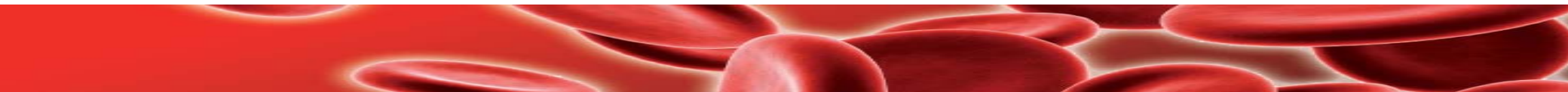


SHOT Update

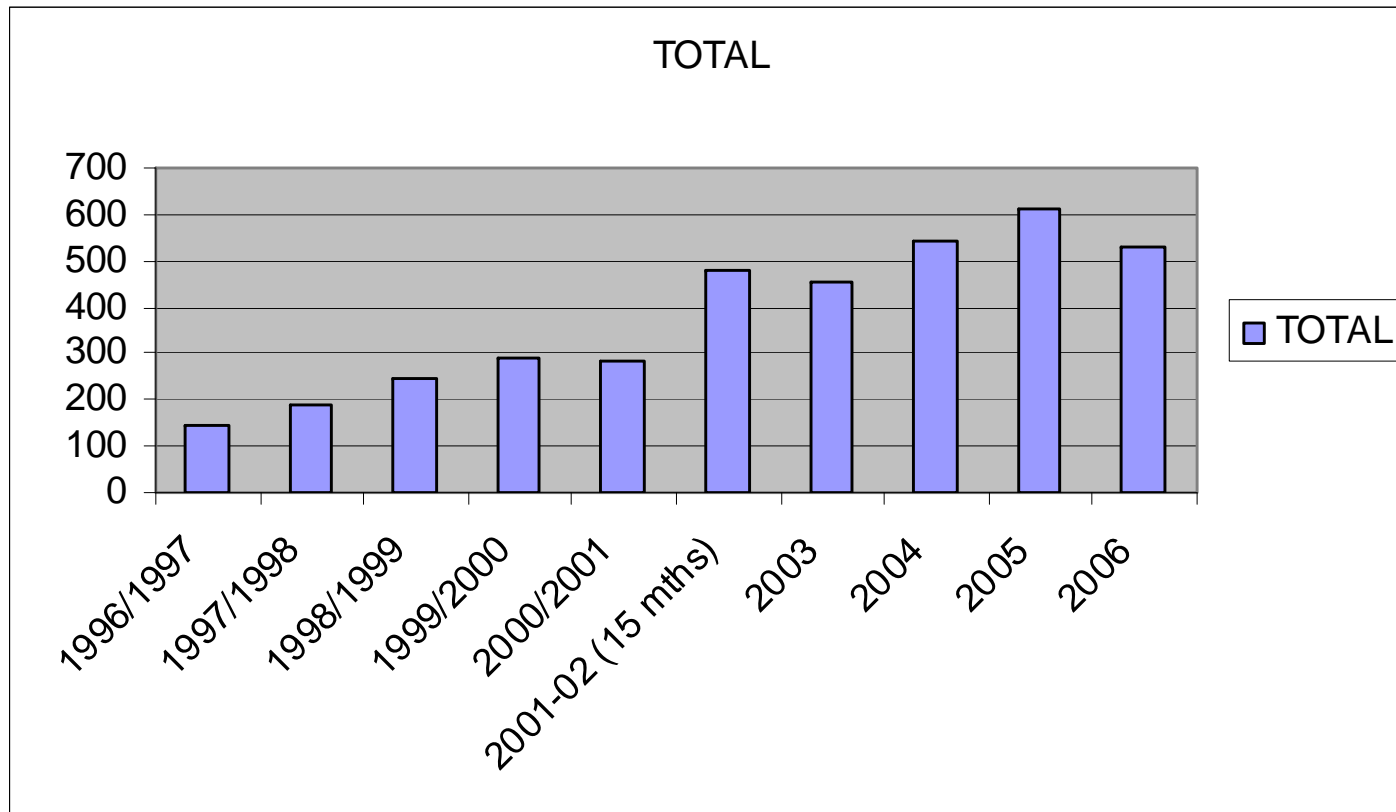
...so where *are* the risks ?

Presented by
Tony Davies - Transfusion Liaison Practitioner

WASPS Day
30th June 2008

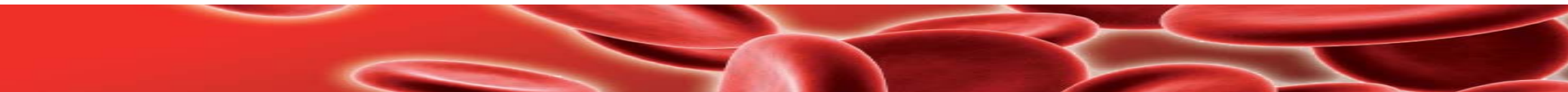


Total number of reports to SHOT

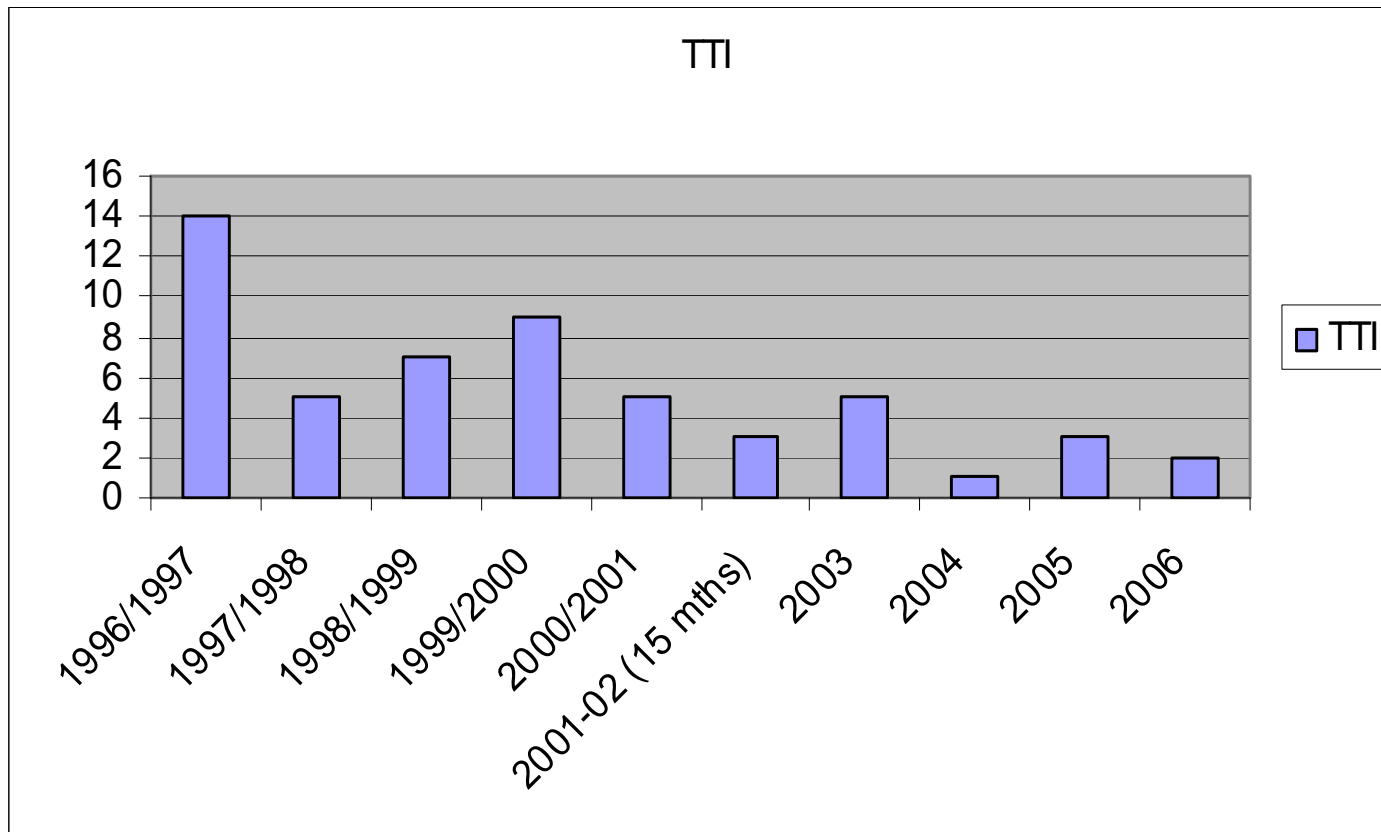


'Headline' risks related to donors

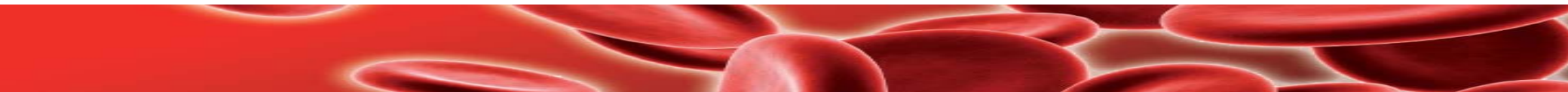
- Microbiological risks
 - Viral
 - Bacterial
 - Prion
- Antibody mediated
 - TRALI



Transfusion Transmitted Infection

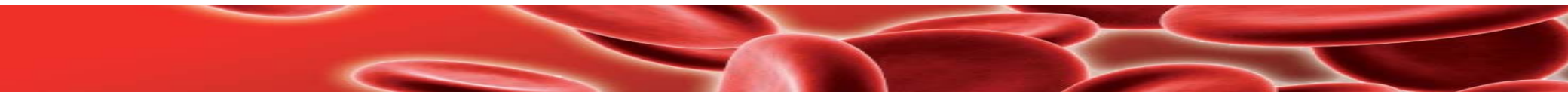


- Better, more sensitive (*MUCH more expensive !*) testing systems
- Donor selection and exclusion
- Diversion of first 20ml donation



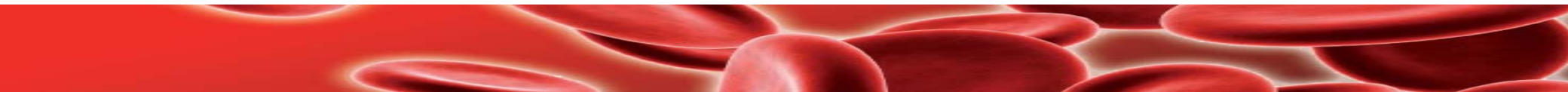
Residual infection risk per donation In England & Wales

	New donors	Repeat donors	All donors
HBV	1/ 200,000	1/ 800,000	1/ 610,000
HCV	1/ 6,580,000	1/ 45,190,000	1/ 28,050,000
HIV	1/ 2,680,000	1/ 7,420,000	1/ 6,290,000



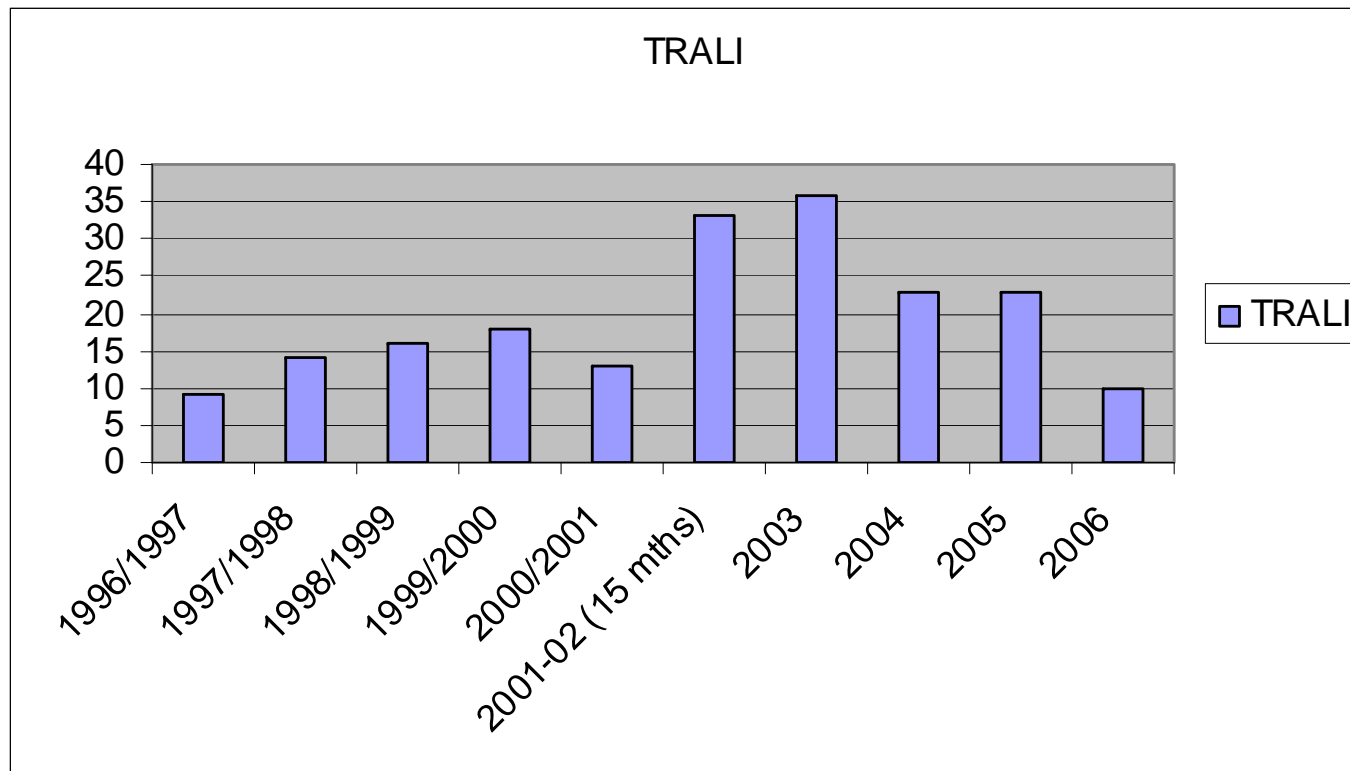
TRALI

- Approx 200 cases reported to SHOT over 10 years
- Half were highly likely or probable on investigation and analysis - still much rarer than US reports
- Incidence has dropped since increased use of male-only FFP since 2003



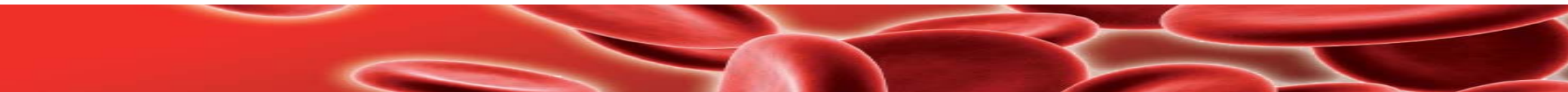
TRALI

Transfusion Related Acute Lung Injury

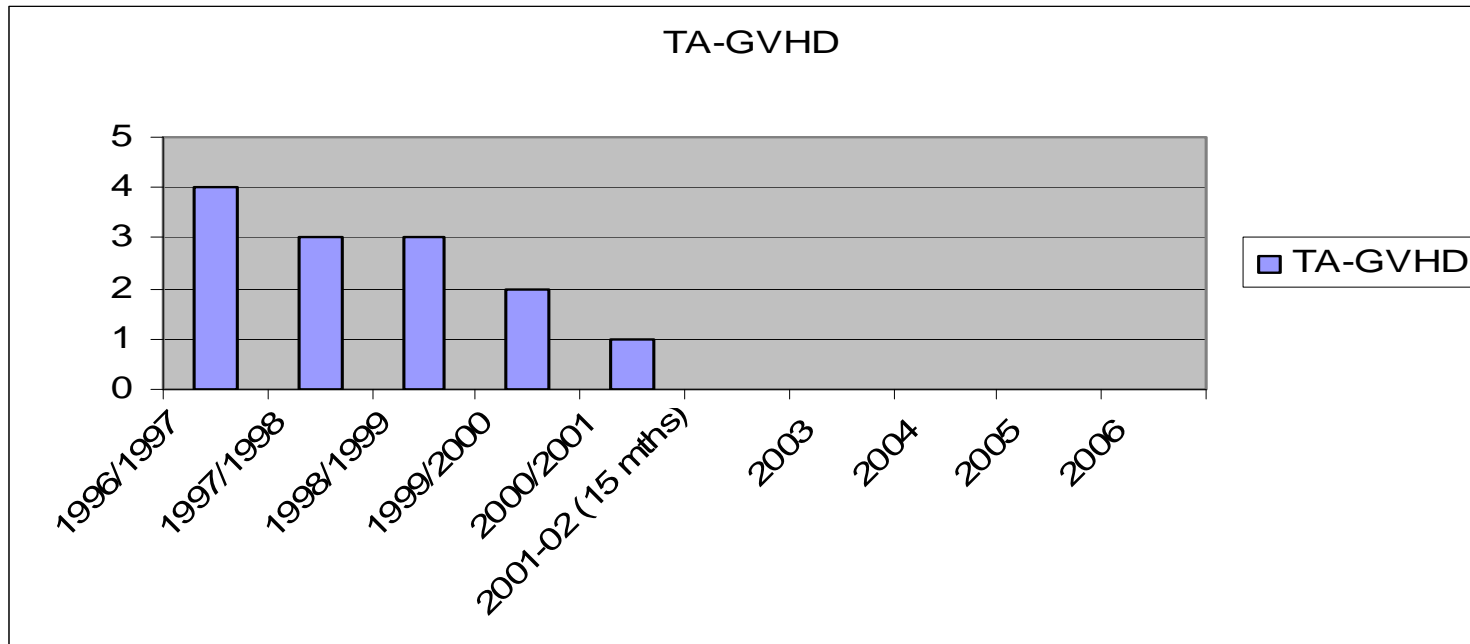


Blood Services

- Processing errors, failures or omissions
 - Leucodepletion
 - Bacterial testing
 - Irradiation
- Testing failures
 - False negatives
 - Erroneous release of component
- Distribution and transportation errors
 - Cold chain and storage



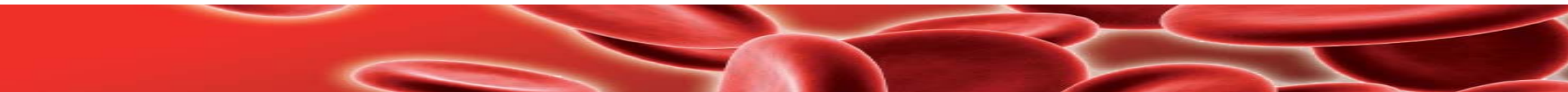
TA - GvHD



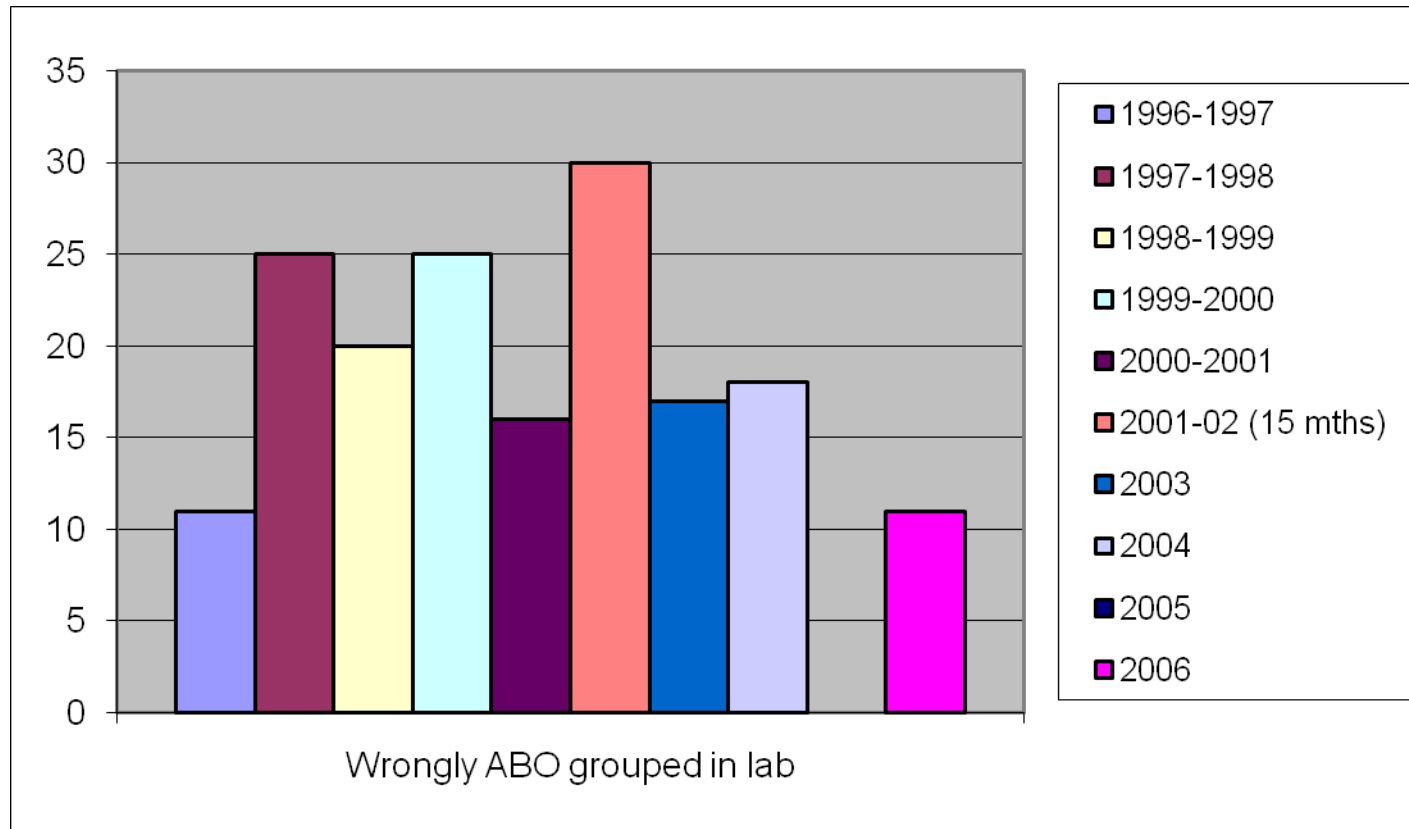
TA-GvHD has decreased since leucodepletion
(one case since, in 2001)

Hospital laboratory risks

- Patient testing errors and omissions
- Compatibility testing errors or omissions
- Cold chain and storage related problems
- Component selection errors
- Failure to meet special requirements
 - Irradiation
 - CMV negative
 - Other e.g. phenotyped, IgA deficient, MB treated etc

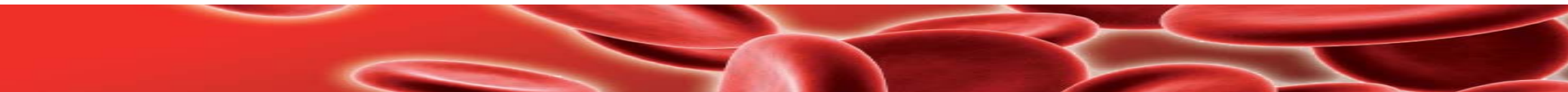


Wrongly grouped by lab



Lab grouping errors

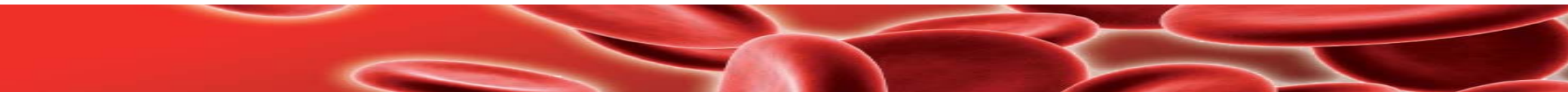
- Transposed samples
- Wrong result from test
- Incorrect interpretation of result
- Transcription error of results
- More with manual than automated methods
- Exacerbated where no historical group available
- Not getting any worse – possibly improving with more and more fully automated labs



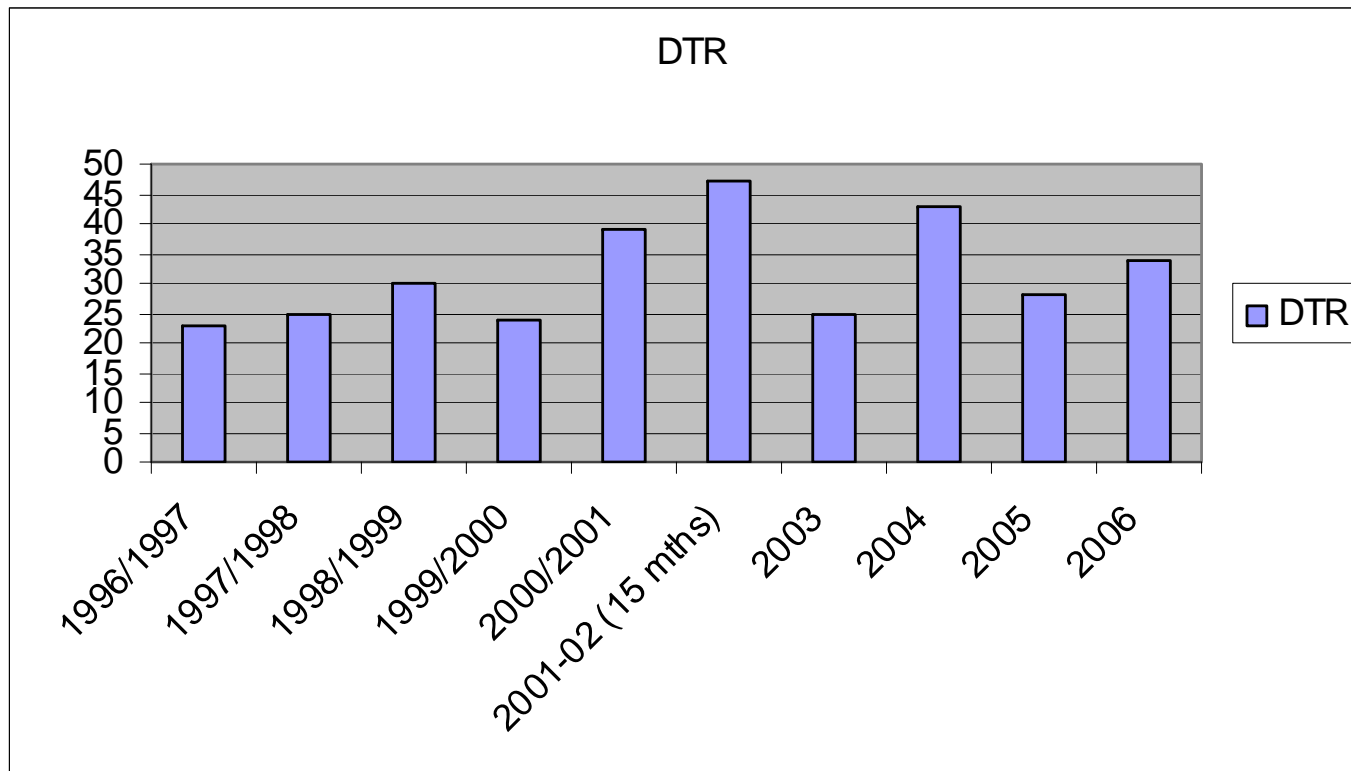
Patient related risks

- mostly non error-related

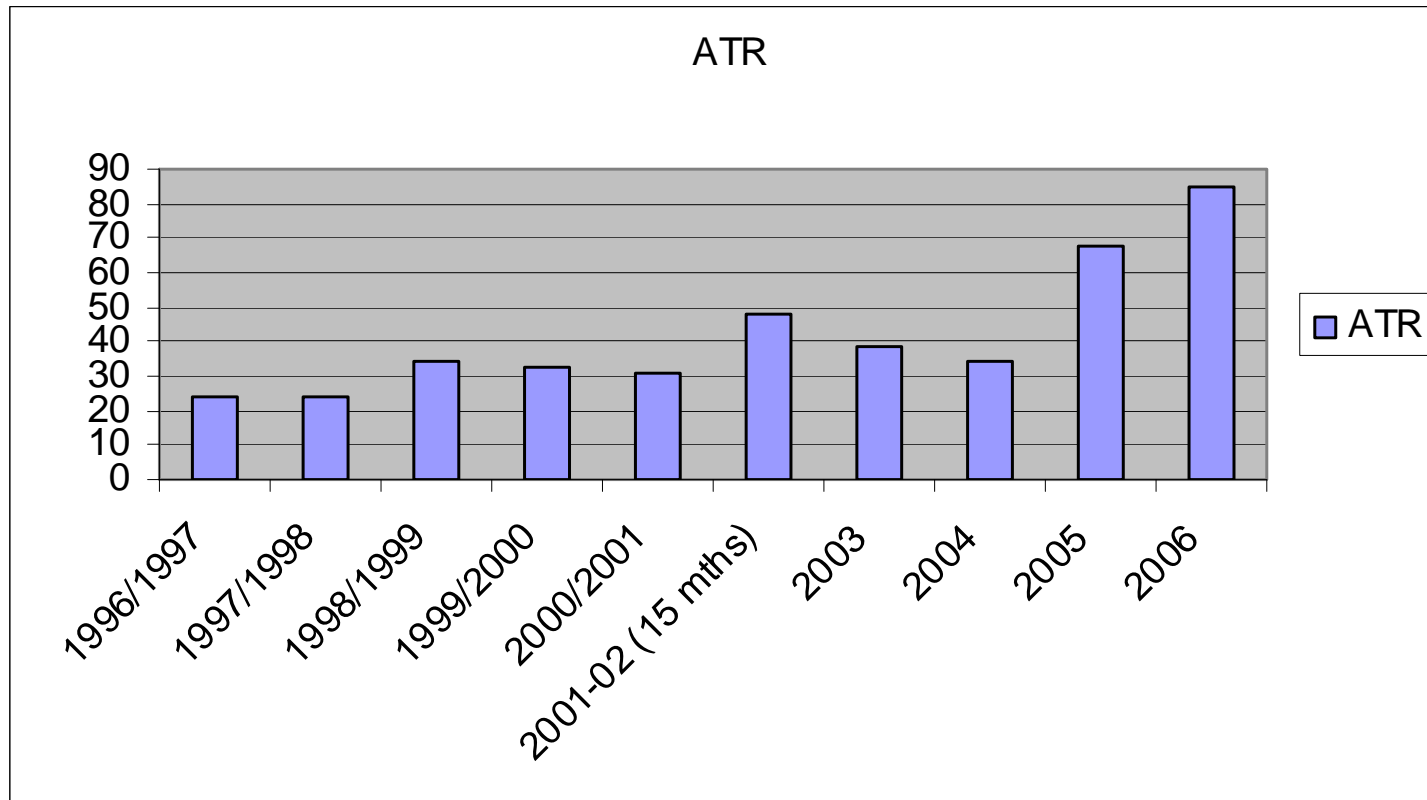
- Acute transfusion reactions
 - Allergic and anaphylactic
- Haemolytic transfusion reactions (non ABO)
- Post transfusion Purpura



Delayed Transfusion Reaction



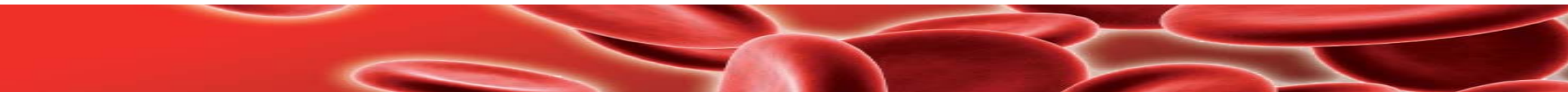
Acute Transfusion Reactions



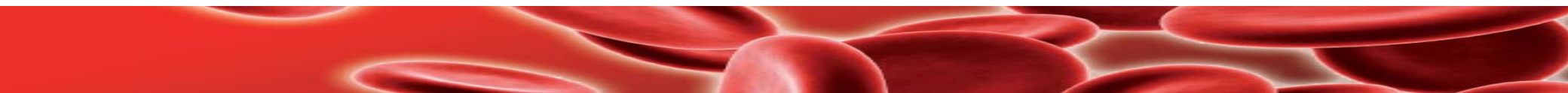
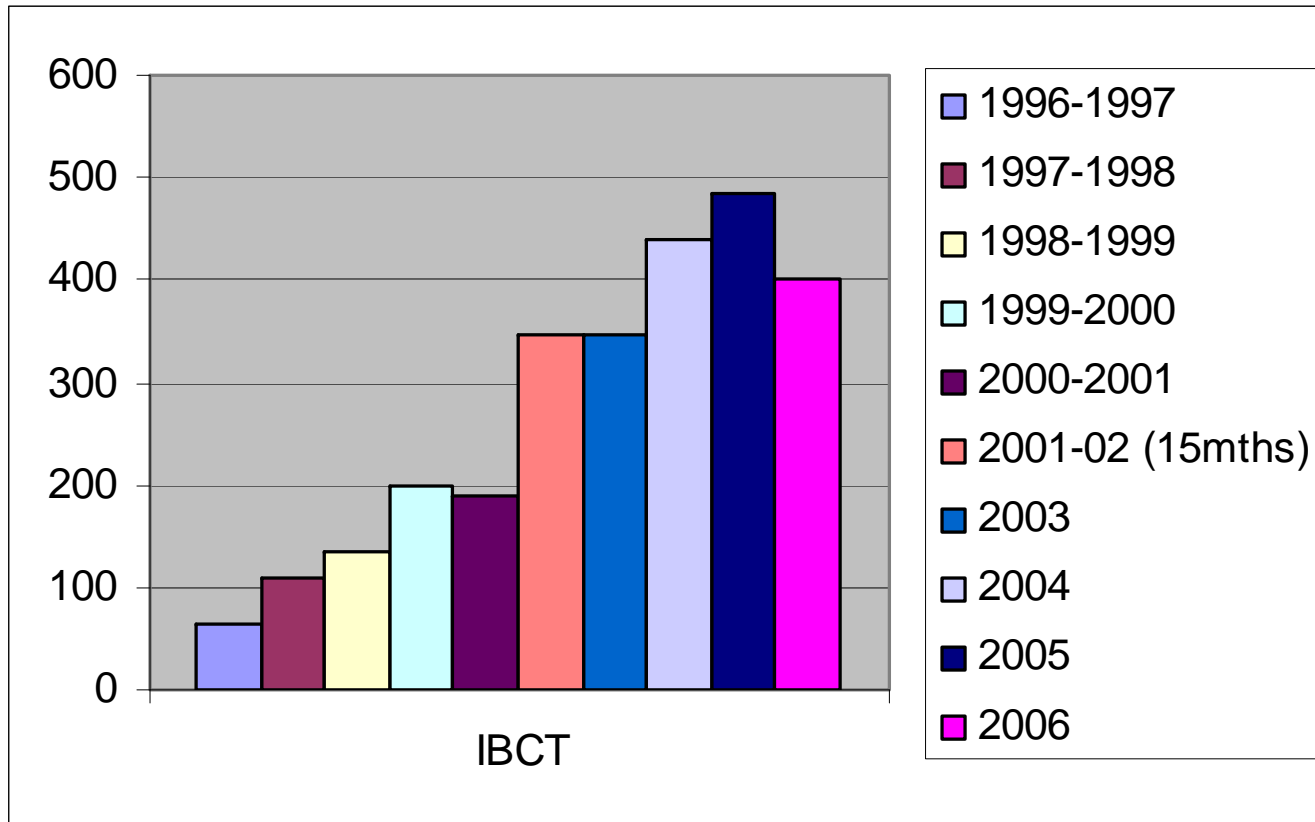
(ATR increasing since BSQR in 2005)

Clinical risks

- Blood administration errors
 - Patient identification
 - Timing, rate, volume, monitoring
- Inappropriate and unnecessary transfusion
 - Poor decision making
 - Incorrect prescribing
 - Inadequate evaluation of results
 - Poor assessment of patient
 - Communication failures
- Over / Under transfusion, TACO

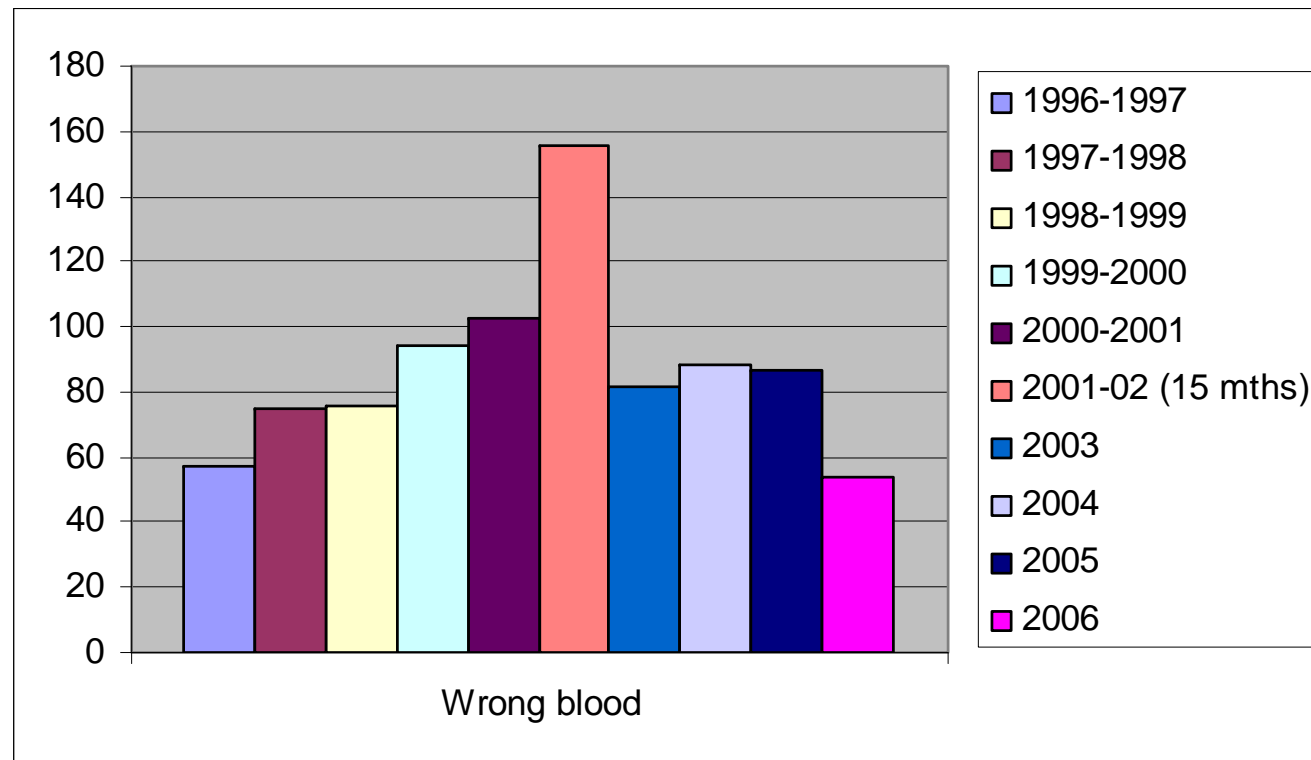


IBCT

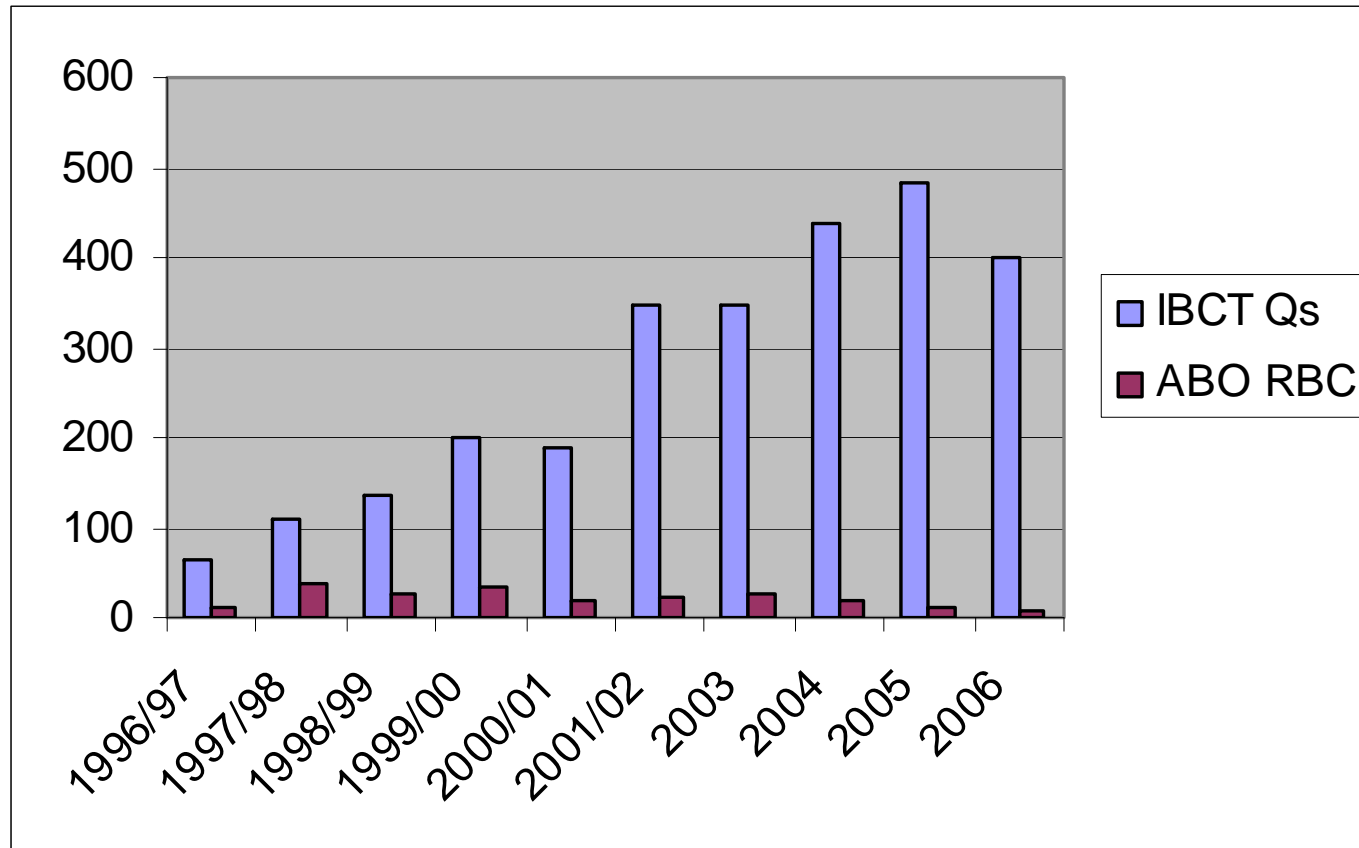


Wrong blood

Patient received a transfusion of the wrong group or intended for another patient



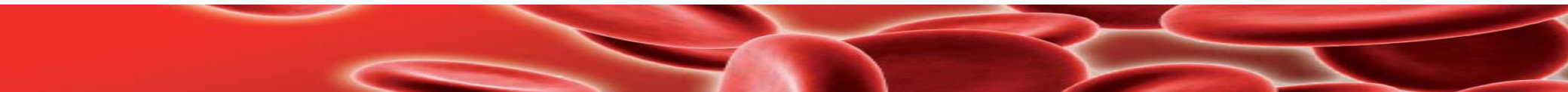
ABO incompatibility



ABO incompatibility

- Risk is likely to be greatly underestimated, but...
 - France 1:135,000
 - SHOT-UK 1:100,000
 - Ireland 1:71,000
 - New York State 1:38,000
 - Germany 1:36,000
 - Quebec 1:33,000

Callum, J.L., Sunnybrook Hospital, Toronto

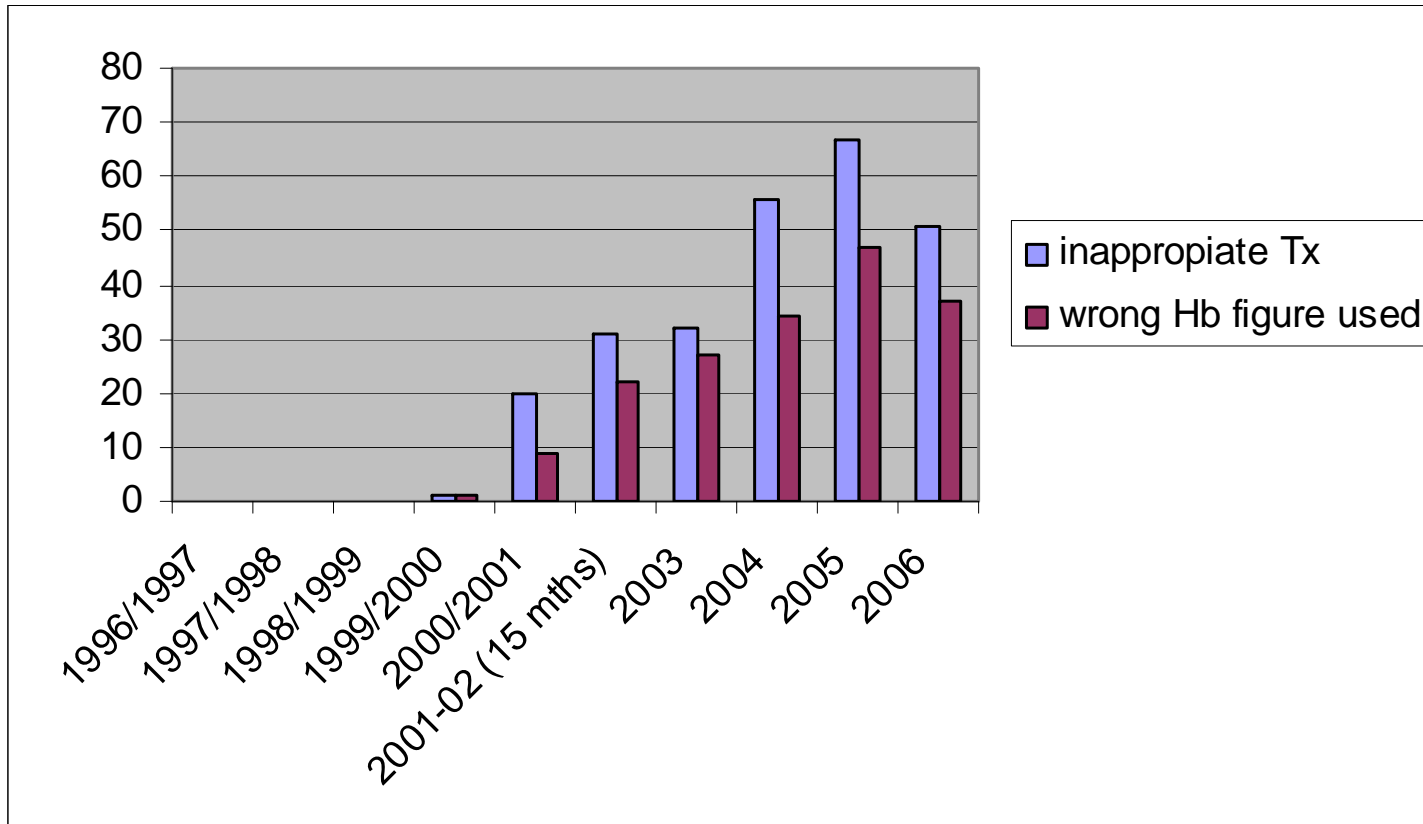


‘Wrong blood – Wrong patient’

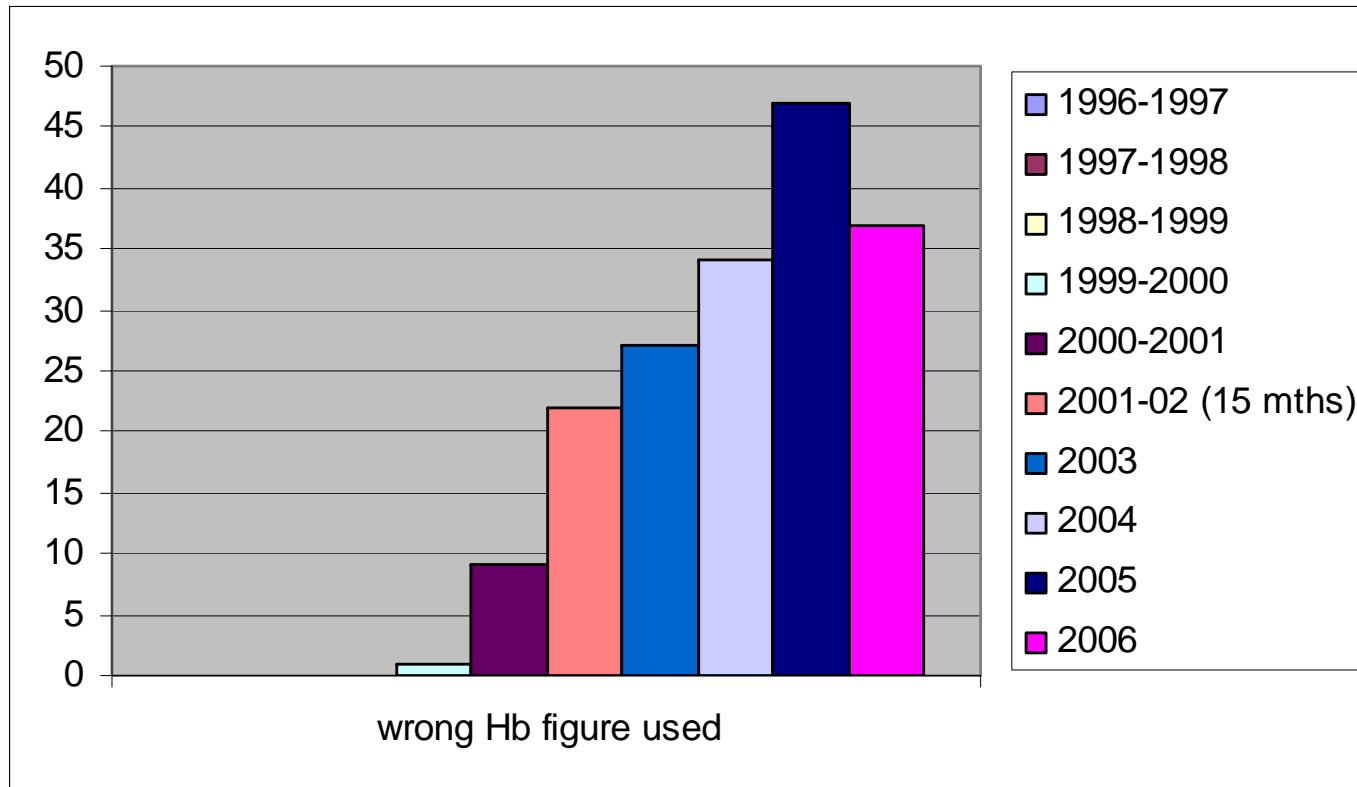
- NOT increased – increase in “IBCT” is for other reasons
- ABO incompatibilities actually decreased
- Initiatives which have impacted on this
 - BBT and role of hospital transfusion practitioners
 - National Comparative Audit results



Inappropriate transfusion



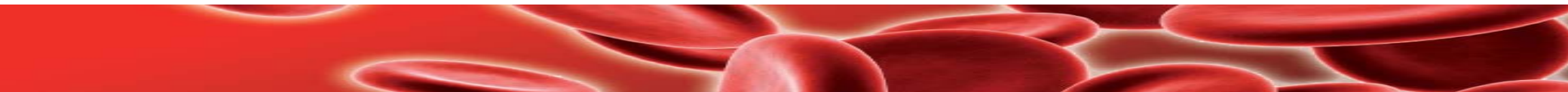
Wrong Hb figure used



Inappropriate or unnecessary transfusion - 1

Wrong Hb result used in decision-making

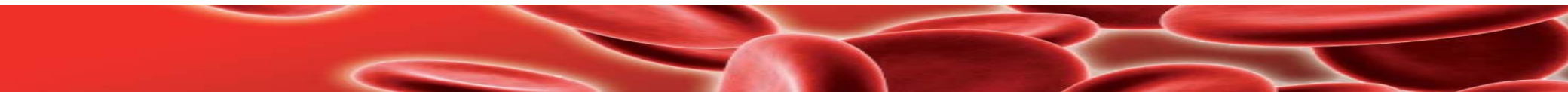
- Phlebotomy error
 - wrong patient
 - drip arm
 - technique – slow, settling in syringe etc
- Haematology laboratory error
 - Analyser
 - main lab
 - point of care testing including blood gas machine
 - Staff
 - transposition of samples
 - transcription error of results
- Clinical error
 - Misreading of figures off computer or printed result
 - Transcription error
 - Telephoned result taken down wrong including reversal of WCC and Hb figures



Inappropriate or unnecessary transfusion - 2

Prescription error – all relate to *over* transfusion

- Inadequate handover between doctors shifts
- Illegible notes or prescriptions
- Incorrect dose prescribed
- Incorrect rate prescribed
- Verbal prescription only
- Hb not checked prior to prescribing
- Protocol for transfusion triggers ignored
- Lack of knowledge of indications for transfusion



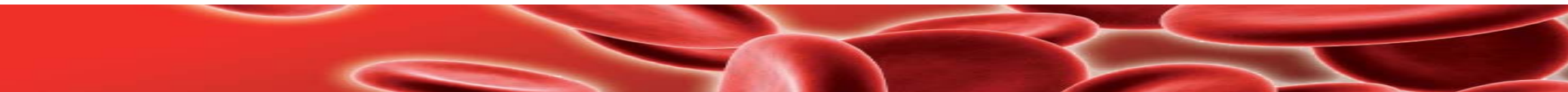
Case 1 from 2006

- A sick, pre-op infant had a platelet count of 48.
- ‘1 pool of platelets’ was prescribed but did not specify the volume.
- Verbal instruction from the doctor was ‘15 ml/kg’.
- The nurses misheard this as ‘50 ml/kg’ and administered 300 ml of platelets over 30 minutes.
- The infant suffered a cardio-respiratory arrest and died on PICU two days later.



Case 2 from 2006

- 80 year old woman post op #NOF, Hb reported as 3.9 g/dl.
- Pre-operative Hb had been 9.5 g/dl and there had been little blood loss.
- A junior doctor diagnosed hypovolaemia and prescribed six units of red cells which were given within sixteen hours.
- The post-transfusion Hb was 18.2 g/dl and the patient died from cardiac failure.
- It was later realised that the blood sample with an Hb of 3.9 g/dl was taken from a drip arm.



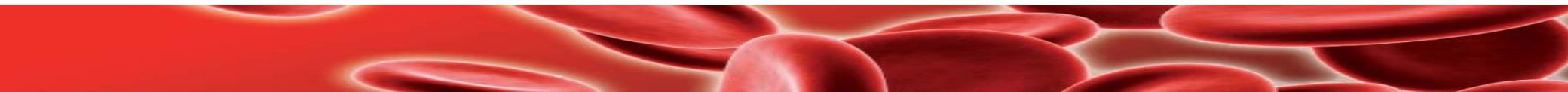
Under-transfusion

- Survey of anaesthesia related mortality in France
- Analysis of years death certificates (537,459) identifying those in relation to:
 - Anaesthetic
 - interventional procedures
 - trauma and accident
- Sample analysed in detail – 4200 cases. After exclusions 1491 analysed from notes and questionnaires to physicians involved



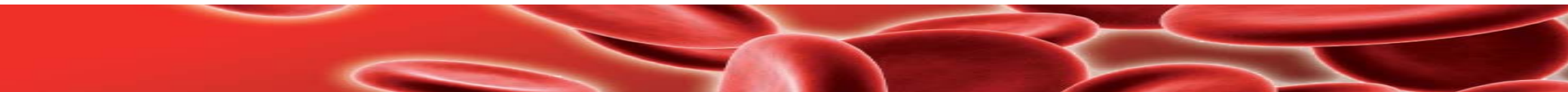
Results

- Projection of > 100 deaths per annum directly related to inadequate blood management
 - Lack of Hb monitoring
 - Low threshold for transfusion
 - Reluctance to transfuse
 - Slowness/delay in transfusion
- This data not captured by any haemovigilance system
 - Lienhart et al, Anaesthesiology, 2006, 105(6):1087-1097



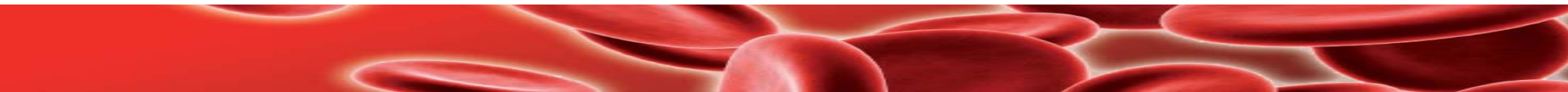
Risks compared with medicines errors

- In USA each year 4000-7000 patients die as result of medication errors
- 6-7% of all hospitalisations are due to medicines adverse events and reactions
- 2 day increase in average length of stay as result of medicines errors and reactions
 - Eichelbaum et al, Annual Rev Med, 2006, 57:119-37
- In Netherlands 150 deaths /year (8.6% of deaths due to unintended damage)



Need for EDUCATION of doctors

- ALL doctors need to have basic grounding in transfusion practice and optimal use as part of curriculum of medical students and specialty training in all disciplines
- Goes beyond training and competency assessing



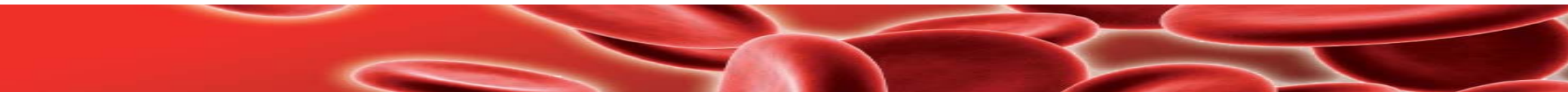
Where is SHOT going ?

- Expanding the team
 - New Operations Manager
 - Clinical Incident Specialist
 - Laboratory Incident Specialist



Where is SHOT going ?

- Upgrading the IT
 - Upload older data from paper records
 - Enhanced search facility
 - ‘Real time’ project work / reporting
 - Improving the questionnaires



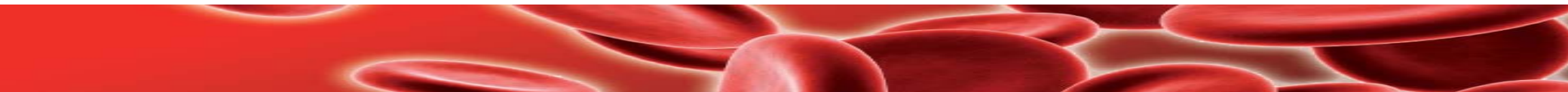
Where is SHOT going ?

- Working with MHRA
 - Reconciling annual data
 - A common EU approach to the definition of adverse reactions and events



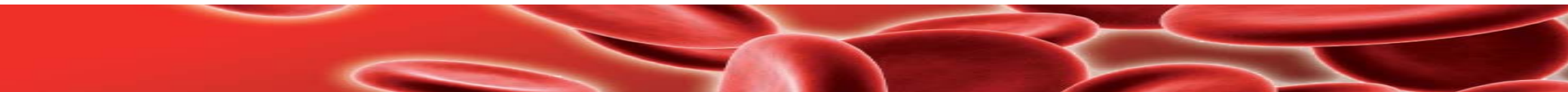
So what *do* I report?

- Criteria for reporting *Adverse Reactions* to MHRA and SHOT are *exactly* the same
- All SAEs arising from a QMS failure within the responsibility of the blood bank to MHRA and SHOT (Many SAEs reported to MHRA are 'near misses' according to SHOT)
- All SAEs involving clinical staff to SHOT only



Anti-D Reporting Categories

- Omission or late administration of anti-D immunoglobulin.
- Inappropriate administration of anti-D immunoglobulin to;
 - a D positive patient.
 - a patient who already has immune anti-D.
 - a mother of a D negative infant.
 - a different patient from the patient it was issued for.
- An incorrect dose of anti-D immunoglobulin according to local policy.
- Administration of expired, or otherwise out of temperature control, anti-D immunoglobulin



What's new for 2008 ?

- Near Miss pilot study
- Cell salvage pilot
- New TACO questionnaire
- New category of unnecessary or inappropriate transfusion
- Anti-D has its own chapter
- More emphasis on Paediatric data



Near Miss Pilot – Stage 1

- Looking at barriers in place to prevent acceptance of erroneous sample into laboratory
- Stage 2 will look at errors detected within the laboratory
- Stage 3 will look at clinical near misses beyond the laboratory

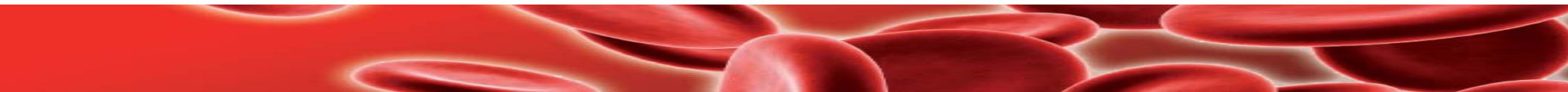


Near Miss Results

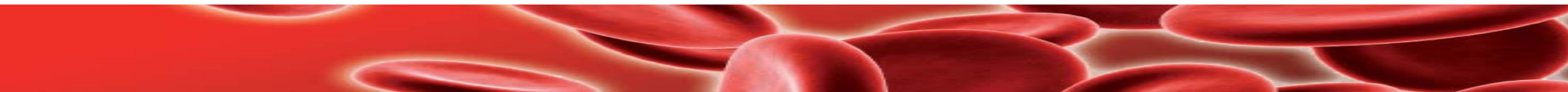
- 131 hospitals registered for pilot (**15 in Wales**)
- 117 have returned data to date (**14 in Wales**)
- 208,000 samples received in one month
- Mean workload nationally = 1776 samples/month
 - Range 82 – 6155 samples/month
- **Mean workload in Wales = 1100 samples/month**
 - Range 123 – 2283 samples/month



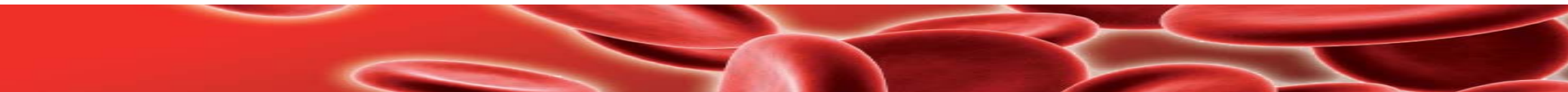
- 7,842 / 207791 samples rejected by labs nationally
- **856 /15408 samples rejected by labs in Wales**
- Average rejection rate nationally = 3.8 %
 - Range 0.8% - 13.2%
- **Average rejection rate in Wales = 5.6 %**
 - Range 0.8% - 12.6%
- Nationally 5698 errors were in core hrs compared to 2128 non-core hrs
- **In Wales 533 core hrs / 323 non-core**



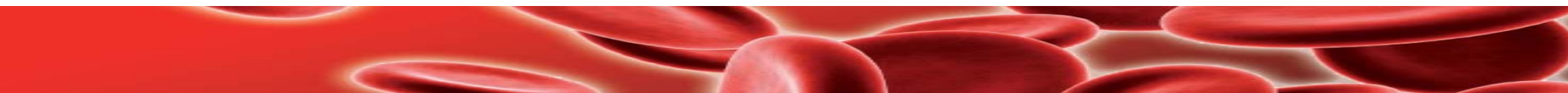
What was the Error ?	National	Wales
Details Missing	3018	477
Details Incorrect	2959	172
Addressograph	443	39
Underfilled/inappropriate	1106	156
Details Discrepant	539	23
Relabeling allowed	730	45



Who took the sample ?	National	Wales
Doctor	2452	391
Nurse	764	41
Midwife	1165	89
Support worker	59	7
Phlebotomist	318	14
Don't know	3068	309



Where was the sample from ?	National	Wales
Emergency Department	1532	204
Emergency Medical Unit	335	59
Intensive Care / HDU	224	30
Pre-op Clinic	498	27
Obs & Gynae	1404	152
Neonatal	66	4
Paediatrics	209	22
General Ward	2336	245
GP / Community	1060	66



Acknowledgements

- SHOT Writing Group
- SHOT Office staff for data handling
- Clare Taylor for slide content
- Hospitals for continuing to report to SHOT
- Hospitals taking part in the Near Miss study

