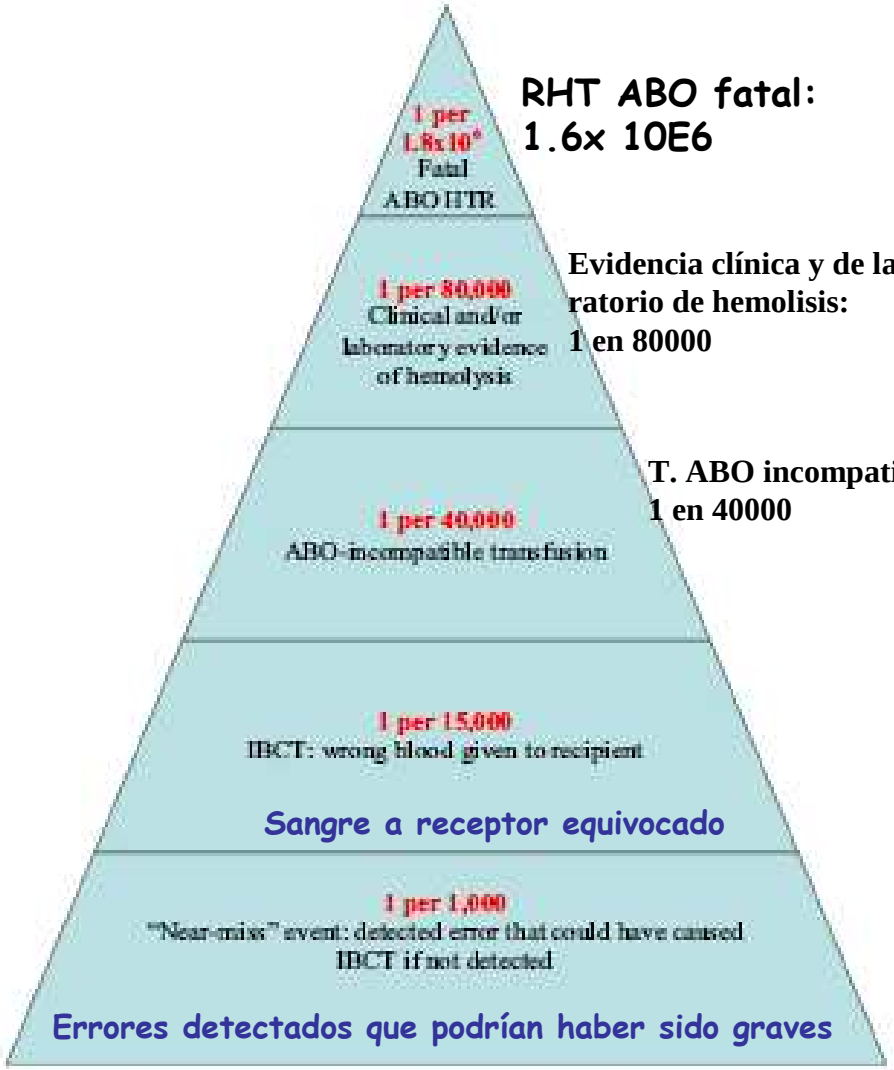
Wristband monitoring

In 2 years (1999-2000) CAP (College of American Pathologist) checked 1.757.730 wristbands in 217 institution

45.197 (2,57%) errors were found

- 71,6% missing wristbands
- 9,1% missing ID information
- 7,7% illegible wristband
- 6,8% erroneous ID information
- 3,7% conflicting wristband
- 1,1% wrong wristband

Howanitz et al.; Arch Pathol Lab Med; 2002, 126: 809-15



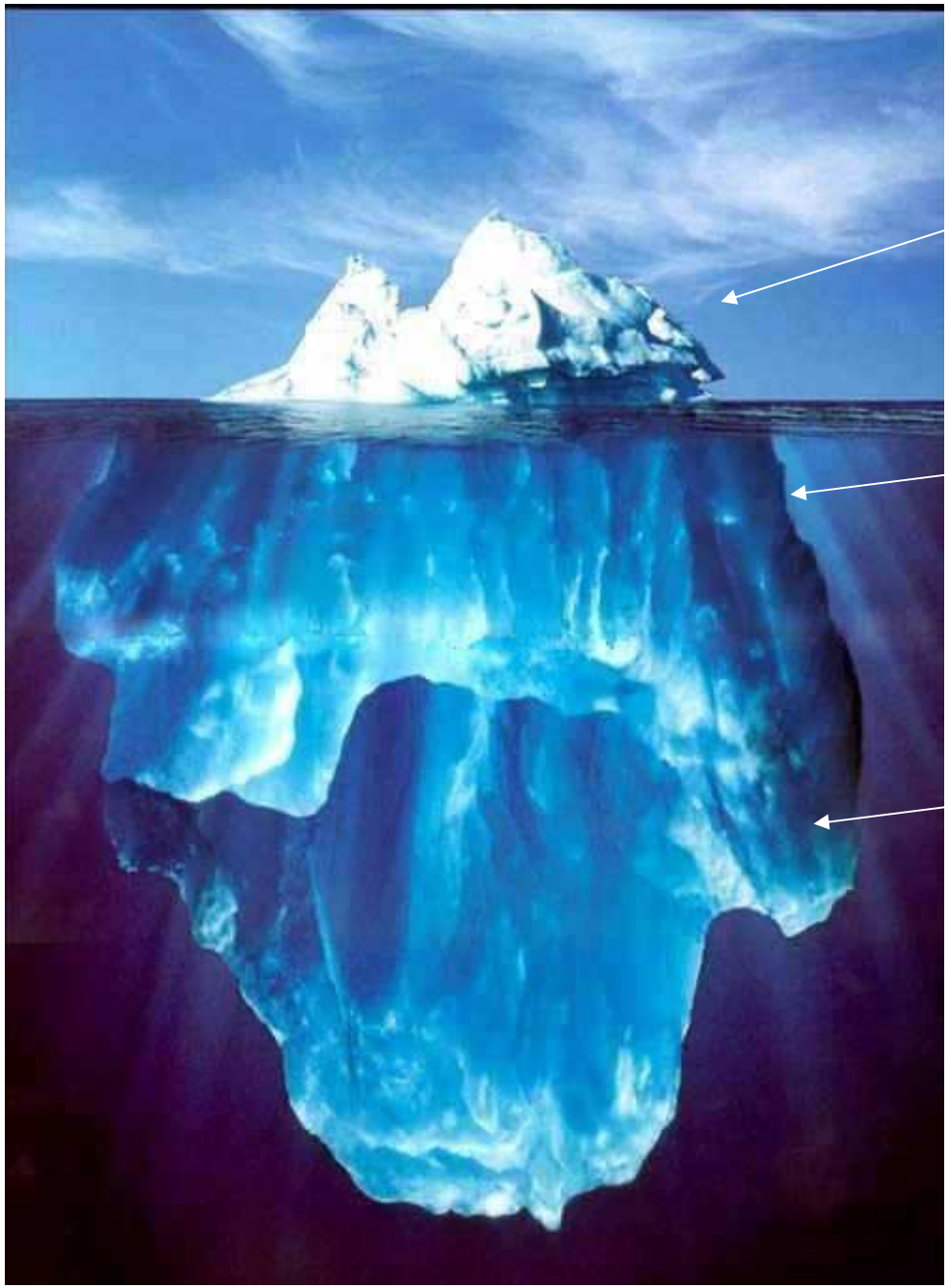
RHT ABO fatal:
1.6x 10E6

Evidencia clínica y de laboratorio de hemolisis:
1 en 80000

T. ABO incompatibles
1 en 40000

Figure 3. Likelihood of a serious ABO HTR, shown as a pyramid whose base represents the probability of events predisposing to incorrect blood component transfusion, whose successive layers show the likelihood of increasingly more hazardous (as well as less likely) events sometimes leading to mortality from ABO HTR, and whose tip represents mortality. The likelihoods indicated are based on data reported by surveillance systems operating in several countries[1-6] and are expressed per number of red blood cell (RBC) units transfused.

Blood 2009;
Vol.113, 16



Prevención del error

- Formación
- Perfiles de trabajo claros
- Procedimientos operativos claros
- Tecnología:
  - automatización
  - trazabilidad electrónica

Prevención del error

- Conciencia de que pueden ocurrir
- Evaluar el riesgo: frecuencia de detección
- Implementar medidas correctivas
- Generar métodos que hagan difícil el error

Prevención de errores ABO

Identificación errónea de la muestra

- política clara de identificación de muestras
- pulsera de identificación del enfermo
- identificación positiva del enfermo
- uso de 2 métodos de identificación?
- etiquetado en cabecera
- tecnología de código de barras / radiofrecuencia...

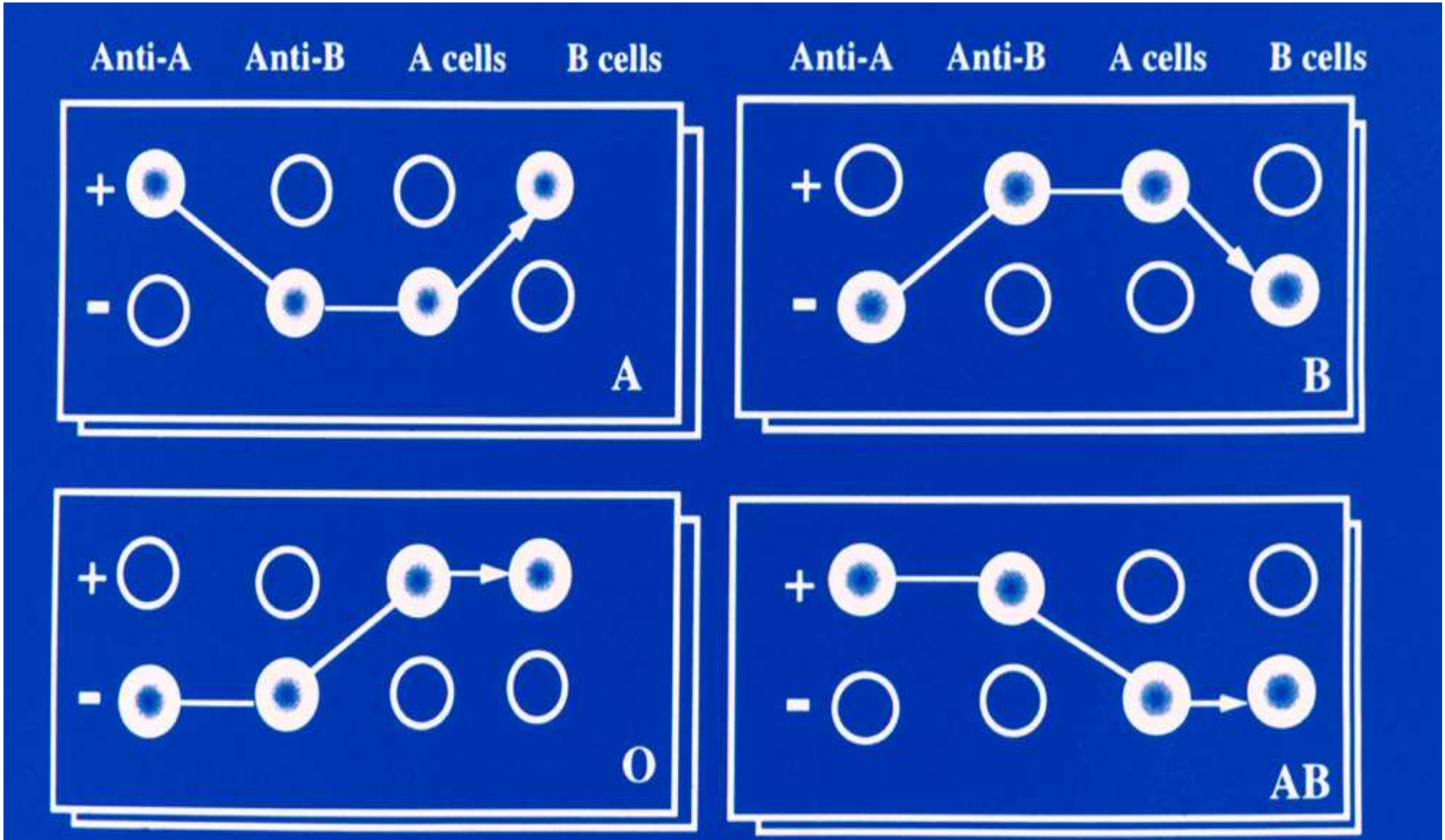


Fig 1. ABO check: self-verification.

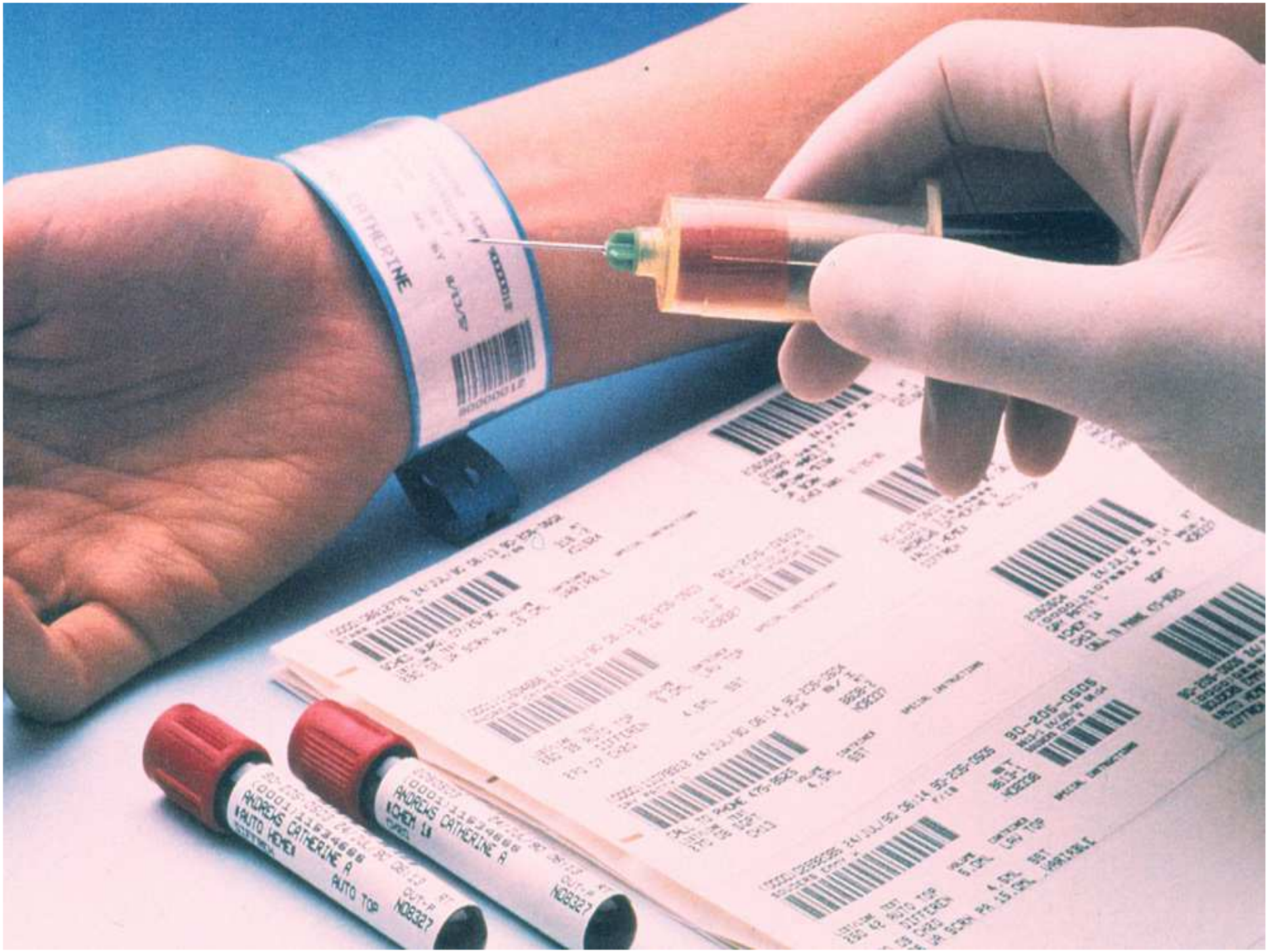
Linden and Kaplan, Transfus Med Reviews, 1994

How do we approach a major change program using the example of the development, evaluation, and implementation of an electronic transfusion management system

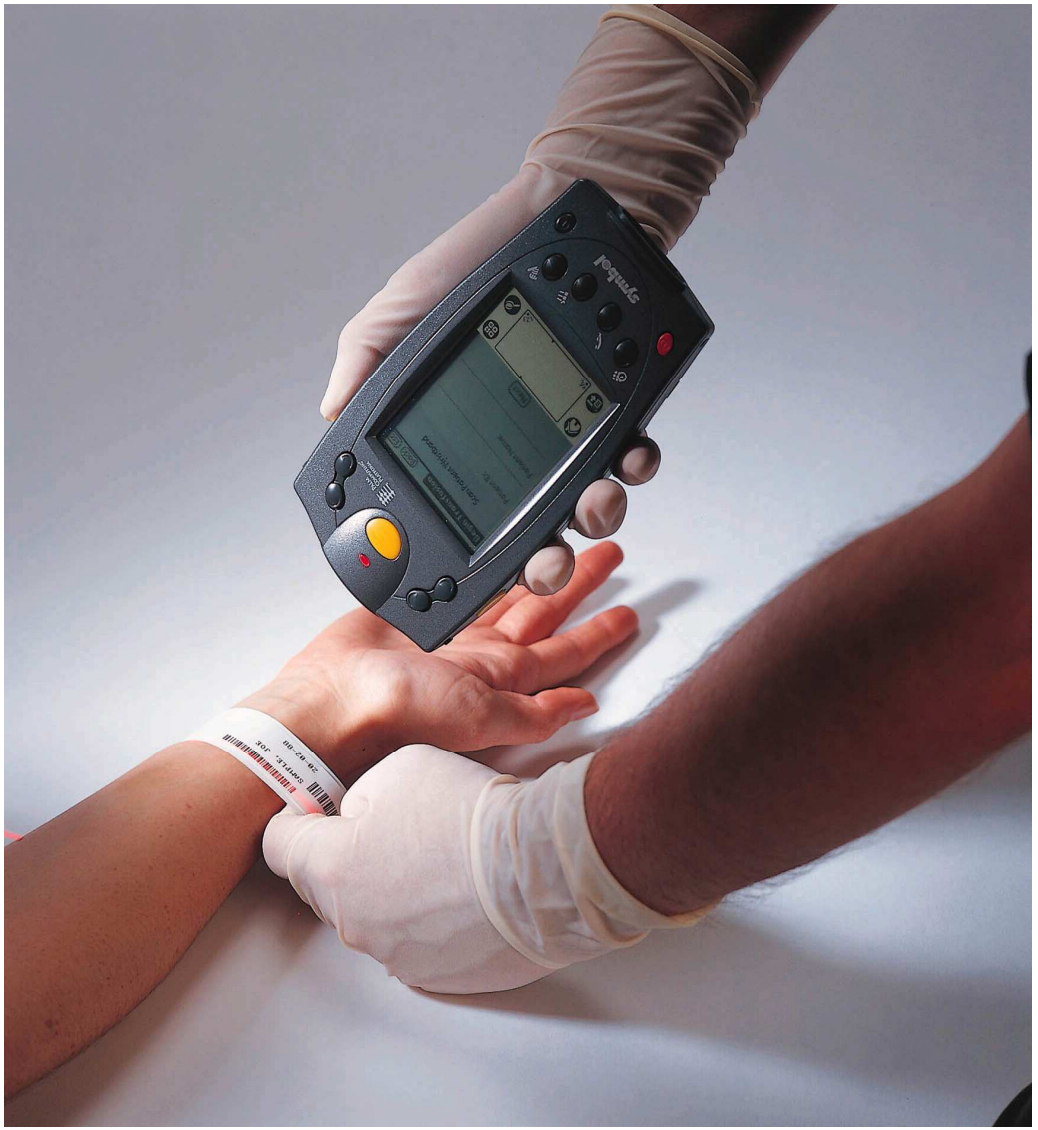
Michael F. Murphy, Julie Staves, Amanda Davies, Edward Fraser, Rachel Parker, Barbara Cripps, Jonathan Kay, and Charles Vincent

TRANSFUSION 2009;49:829-837.

Fig 4. A bar-code based system for the bedside transfusion check in use at the John Radcliffe Hospital, Oxford, UK. Photo courtesy of Michael F Murphy, MD, USA.


ANDREAS CATHERINE A
AUTO TOP
ANDREAS CATHERINE A

I-TRAC Plus Definition



Tecnología para prevención de errores ABO

Tecnología de código de barras

- ampliamente usada

Identificación por radiofrecuencia

-ventajas teóricas sobre el código de barras

. el chip puede contener más información

. no requiere alinear el haz de luz con el código de barras

. no precisa una intervención activa de lectura..

Errores y accidentes

- Son parte de los riesgos de nuestra actividad
- No siempre se vinculan a ineptitud o actitud negligente
- Son una consecuencia del proceder humano

- la mayoría no producen daño

- muchos errores pasan desapercibidos
- muchos errores y accidentes se ocultan

Factores que influyen en los errores