

The role of SHOT in leading improvements in blood safety

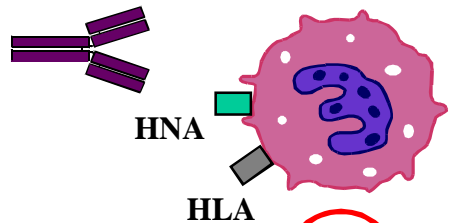
Lorna Williamson,
Medical and Research Director,
NHS Blood and Transplant.

SHOT has include TRALI since 1996

ACUTE DYSPNOEA WITH HYPOXIA
AND BILATERAL PULMONARY
INFILTRATES OCCURRING DURING OR
IN THE 24 HOURS AFTER
TRANSFUSION, WITH NO OTHER
APPARENT CAUSE
(6 hours since 2006)

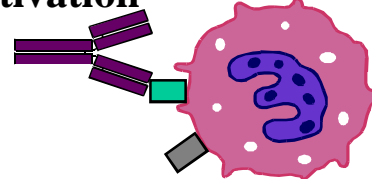
One proposed mechanism of TRALI

HLA/HNA antibodies in donor plasma



1

C' activation

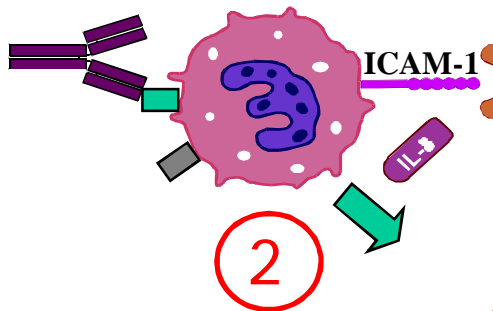


2

Blood transfusion

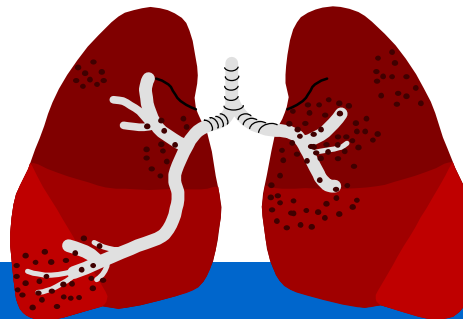
C5a chemotactic factor

inactive → active



2

Endothelial Cell

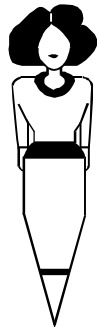


- Adherence of neutrophils to pulmonary endothelium or epithelium
- cell membrane permeabilisation
- lung oedema
- Secretion of IL-1 β , TNF α , IL-8 may amplify the reaction

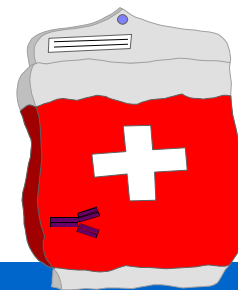
Main source of HLA/HNA antibodies is donor plasma



A male (or female) donor with a history of blood transfusion

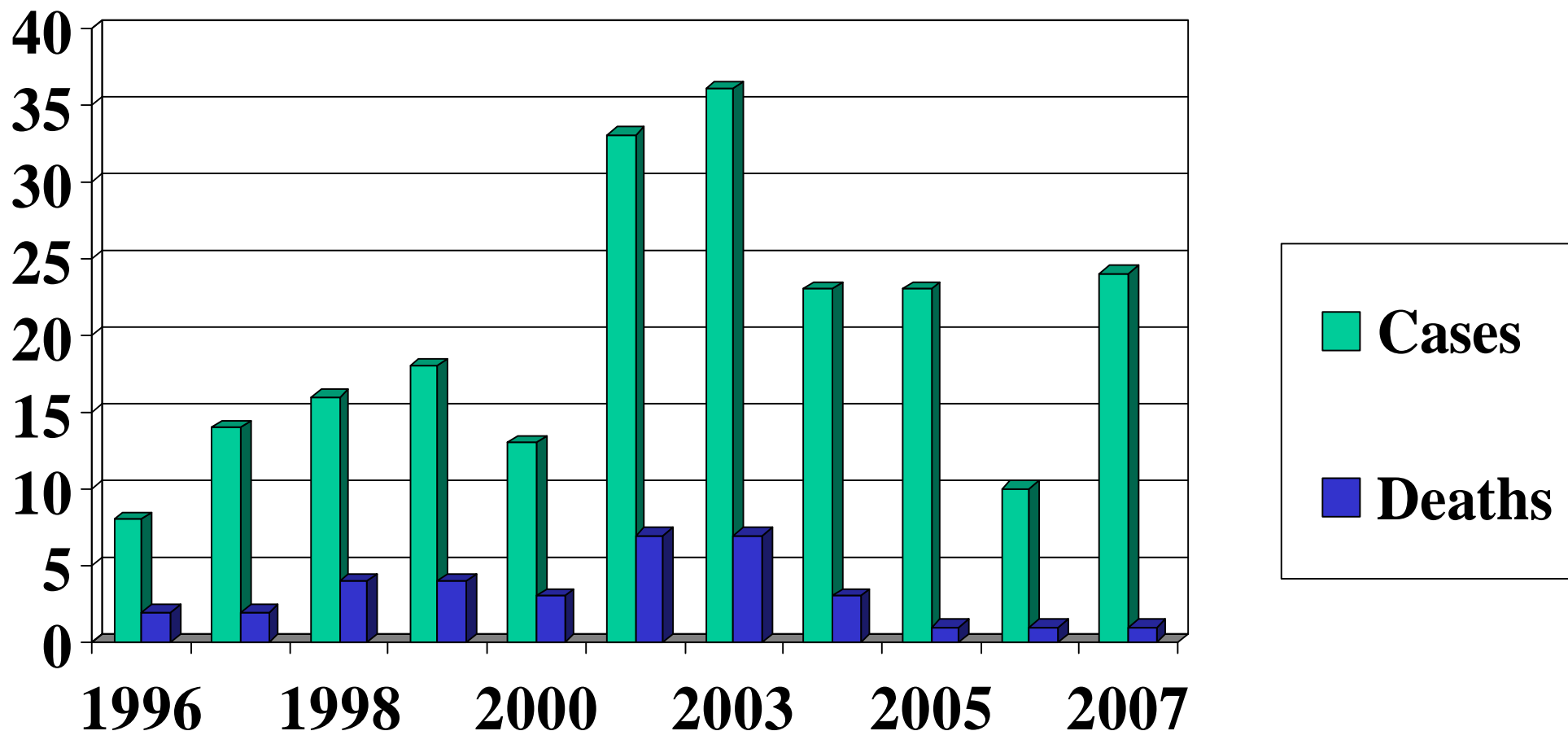


A female donor with history of pregnancy - antibodies in 10-15%



HLA/HNA antibodies

TRALI cases analysed by SHOT
1996-2007 (n= 252)



TRALI risk reduction project 2003: entirely based on SHOT data

- Donor HLA/HNA antibodies accounted for 50% of TRALI cases
- Highest risk components are FFP and platelets- x 5-7 greater than red cells
- All antibody positive implicated donors were previously pregnant women
- Looked for ways to reduce antibody-positive TRALI

October 2003

NHS

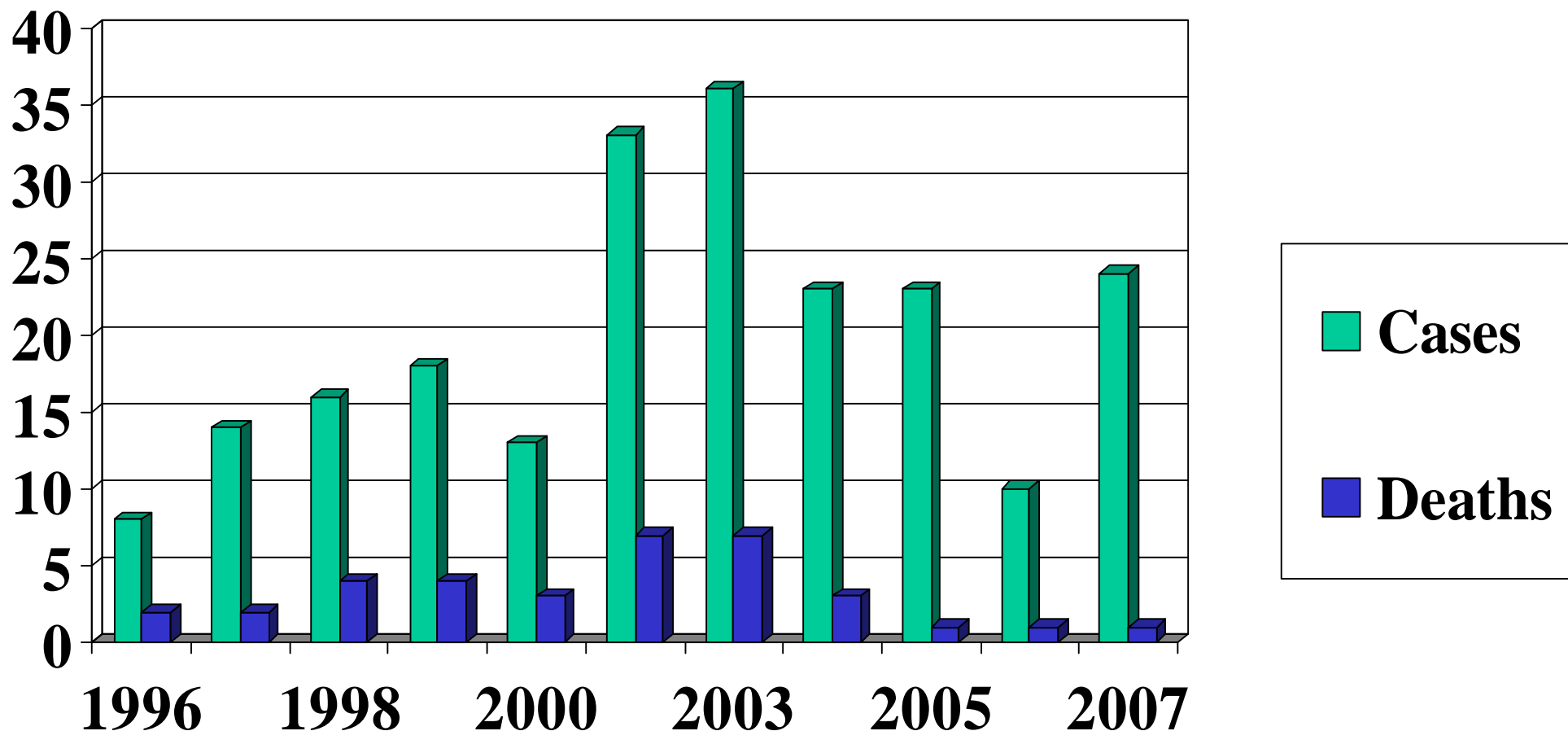
Blood and Transplant

- ‘Male plasma as far as possible’.
- Male donations marked M - to FFP
 - Female donations marked F- to ‘plasma discard’ (no swap out of stock)
 - Imported male plasma for children
 - Imported pooled solvent-detergent FFP for TTP since 2004
 - Platelet pools in male plasma

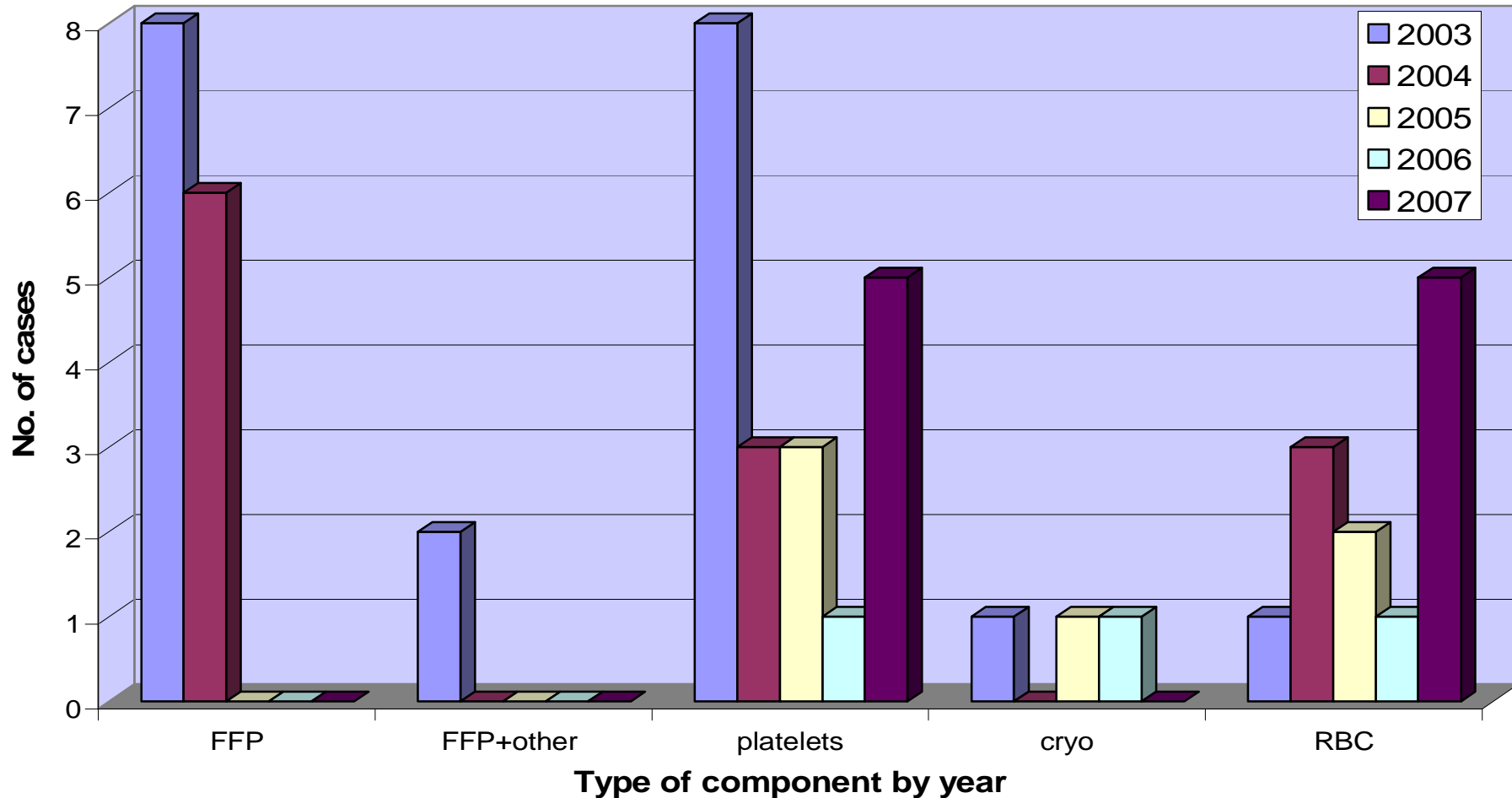
Was male plasma feasible?

- England:
 - FFP >95% male- 100% by Aug 09
 - Platelet pools >95% male; 100% by Aug 09
 - Cryoppt: 50% male:100% by March 2010
 - Apheresis platelets: recruitment geared to males; rolling out HLA/HNA antibody screening of new female donors
- Wales, Scotland, N Ireland = 100%

TRALI cases analysed by SHOT 1996-2007 (n= 252)



Cases with donor HLA/HNA antibodies matching patient antigens 2003-2007.



SHOT TRALI data has influenced TRALI practice internationally

- Male plasma now preferred in many EU countries
- USA: AABB standard is for male FFP
- Platelet donor screening beginning to be adopted in other countries.

SHOT data have resulted in
peer reviewed publications

Chapman, Stainsby, Jones, Love, Massey, Win,
Navarrete, Lucas, Soni, Morgan, Choo, Cohen,
Williamson. Transfusion March 2009:49:440-52

Editorial Comment:

‘Since its inception, SHOT has remained among the leading
systems worldwide’

‘Authors, UK Blood Service and SHOT are to be
congratulated for their important contribution over the last
decade’

‘SHOT data (+American Red Cross) convinced AABB to
issue guidance re avoidance of antibody-positive plasma’