



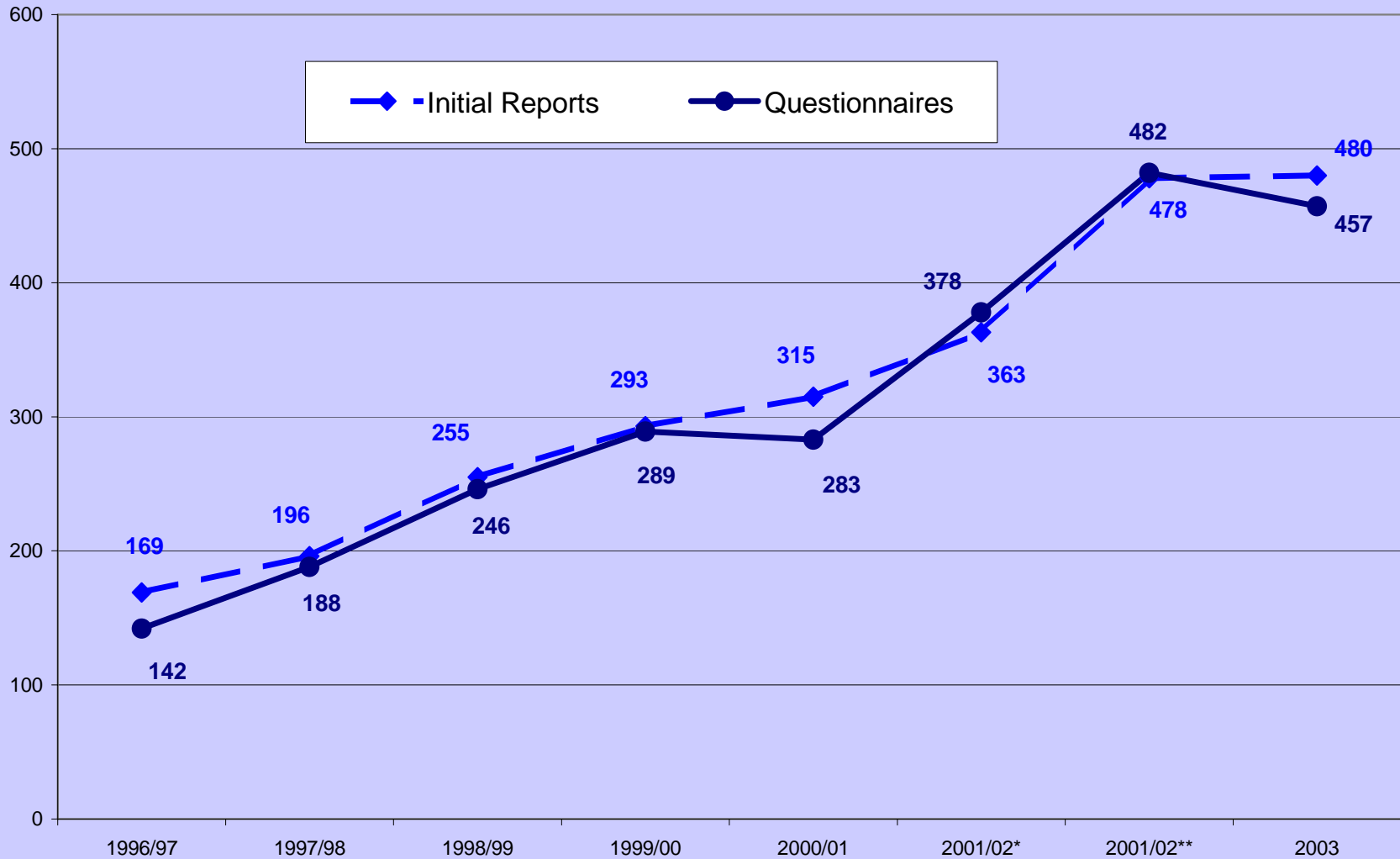
***HIGHLIGHTS FROM 7th SHOT REPORT –
TAKING SHOT RECOMMENDATIONS
FORWARD***

Hannah Cohen

Chair, SHOT Steering Group

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Increases in reporting year by year



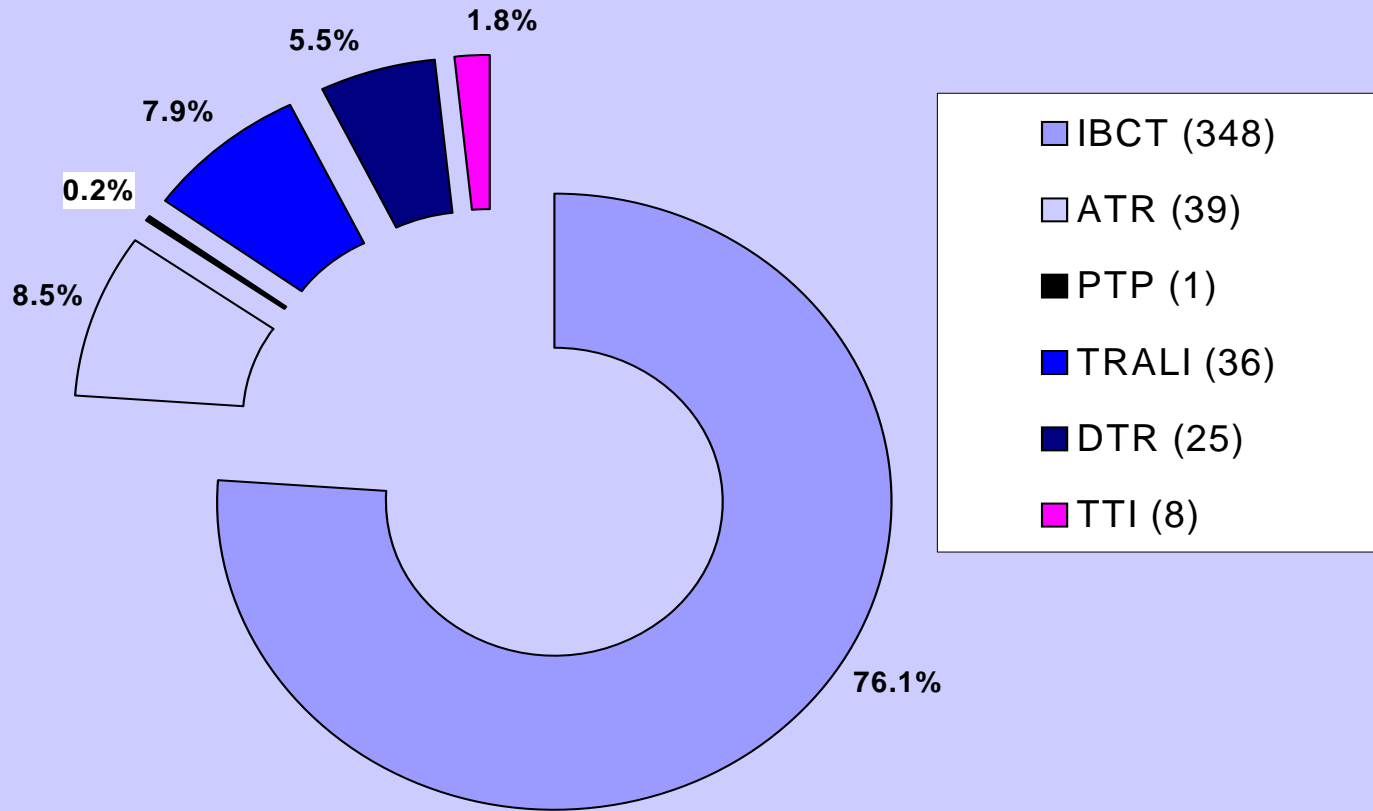
HOSPITAL PARTICIPATION 2003

- **351/415 (85%)** hospitals returned cards stating they participated in the scheme
- **195** stated that they reported incidents

Therefore:

- ***Level of active participation is 47%.....***

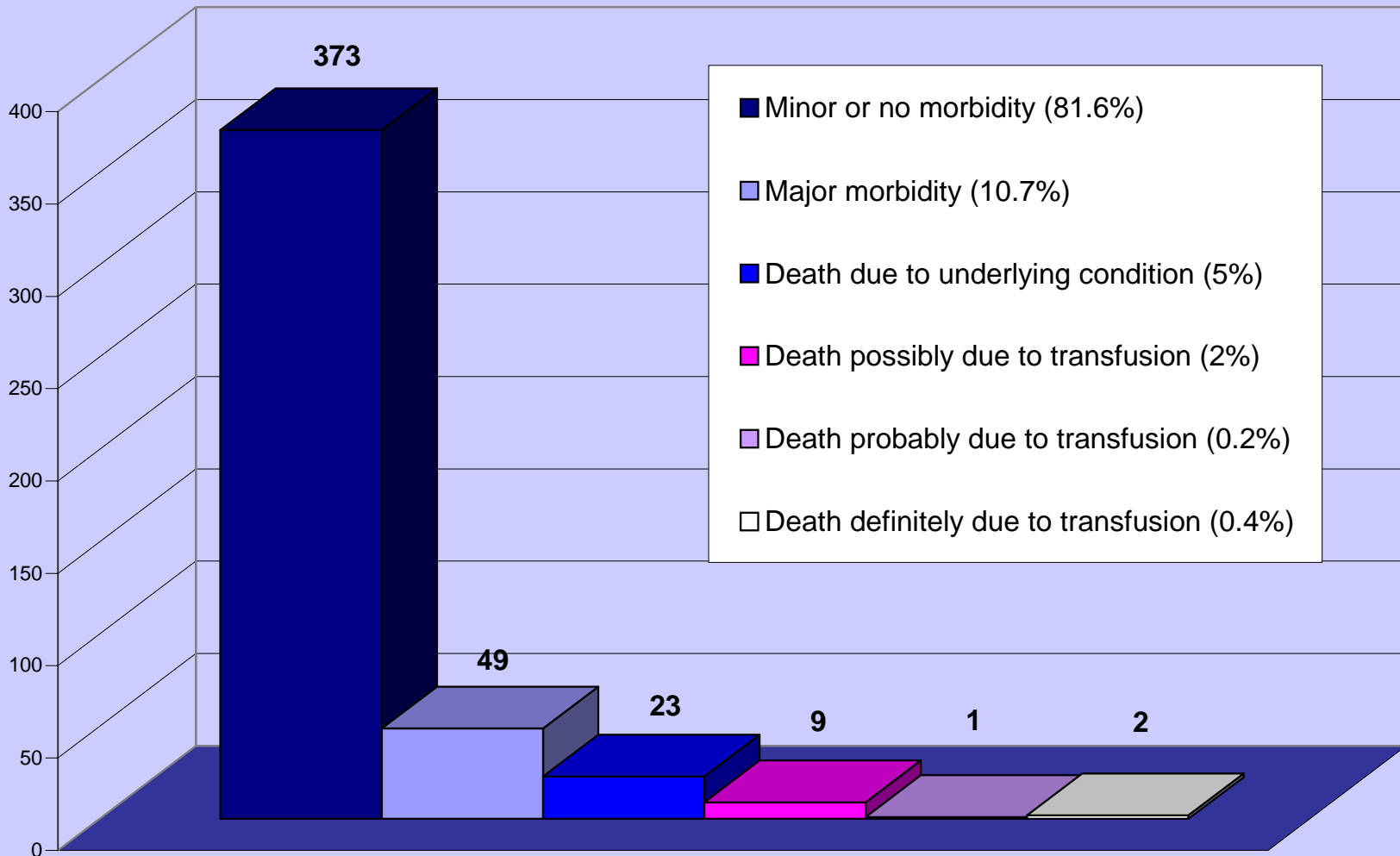
Overview of 457 cases for which fully completed questionnaires were received



MAJOR MORBIDITY – DEFINITION

- Intensive care admission and / or ventilation
- Dialysis and / or renal dysfunction
- Major haemorrhage from transfusion-induced coagulopathy
- Intravascular haemolysis
- Potential RhD sensitisation in a female of child-bearing potential
- Persistent viral infection
- Acute symptomatic confirmed infection (viral, bacterial or protozoal)

2003: TRANSFUSION RELATED MORTALITY / MORBIDITY IN 457 COMPLETED QUESTIONNAIRES



2003: Transfusion related mortality/morbidity according to the type of hazard reported

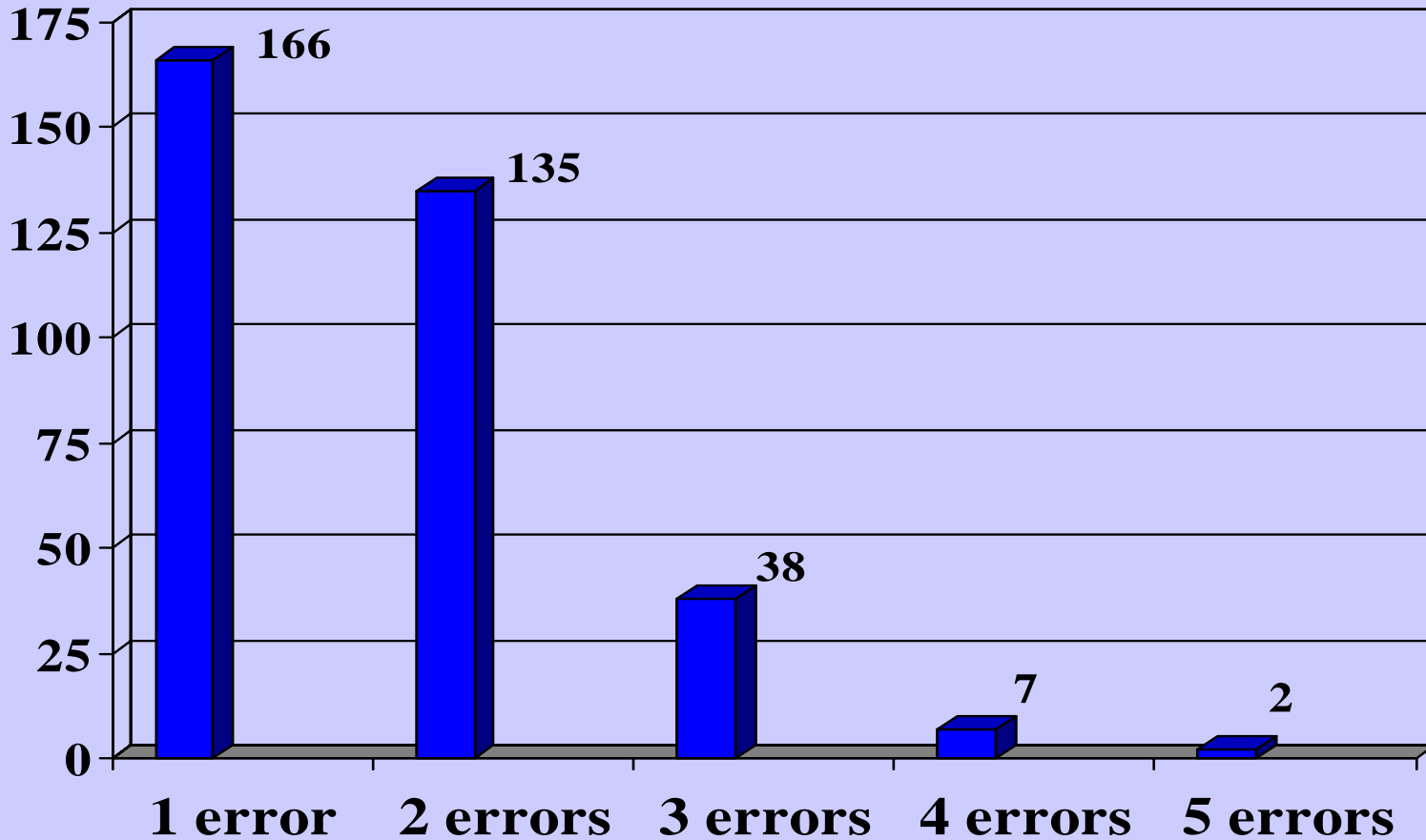
	Total	IBCT	ATR	DTR	PTP	TRALI	TTI
Death definitely attributed to transfusion	2	0	0	0	0	1	1
Death probably attributed to transfusion	1	0	1	0	0	0	0
Death possibly attributed to transfusion	9	1	1	0	0	7	0
Death due to underlying condition	23	16	3	3	0	1	0
Major morbidity	49	16	2	3	1	22	5
Minor or no morbidity	373	315	32	19	0	5	2
Totals	457	348	39	25	1	36	8

INCORRECT BLOOD COMPONENT TRANSFUSED

**ALL REPORTED EPISODES WHERE
A PATIENT WAS TRANSFUSED WITH
A BLOOD COMPONENT OR PLASMA
PRODUCT WHICH DID NOT MEET
THE APPROPRIATE REQUIREMENTS
OR WHICH WAS INTENDED FOR
ANOTHER PATIENT**

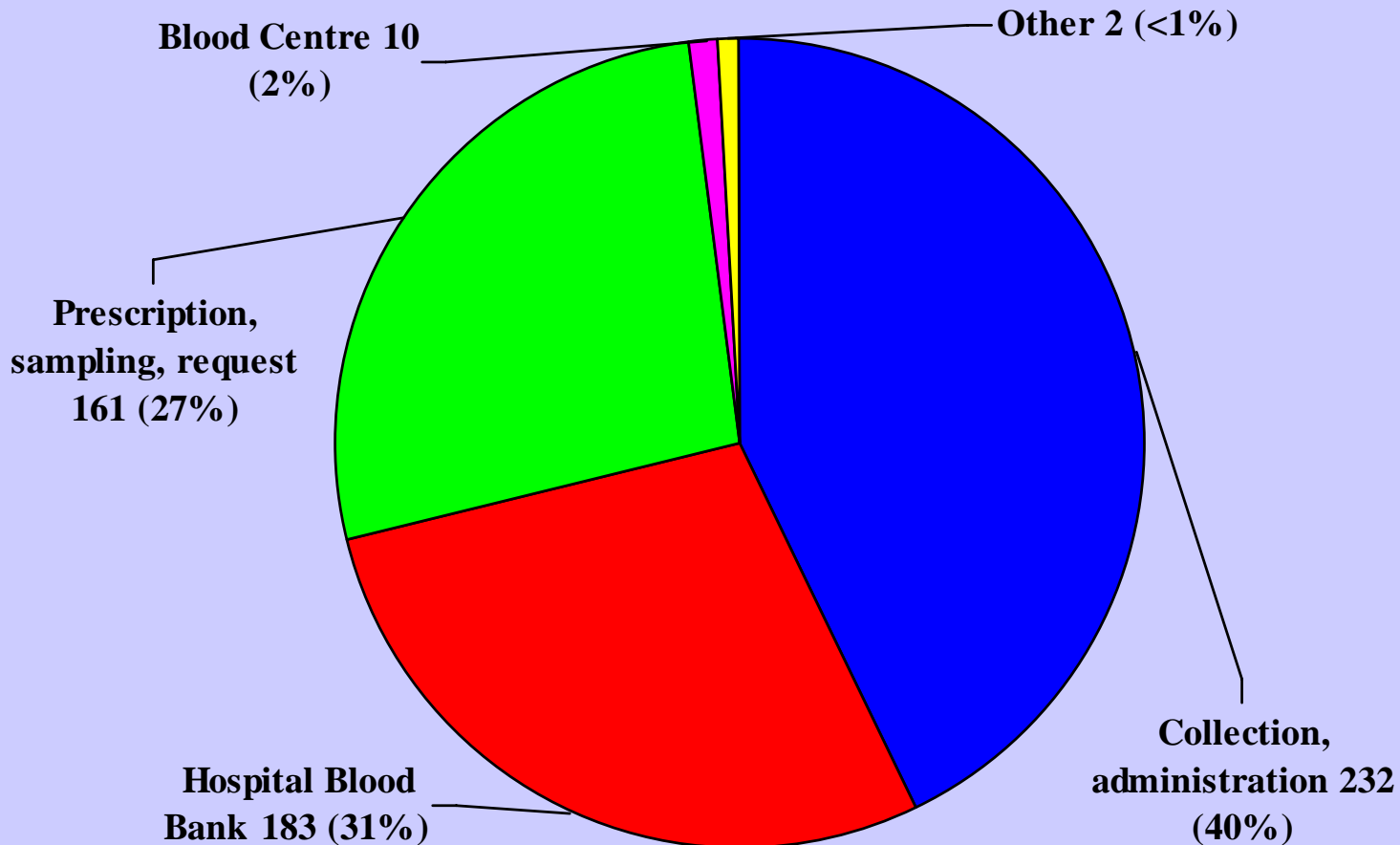
MULTIPLE ERRORS CONTINUE TO CONTRIBUTE TO MANY “WRONG BLOOD” TRANSFUSIONS

(total cases = 348; total errors = 588)

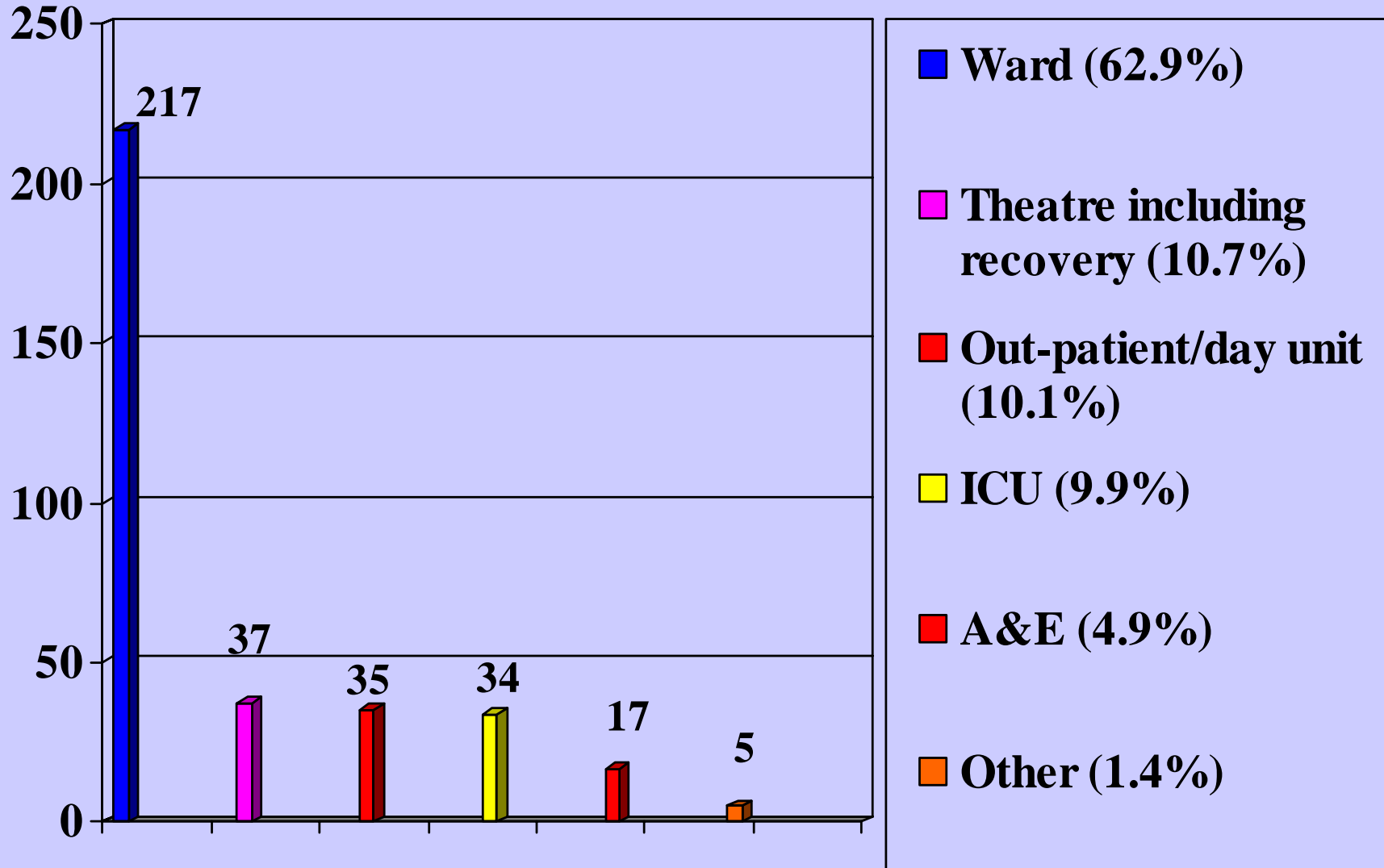


DISTRIBUTION OF ERRORS ACCORDING TO THE MAIN REPORTING CATEGORIES (n=588)

Failure of pretransfusion check 156/588



SITE OF TRANSFUSION WHEN ERROR OCCURRED IN A CLINICAL AREA (n=345)



LABORATORY ERRORS

Among errors likely to result in incompatible transfusion:

- 8/9 ABO grouping errors and
- 7/15 antibody identification errors

were related to out-of-hours or urgent work

SAMPLE ERRORS, ANALYTICAL ERRORS, COMMUNICATION FAILURES, PRESCRIPTION ERRORS

29 patients were unnecessarily transfused or over-transfused as a result of:

- Sample errors
 - dilute samples taken from “drip arms” or samples allowed to settle in syringe (11); lab reported possible dilute sample but clinical staff transfused patient (2)
- Analytical errors
 - Wrong Hb (2); wrong fibrinogen (1); spurious low plts. (3)
- Haematology results wrongly documented or misinterpreted (7)
 - white cell count was taken to be the haemoglobin level (3)

FAILURES IN COMMUNICATION

Continued failure to communicate special transfusion Requirements (107)

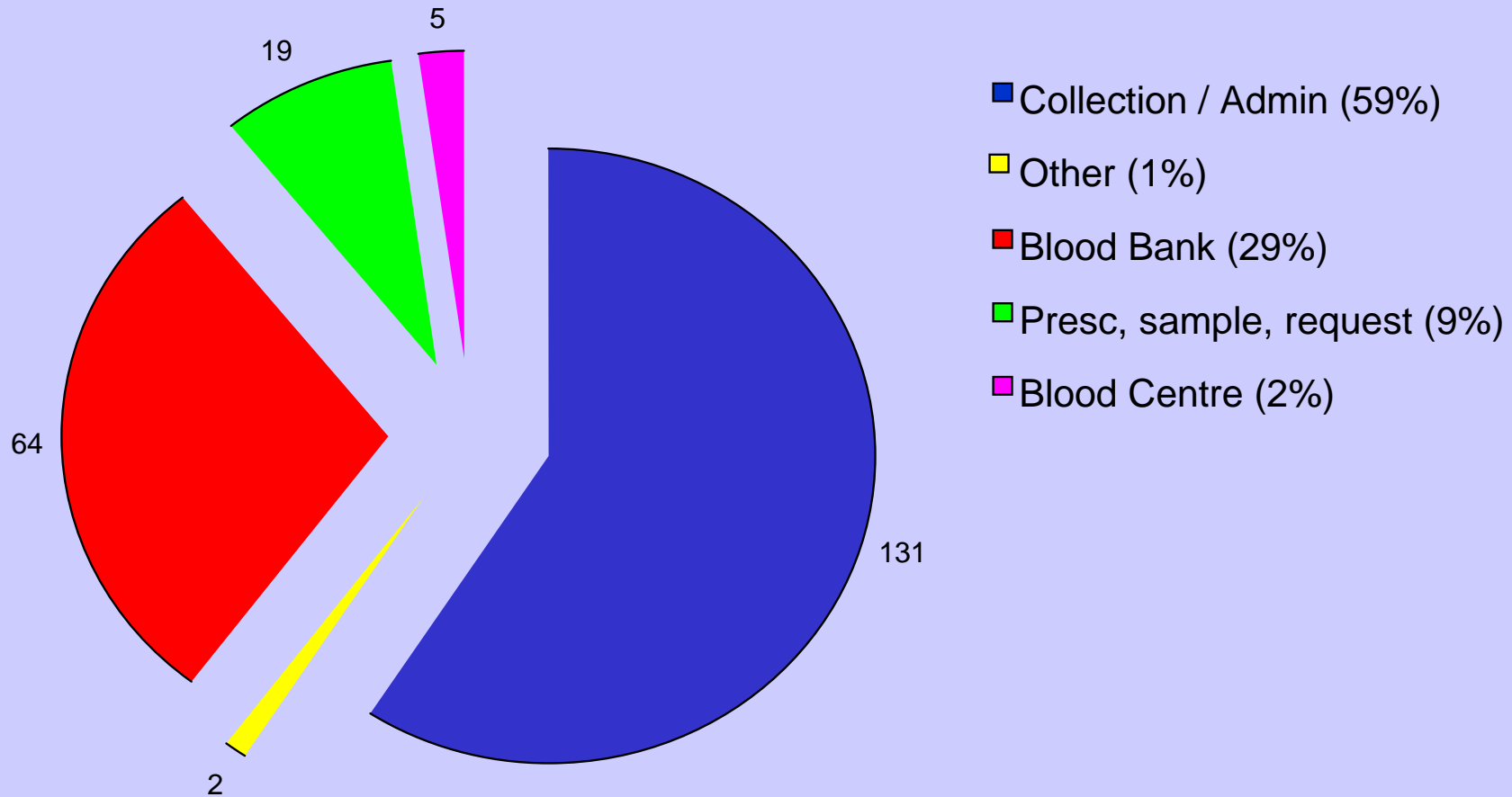
- 88/107 - errors at request stage
- 81/107 - failure to provide irradiated components most commonly in patients prescribed purine analogues
- 39/107 - lab error; 22/39 – irradiated components
- the use of purine analogues is increasing
- gamma-irradiation remains the only proven method of prevention of TA-GVHD

CATEGORIES OF IBCT REPORTED (n=348)

Category

	No. of cases
Major ABO incompatibility	33
RhD incompatible	22
ABO/RhD compatible	49
Other red cell incompatibility	22
Inappropriate transfusion	36
Special requirements not met	107
Anti-D	24
Other	55

DISTRIBUTION OF ERRORS in ABO INCOMPATIBLE TRANSFUSIONS 1999-2003: 221 ERRORS IN 130 CASES

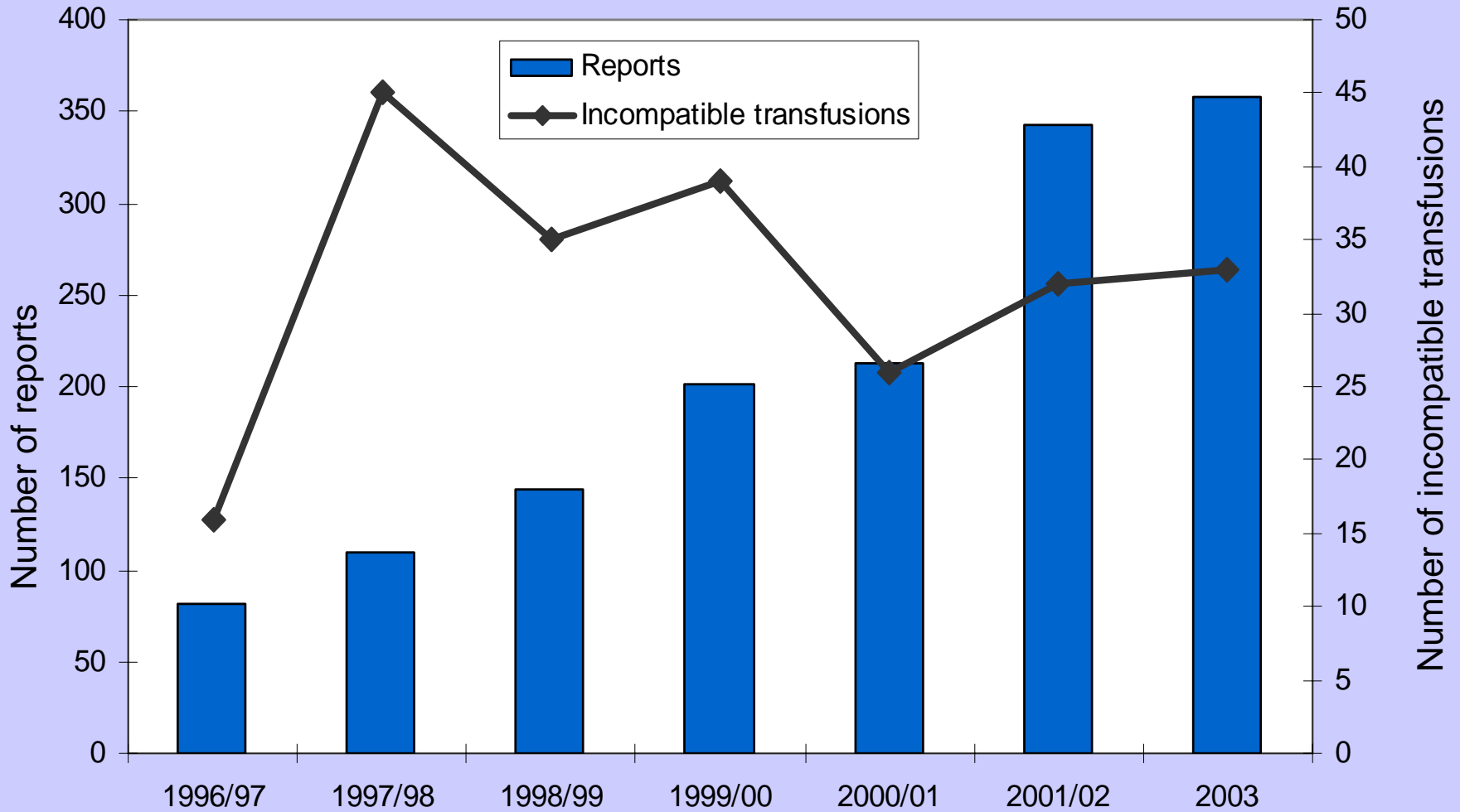


OUTCOME OF CASES OF IBCT FOLLOWING MAJOR ABO INCOMPATIBILITY (n=33)

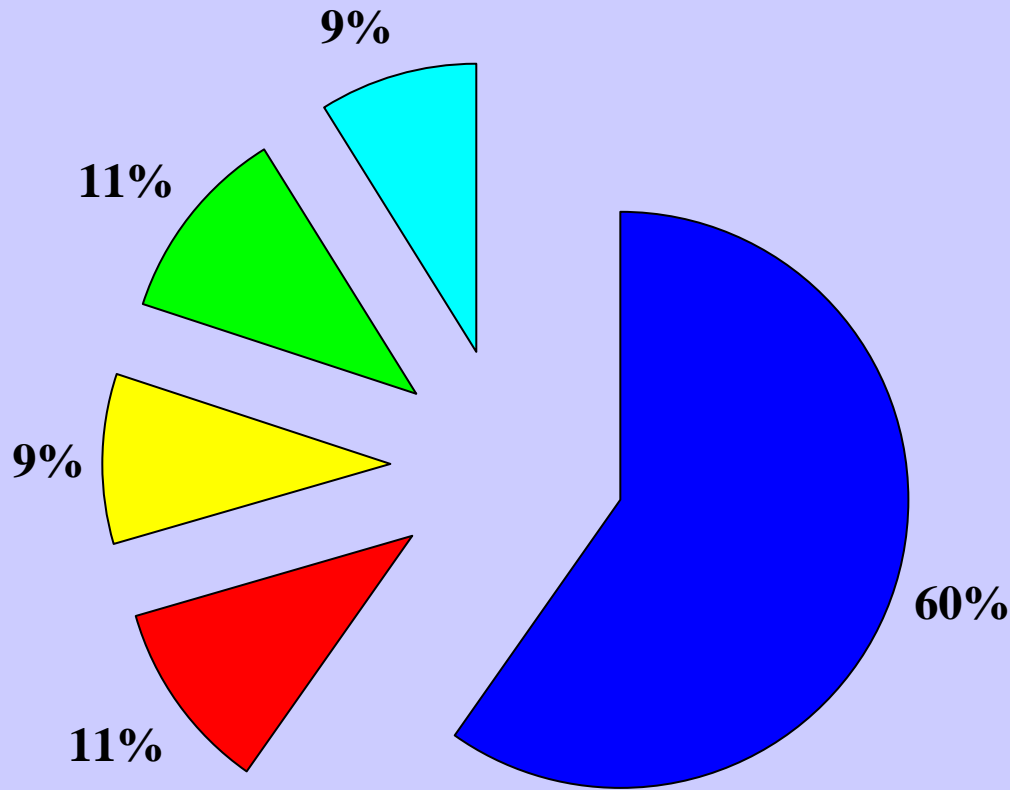
Category

	No. of cases
Survived with no ill effects	19
Major morbidity	8
Died unrelated to transfusion	5
Died possibly related to transfusion	1
Died probably related to transfusion	0
Died definitely related to transfusion	0
Total	33

ABO INCOMPATIBLE TRANSFUSIONS SINCE 1996



“NEAR MISS” EVENTS 2003 (n=906)



■ Sample errors (542)

■ Laboratory component selection, handling, storage & issue errors (97)

■ Laboratory sample handling &/or testing errors (86)

■ Component collection, transportation, ward handling & administration errors (100)

■ Request errors (81)

IMMUNE COMPLICATIONS OF TRANSFUSION

Acute transfusion reactions

Delayed transfusion reactions

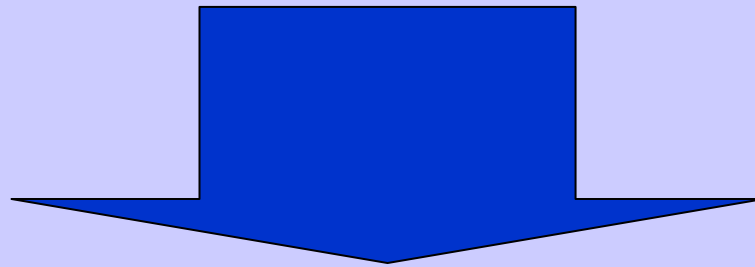
Transfusion-related acute lung injury

Post-transfusion Purpura

Transfusion-Associated Graft-versus-host Disease

ACUTE TRANSFUSION REACTIONS

44 VALID INITIAL REPORTS RECEIVED



39 COMPLETED QUESTIONNAIRES
(including 4 from the previous year)

30/39 cases due to FFP (17) or platelets (13)

ACUTE TRANSFUSION REACTIONS

	RBC	FFP	Platelets
<u>1996-03</u>	18.4	2.7	1.9 million
No. ATR	94	71	63
Frequency	1:195,744	1:38,028	1:30,158

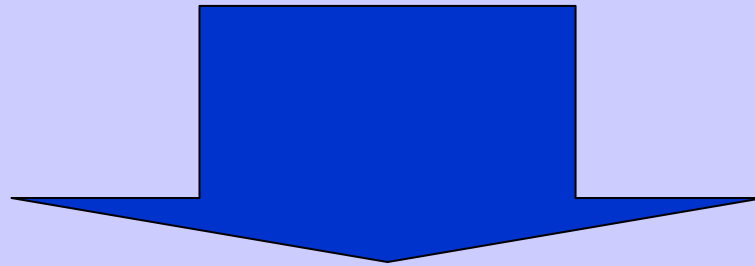
1996-03: Reactions to FFP 5 times and to platelets 6.5 times more frequent than those due to red cells

ACUTE TRANSFUSION REACTIONS

- At least **5/17** FFP transfusions **NOT** indicated
 - non-urgent warfarin reversal in the absence of bleeding - 3
 - liver disease in the absence of haemorrhage or intervention - 1
 - enoxaparin (LMWH) reversal on account of bleeding at site of injections - 1
- Haematologists are not frequently involved in the management or investigations of suspected acute transfusion reactions which can lead to inappropriate diagnosis and treatment

DELAYED TRANSFUSION REACTIONS

32 INITIAL REPORTS RECEIVED
(2 FROM PREVIOUS YEAR)



25 COMPLETED QUESTIONNAIRES

A marked reduction from last year's 47 –
are DTRs under-recognised?

2003: TRALI

Initial reports received

42

Analysed for TRALI (after 5 withdrawn, 1 written off)

36 (26 in 2001-2002; 15 in 2000-2001)

Highly likely
20

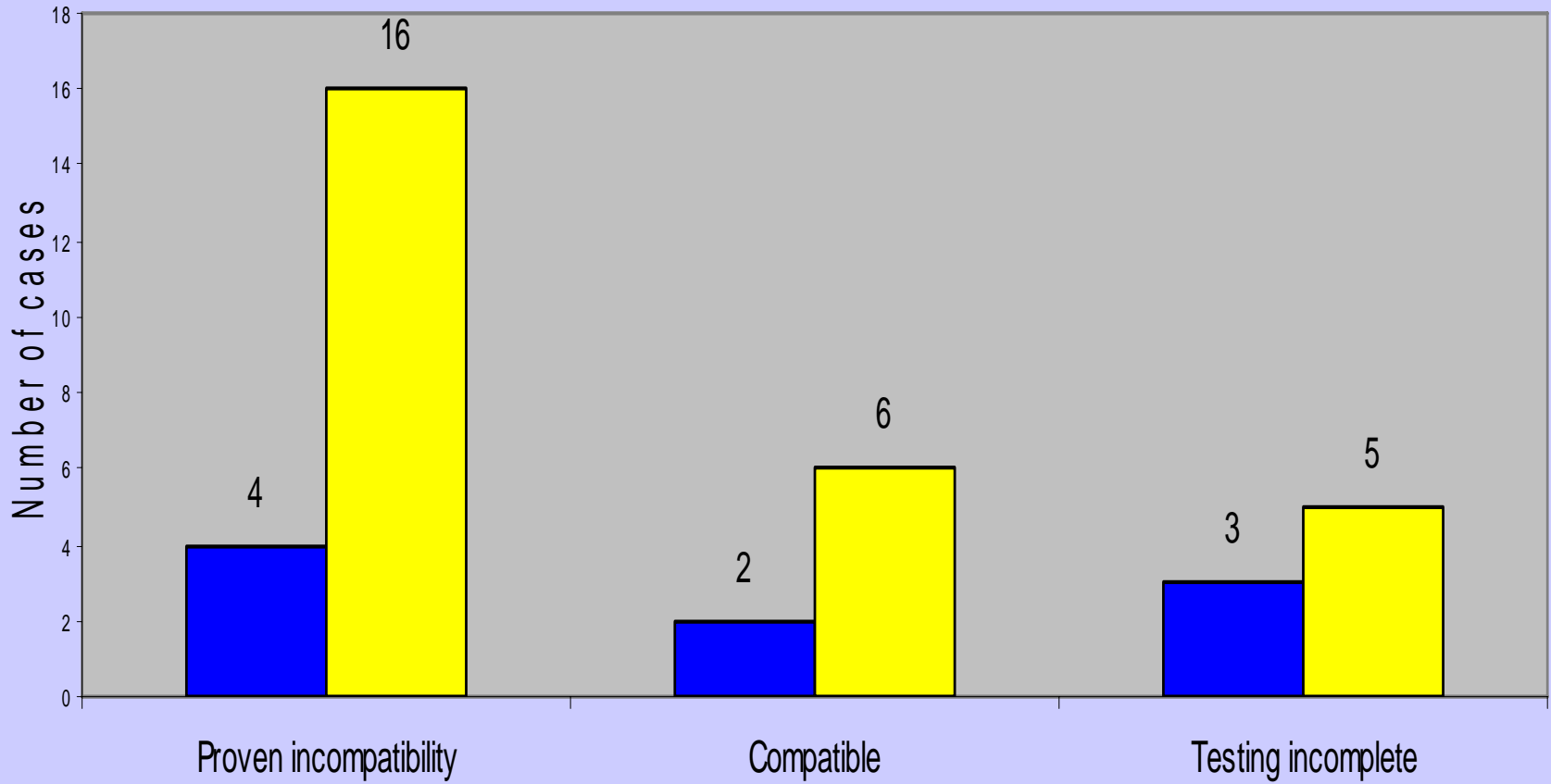
Probable
2

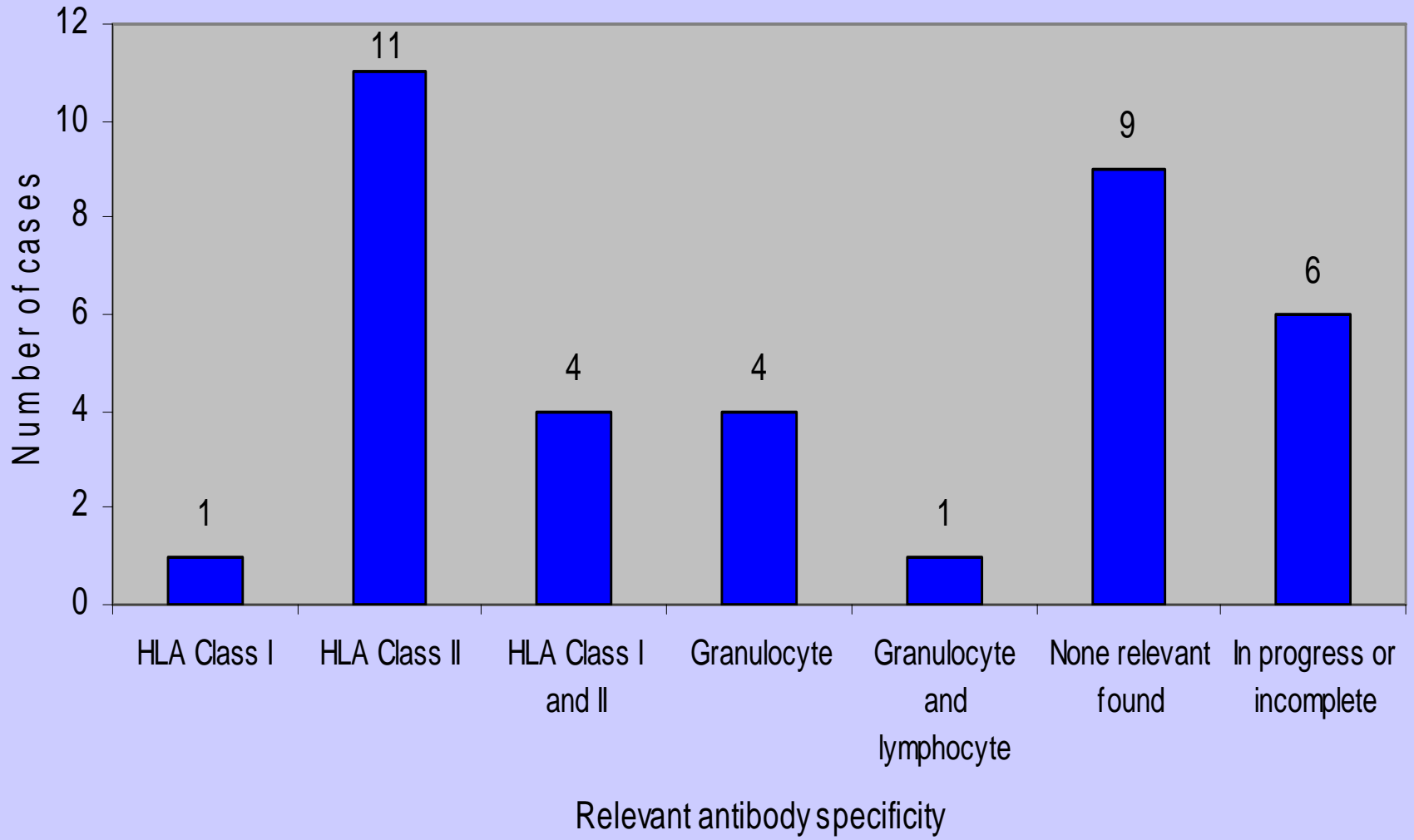
Possible
6

Unlikely
8

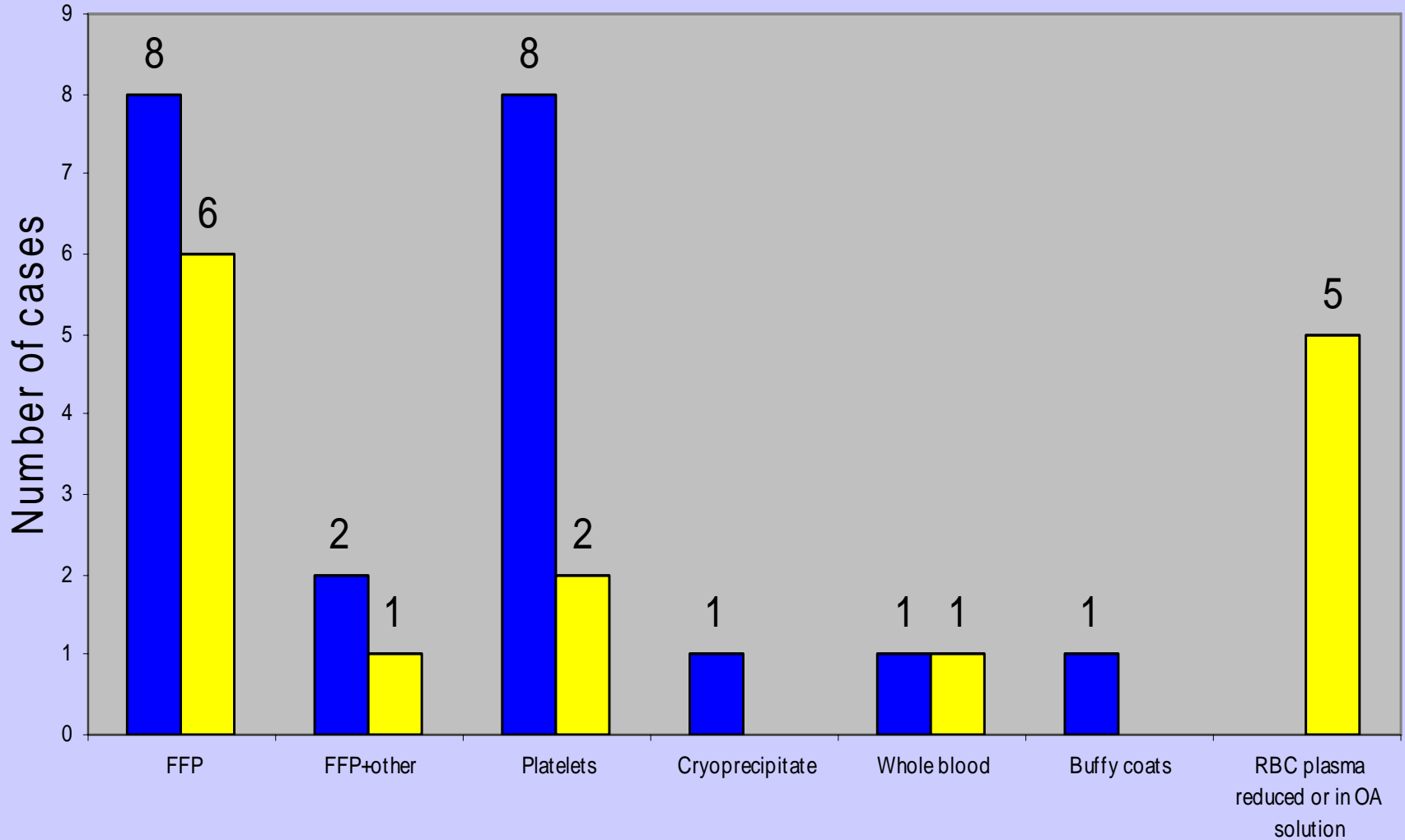
■ Died

■ Recovered





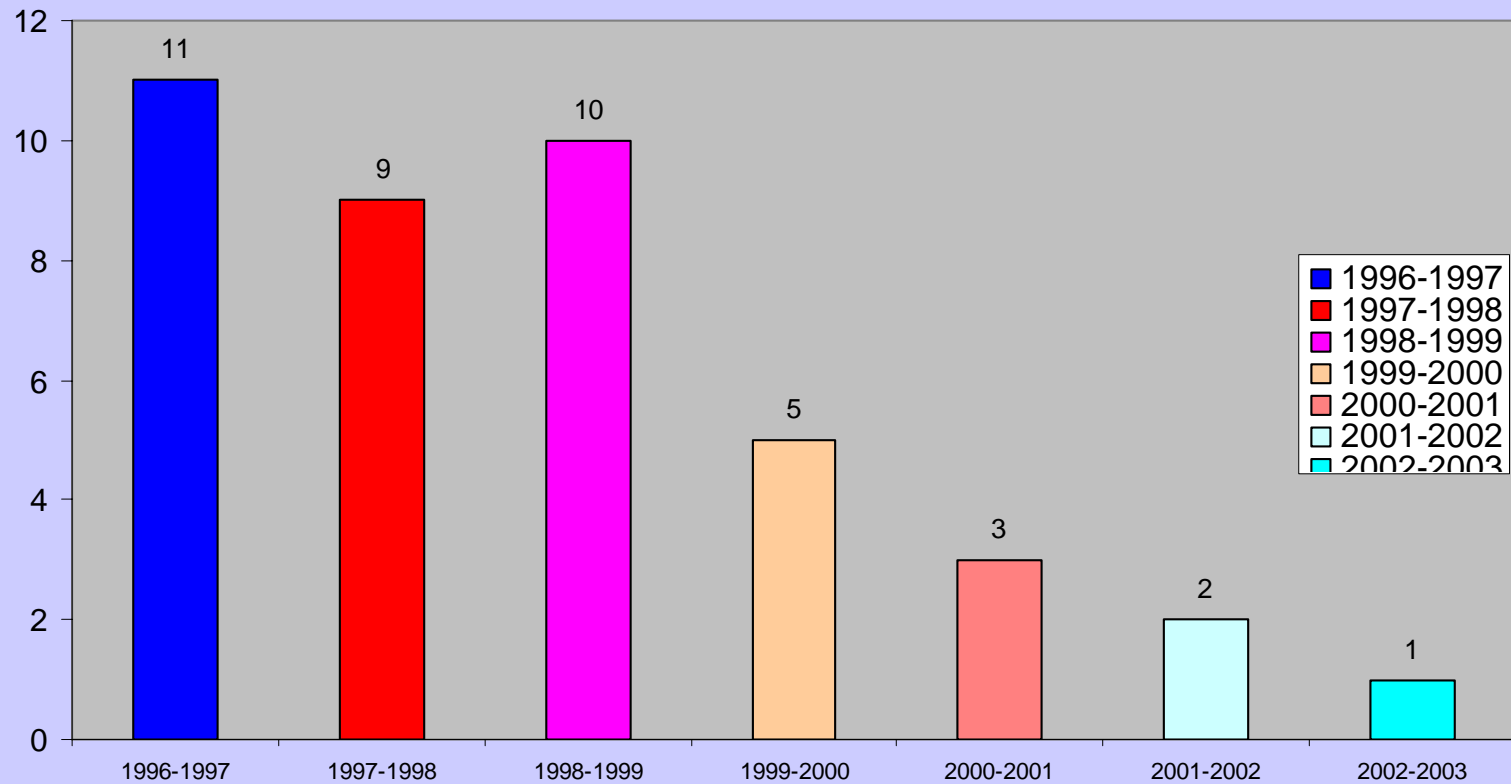
■ Cases with leucocyte incompatibility ■ Leucocyte incompatibility not proven



2003: TRALI

- Plasma-rich components in 20/21 cases with proven leucocyte incompatibility
- 2003: Risk of TRALI
 - FFP: 1 case per 27,000 FFP units issued
 - Platelets: 1 case per 25,000 platelet units issued
 - Red cells: 1 case per 529,000 red cell units issued
- Avoid unnecessary FFP and platelets
- Continued awareness and continued education
- Early evaluation by consultants, a team approach – and early liaison with local Blood Centre

2003: POST TRANSFUSION PURPURA



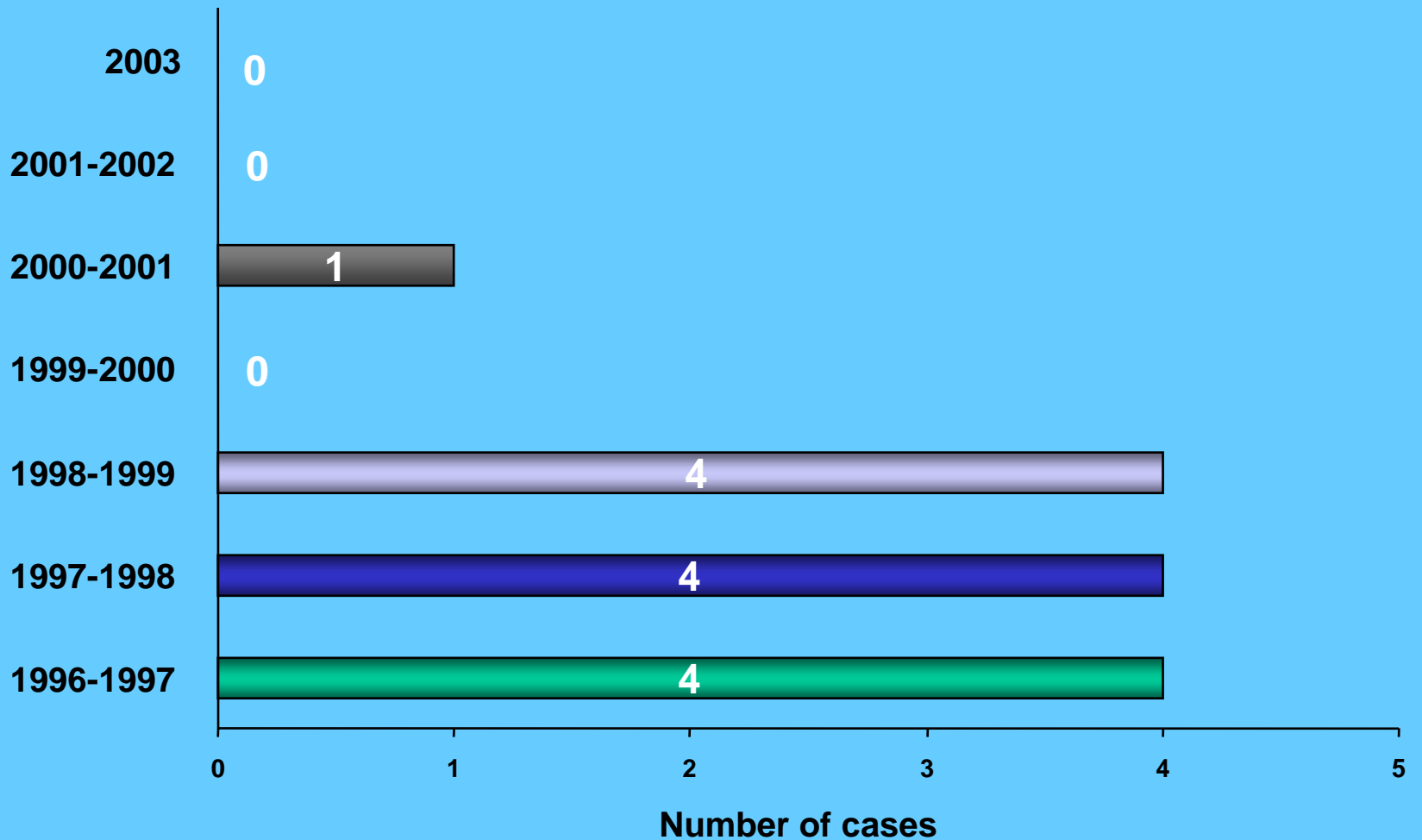
POST-TRANSFUSION PURPURA

- 2003: Only 1 report meeting SHOT definition of PTP
- The drop in numbers of suspected cases of PTP since the introduction of universal leucodepletion has been maintained
- The antibody identified this year was anti HPA 1a. This has been the most commonly implicated platelet antibody; it was identified in 34 of 41 (83%) cases of antibody-proven PTP reported to SHOT since 1996

TRANSFUSION-ASSOCIATED GRAFT-VERUS-HOST DISEASE

NO NEW CASES WERE REPORTED
DURING 2003

NUMBER OF CASES OF TA-GVHD REPORTED TO SHOT EACH YEAR



**THIS PATIENT IS AT RISK OF
TRANSFUSION-ASSOCIATED
GRAFT-VERSUS-HOST
DISEASE**



If this patient needs to have a blood transfusion, cellular blood components (Red Cells and Platelets) must be **QUANTITATIVELY IRRADIATED**



Please inform your blood transfusion laboratory

Name _____

d.o.b. ___/___/___ Consultant _____

Hospital/NHS number _____

Hospital for enquiries _____

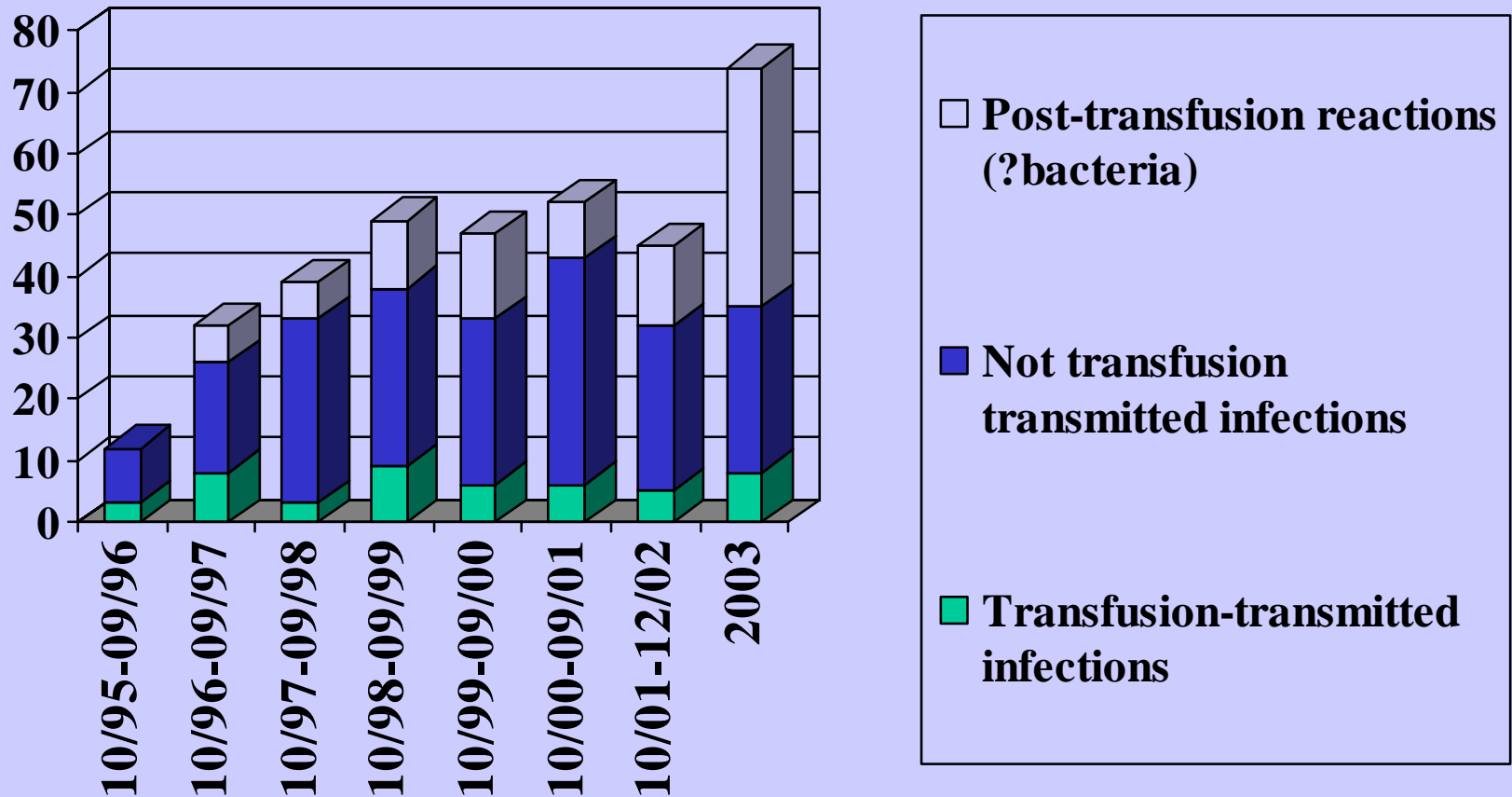
Reason for irradiated blood _____

Irradiated blood needed indefinitely
or until ___/___/___

Date of issue of card ___/___/___

SHOT 1 (2011) NHS UK SHOT 001

TRANSFUSION-TRANSMITTED INFECTIONS BY REPORT YEAR (including Scotland from 10/98 onwards)



TRANSFUSION-TRANSMITTED INFECTIONS 2003

- 2 x Hepatitis B virus
- 1 x Human immunodeficiency virus
- 1 x Hepatitis A virus
- 1 x malaria
- **3 x bacterial contaminations of platelets**
- 1 x *E. coli* infection, 42 year old male - 2 day old unit of apheresis platelets - died 15 hours post transfusion
- 1 x *S. aureus* infection, 60 year old female - 4 day old unit of apheresis platelets - fever and diarrhoea - recovered after antibiotic treatment
- 1 x *S. epidermidis* infection, 61 year old male - 5 day old unit of pooled platelets - hypotension, breathlessness, fever and rigors
- 1 x possible transfusion-transmitted vCJD

TRANSFUSION-TRANSMITTED BACTERIAL CONTAMINATION

**Remains an avoidable cause of death and
major morbidity**

- **29 cases 1995-2003**
- **25 from platelets**
- **19/25: platelets 3 or more days old**
- **Resulted in 9 deaths**

➤ **Increased efforts are needed to prevent
bacterial contamination of blood components**

SHOT EVENTS REPORTED IN PATIENTS LESS THAN 18 YEARS OF AGE

**2003: 59/449 (13%) ANALYSABLE REPORTS
INVOLVED PATIENTS LESS THAN 18 YEARS OF
AGE**

**1996-2002: 141 VALIDATED CASES (8.65% OF ALL
ANALYSABLE REPORTS)**

PATIENTS LESS THAN 18 YEARS OF AGE: NOTABLE FINDINGS

- 25/53 IBCT cases related to a failure to request or issue the blood or blood components of the correct specification; 7 cases of failure to issue MB FFP
- Lack of awareness amongst laboratory, nursing and medical staff of the special needs of paediatric recipients of blood and blood components
- 3 cases where group O platelets or FFP caused haemolysis in group A individuals. UKTS should be encouraged to ensure that sufficient group A platelets are always available for group A neonates and older children

PATIENTS LESS THAN 18 YEARS OF AGE: OUTCOME IN 59 CASES

NO DEATHS DUE TO TRANSFUSION RELATED EVENTS

4 DEATHS FROM UNRELATED CAUSES

**9 PATIENTS SUFFERED SIGNIFICANT MORBIDITY OR ARE
AT RISK OF FUTURE PROBLEMS DUE TO RhD
SENSITISATION**

5 cases of haemolysis from ABO incompatible components

2 cases of RhD negative females who received RhD
positive blood

1 child (18 months) was significantly over transfused

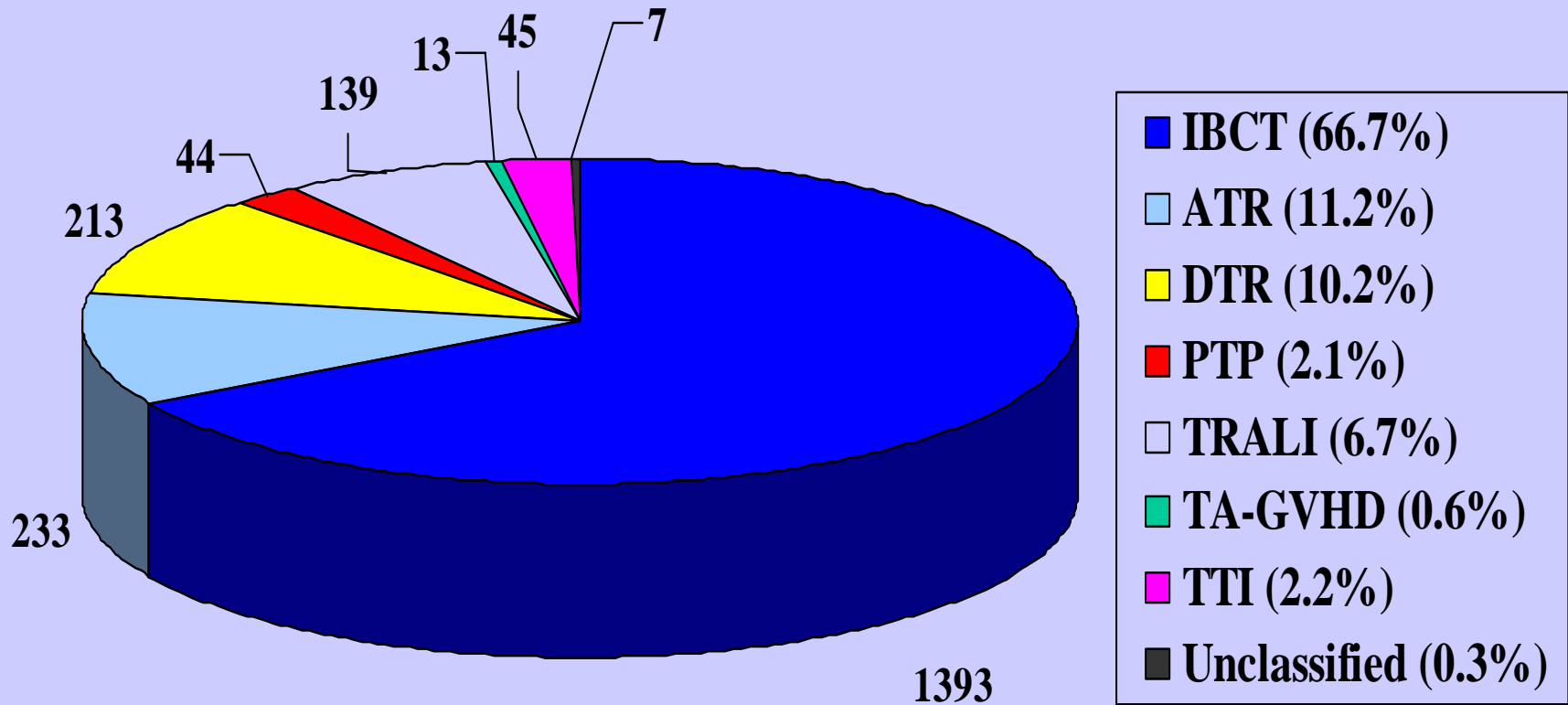
1 neonate was exchange transfused with blood prepared
for an intrauterine transfusion

Cumulative data

1996-2003

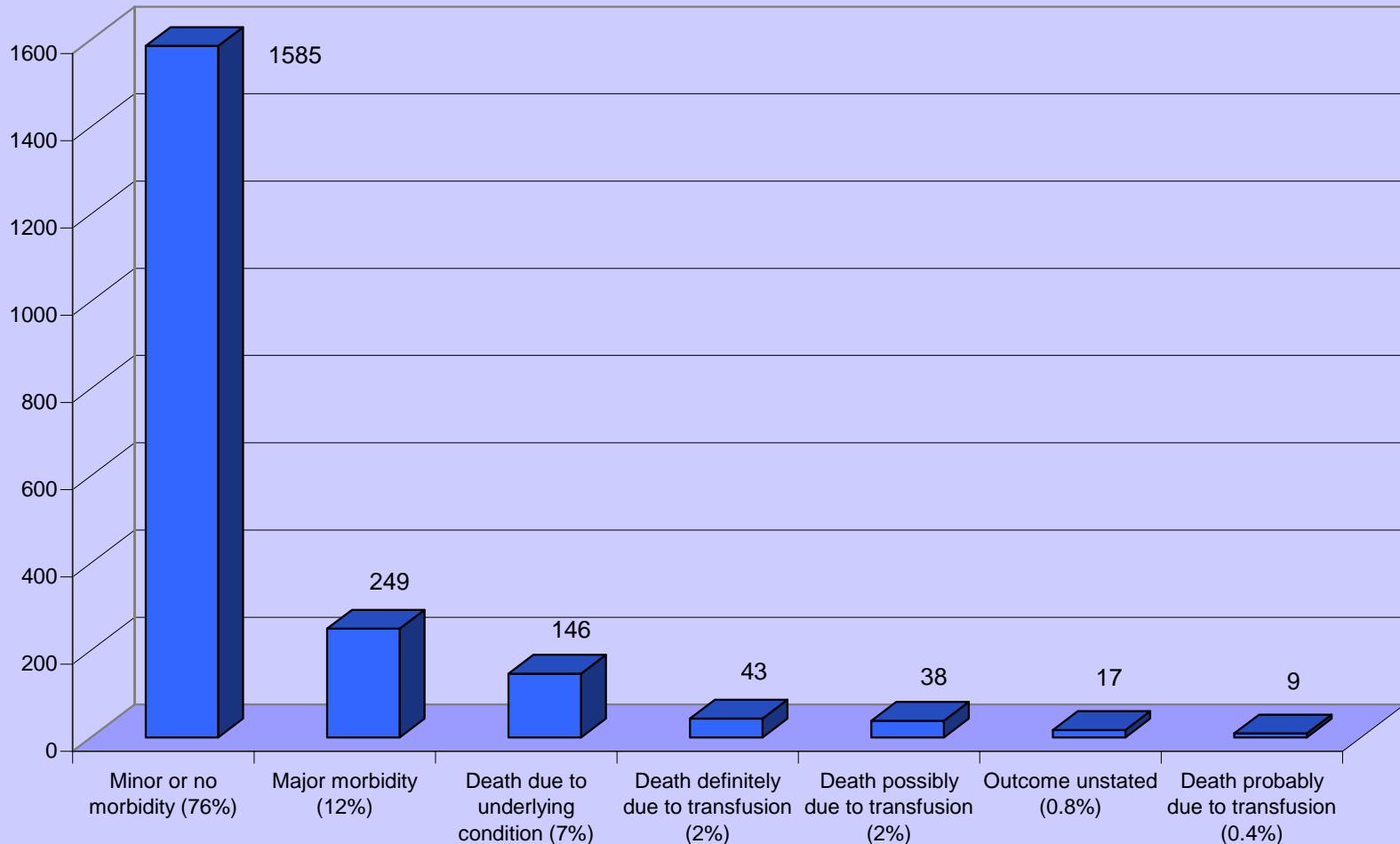
QUESTIONNAIRES BY INCIDENT

1996 - 2003 (n=2087)



MORBIDITY AND MORTALITY

1996 - 2003 (n=2087)



1996-2003 total components issued:
~23 million

Risk of serious hazard	2087	1 in 11,000
Risk of major morbidity	249	1 in 92,000
Risk of death	90	1 in 255,500
Risk of IBCT (all categories)	1393	1 in 16,500
Risk of ABO incompatible	226	1 in 102,000
Risk of TRALI	139	1 in 165,000

2003: 46 RECOMMENDATIONS TARGETED TO MAXIMISE EFFICACY

➤ *The most important contribution which could now be made to the safety of blood transfusion would be an initiative to improve the safety of the bedside pretransfusion checking procedure. Will require investment in:*

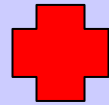
- Education and audit
 - Evaluation and implementation of suitable IT
- Co-ordinated initiative - NPSA/NBTC/SHOT

SHOT RECOMMENDATION

Active participation

**REPORTING
TO SHOT**

**Errors
Adverse events**

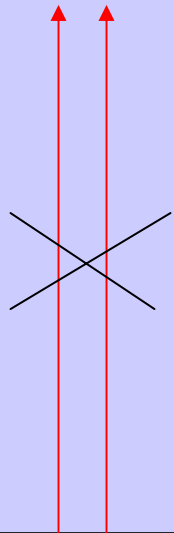


IMPLEMENTING

Safety improvements

SHOT

**BLOOD SAFETY POLICY
PRIORITISATION OF RESOURCES**



**SHOT
Recommendations**

HOW TO MAKE IT HAPPEN - I

- **NEED CLEAR DECISION MAKING PATHWAYS FOR USING SHOT DATA TO INFLUENCE BLOOD SAFETY POLICY AND PRIORITISATION OF RESOURCE ALLOCATION**

- **PROACTIVE LEAD BY CMO'S NBTC IN ENGLAND AND ITS COUNTERPARTS IN SCOTLAND, WALES AND NORTHERN IRELAND**

- **EXTEND PARTNERSHIP BETWEEN UKTS/Hospitals/NBTC**
 - **RTC, facilitated by the blood services**
 - **forum for debate and sharing of problems and solutions in a supportive environment with expert clinical input.**
 - **SHOT reports should be a standing agenda item for regional BMS forums and SPOT meetings**
 - **RTC - support translation of guidelines into local practice**
 - **Develop structured approach to investigation and management of immunological reactions**

HOW TO MAKE IT HAPPEN – II

- **A national body is needed to evaluate and prioritise blood safety initiatives**
- **Extend remit and membership of MSBT?**
(MSBT = DH Advisory Committee on the Microbiological Safety of Blood and Tissues for Transplantation)
- empower it to take on this role.
- **Initiative to address resource needs and procurement**

ACKNOWLEDGMENTS

- All reporting hospitals!
- National co-ordinators
 - Dorothy Stainsby
 - Katy Davison (Health Protection Agency CDSC)
- SHOT office
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- Steering Group
- Lorna Williamson, Elizabeth Love
- Paul Ashford
- UK Transfusion Services