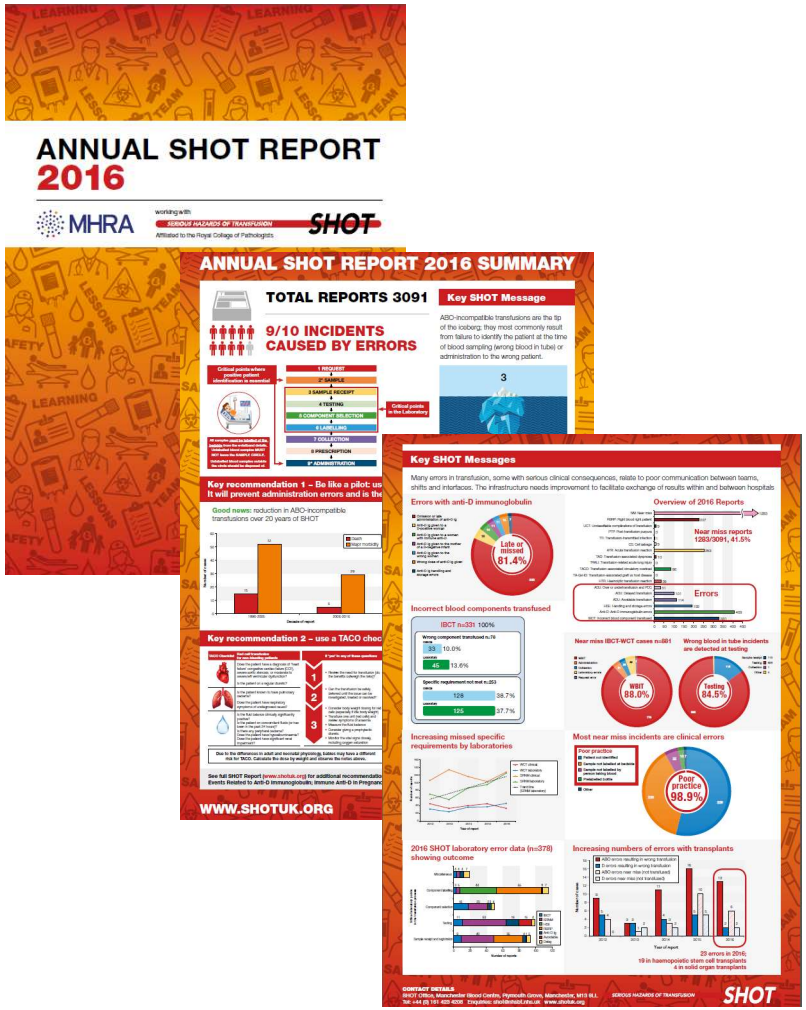
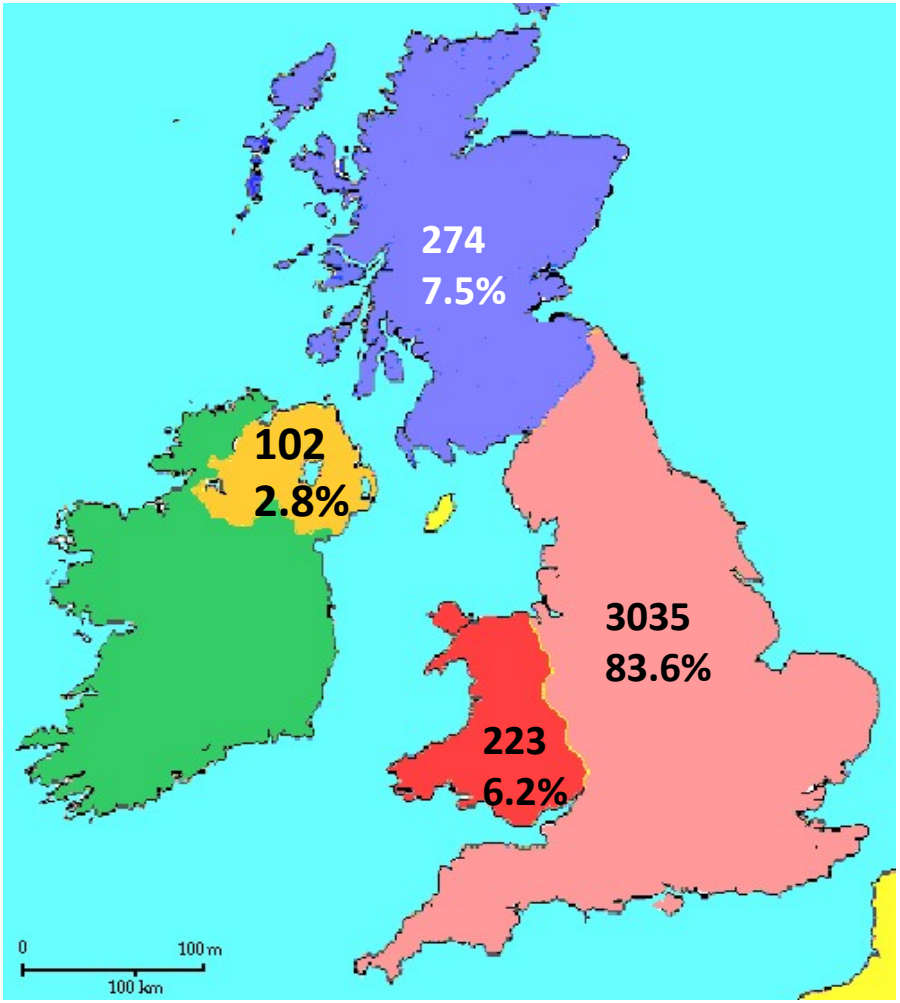
Great expectations: SHOT lessons from cases in obstetrics

Paula Bolton-Maggs
Medical Director

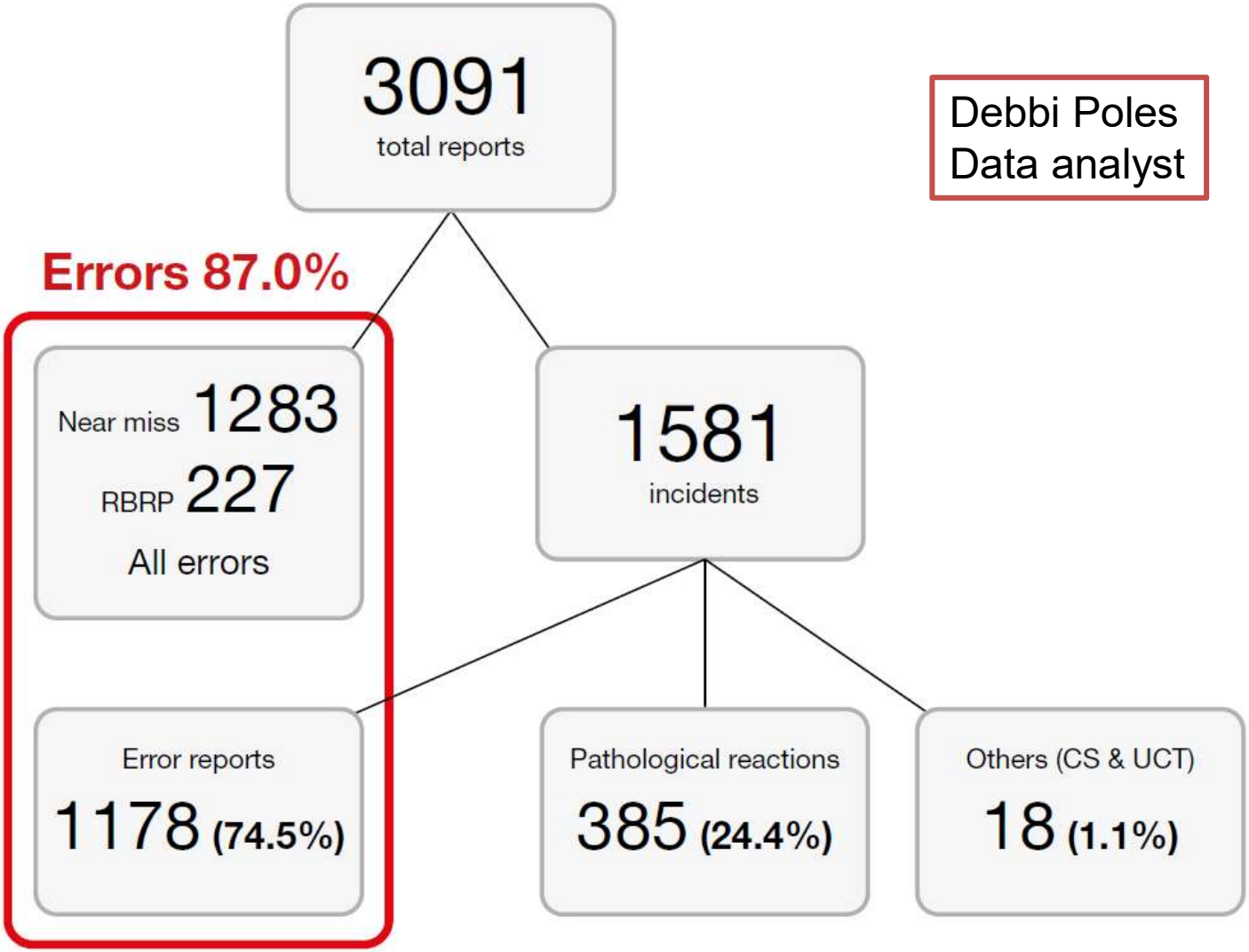
Wakefield October 2017
Yorkshire and the Humber RTC

SHOT Cases 2016 (n=3634 total reports made)



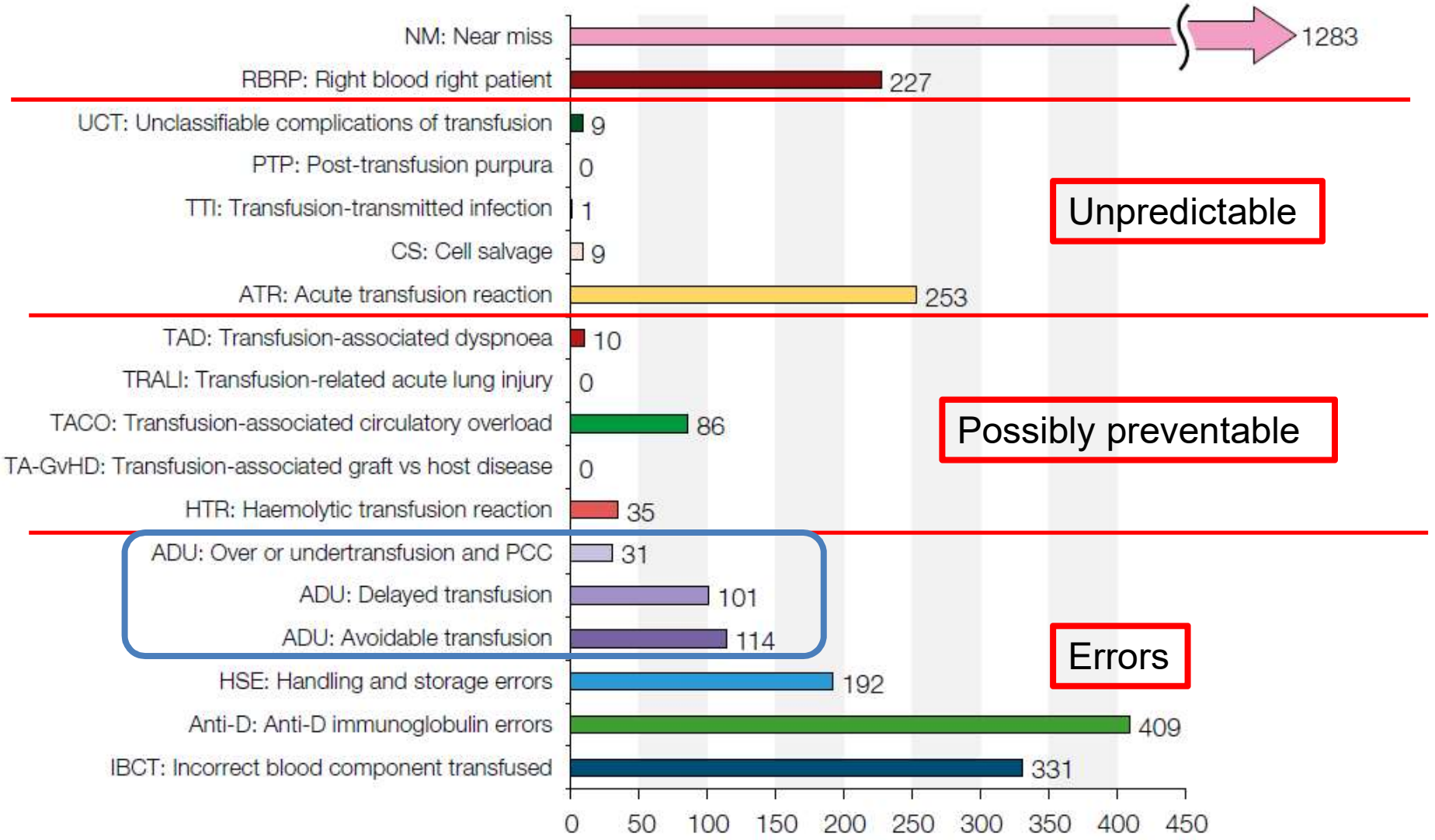


Overview of incidents in 2016

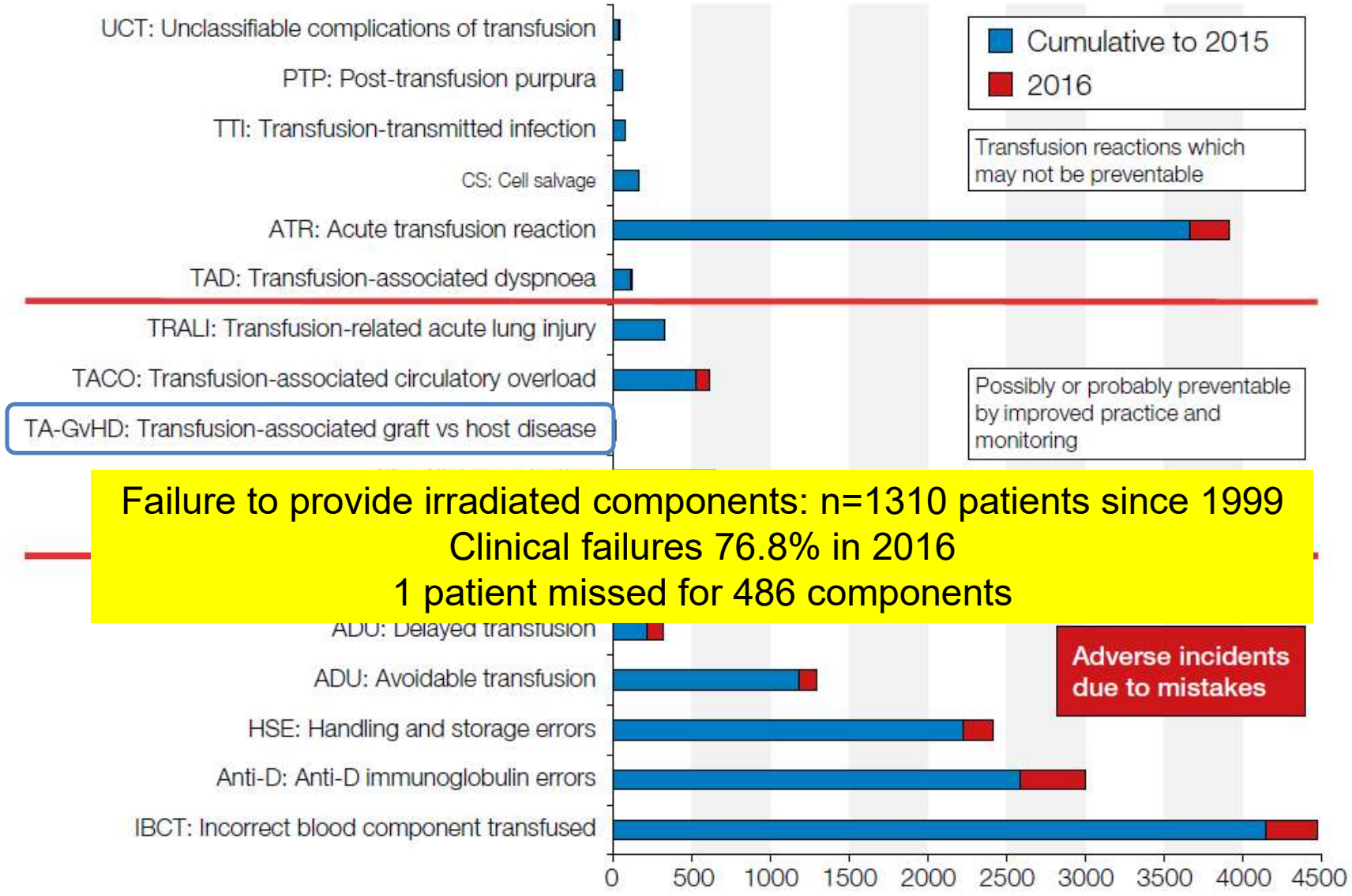


Debbi Poles
Data analyst

All incidents reported in 2016 n=3091



Cumulative data for SHOT categories 1996-2016 n=18258

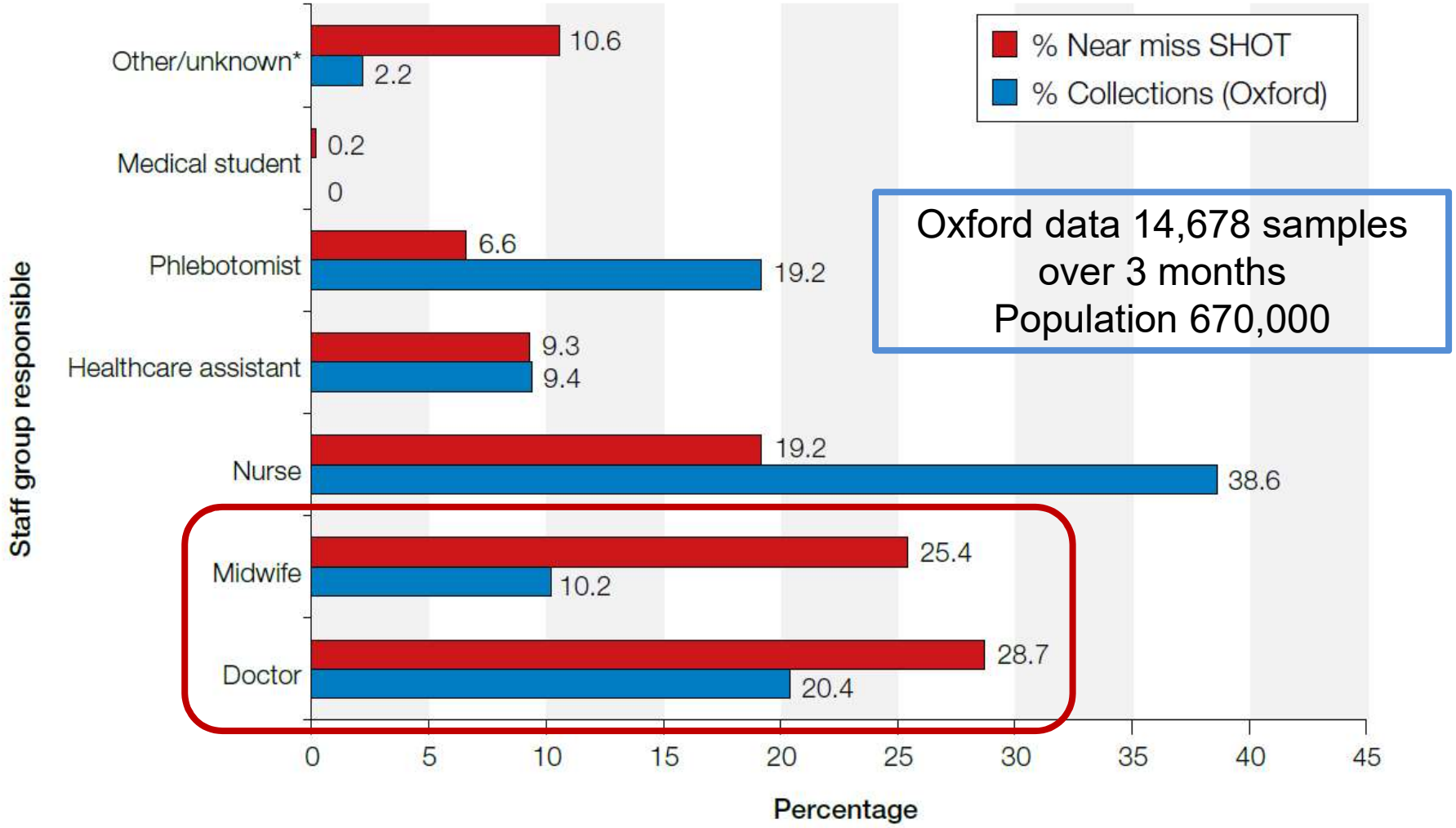


Failure to provide irradiated components: n=1310 patients since 1999
Clinical failures 76.8% in 2016
1 patient missed for 486 components

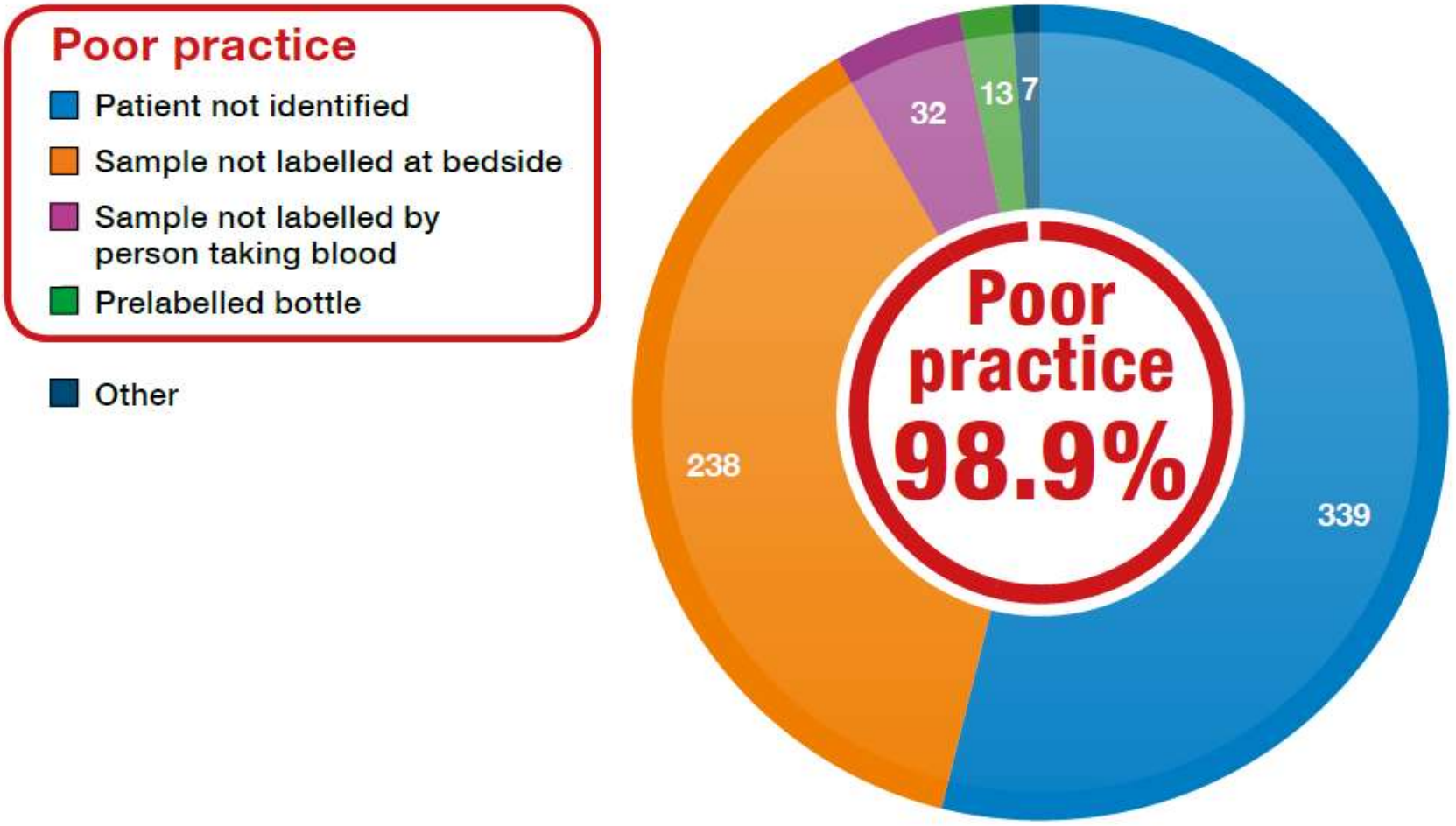
Review of obstetric cases reported 2014-2016

- Total reports 521, of which near miss = 342
- This is **65.6%**, a much higher proportion than in total SHOT incidents: NM = **41.5%** in 2016
- The majority are ‘wrong blood in tube’
- In 2014 24/65 (**36.9%**) WBIT were due to mislabelling of mother and cord samples
- The great majority of samples were taken by midwives

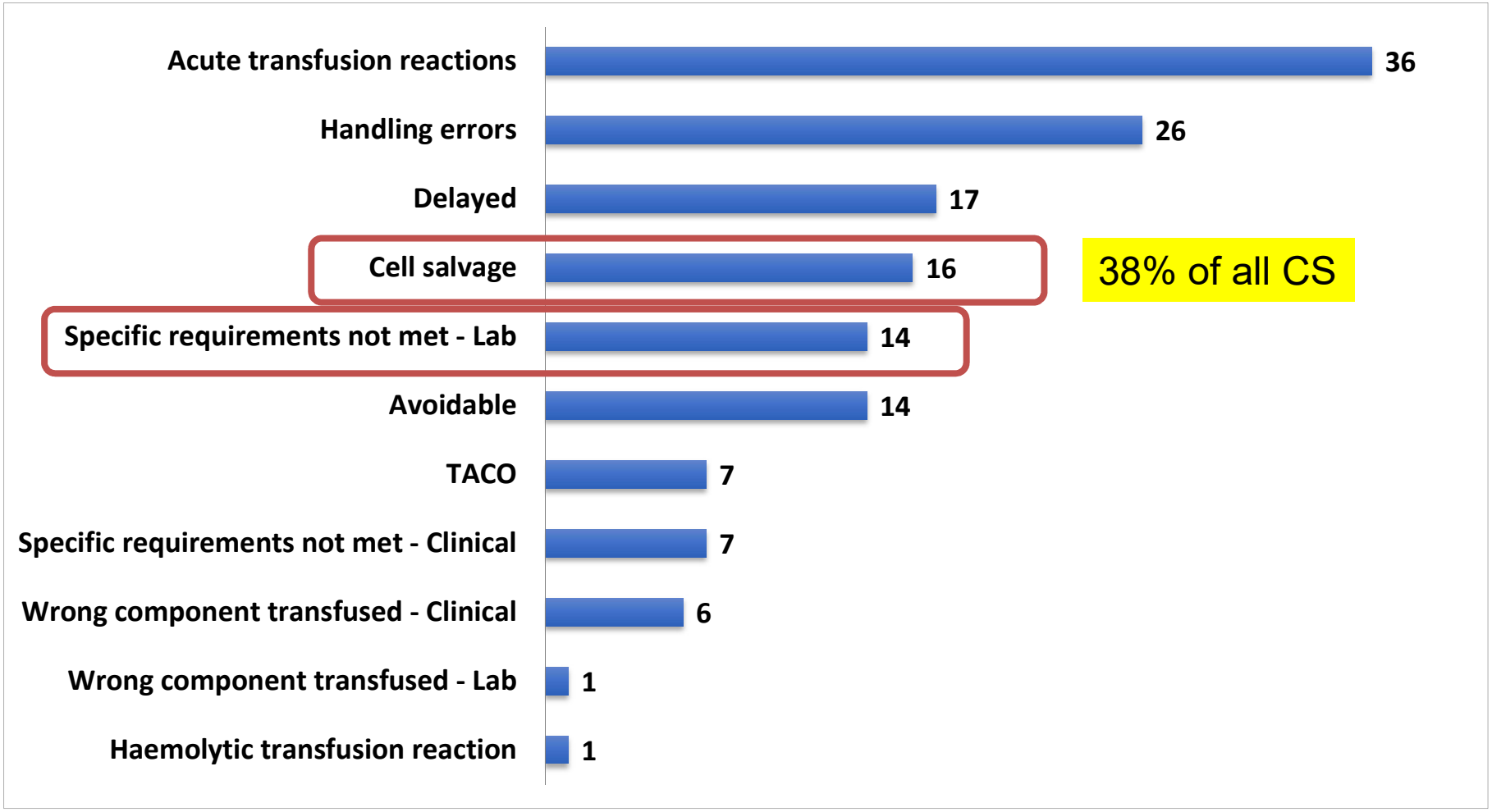
Midwives and doctors….



Practices leading to near miss WBIT incidents n=629



SHOT reports 2014-2016 n=145



Delays and major obstetric haemorrhage

- 6/16 major haemorrhage protocols with delay in 2016
  - 2 cases failed to trigger porters
  - 1 unable to access emergency O D-negs
  - 3 poor communication
- A death due to delay in 2015
  - 2 other cases of major morbidity
- 2 with major morbidity in 2014

MOH and death

- A 37 year old lady with twin pregnancy admitted at 32/40 with APH
- Delivered by CS complicated by major haemorrhage
- Cardiac arrest and death
- Delay in activation of MHP
- Need for earlier involvement of consultants

Failure to replace blood volume after post partum haemorrhage

- A woman in her mid-thirties had a ventouse-assisted vaginal delivery for fetal distress at term
- It was then complicated by massive haemorrhage from cervical lacerations
- The major haemorrhage protocol was activated, six units of blood were delivered within 5 minutes and one was started immediately
- She was transferred from the delivery room to theatre and the bleeding was controlled within 30 min and the emergency team stood down
- The blood loss was unclear with losses recorded in both the delivery suite and theatre. A second unit was commenced

- About 2 hours later, she suffered cardiac arrest from which she could not be resuscitated despite transfusion of 12 units of blood and 3 units of Fresh Frozen Plasma (FFP)
- The coroner confirmed cause of death to be cerebral hypoxia secondary to haemorrhage
- Human Factors: Two teams, two locations, shift changes

Poor planning and communication breakdown

- Planned caesarian hysterectomy for morbidly adherent placenta (patient age 40 yrs), admitted -4d
- Blood bank warned early morning then code blue; in theatre from 09:00 to 23:00
- Requested 8 FFP, supplied with 4
- Total blood loss >20 L; 26 RBC, 18 FFP, 1Pl, 3 Cryo
- Hb 33g/L, no RBC despite request for 6 units 30 min before
- Anaesthetist was challenged several times by lab staff

Outcome

- Acute renal failure
- Admission to ICU
- Ischaemic leg (prophylactic iliac balloon insertion pre-operation)

Review

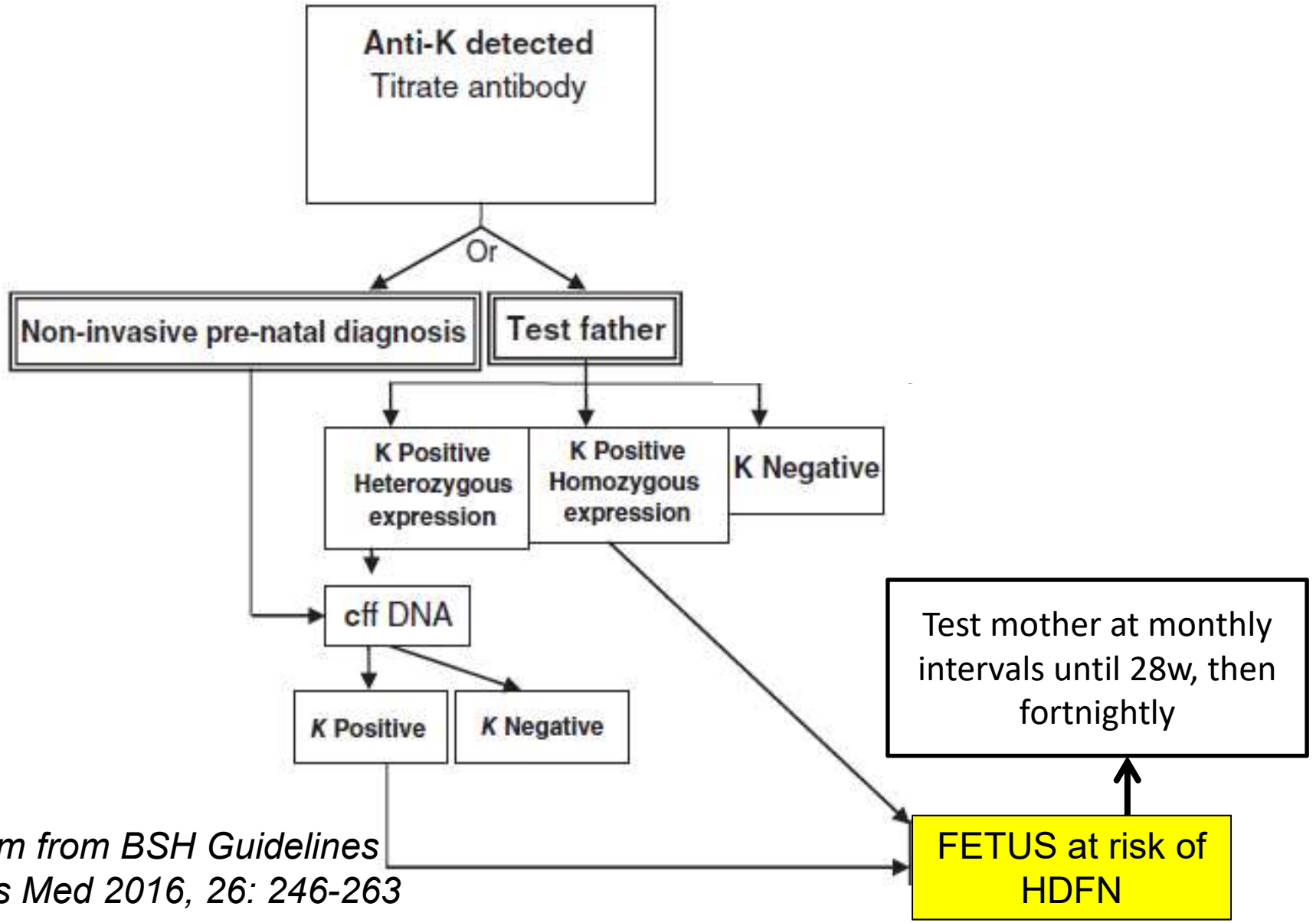
- Clinicians talking to different laboratory staff
- Lab staff not invited to planning meeting so did not understand the bleeding risk
- Two different MH protocols, obstetric one was 6 RBC to 4 FFP, anaesthetist expected more (calculated on 15mL/kg, overweight)
- No SOP for managing patient with antibodies so lab staff attempted to crossmatch, leading to delay, lab staff did not tell clinical staff this
- Lab staff had no opportunity to discuss concessionary release

Specific requirements missed (Lab)

- Failure to provide PI-FFP n=3
- Failure to provide CMV-screened n=2
- Transfusion of K+ units n=6
  - 4 resulted in development of anti-K
  - 2 outcome not known
- Failure to provide appropriate phenotype for sickle cell patient n=1
- Inappropriate use of electronic issue in a woman with positive antibody screen n=1

What's the problem with anti-K?

- Characterised by fetal anaemia rather than jaundice
- Antibody should be titrated
- Most, 80%, relate to previous transfusions
- Only 9% of population are K+
- Test father, if K positive, refer to fetal medicine centre
- If heterozygous or unknown, do cffDNA testing from maternal blood



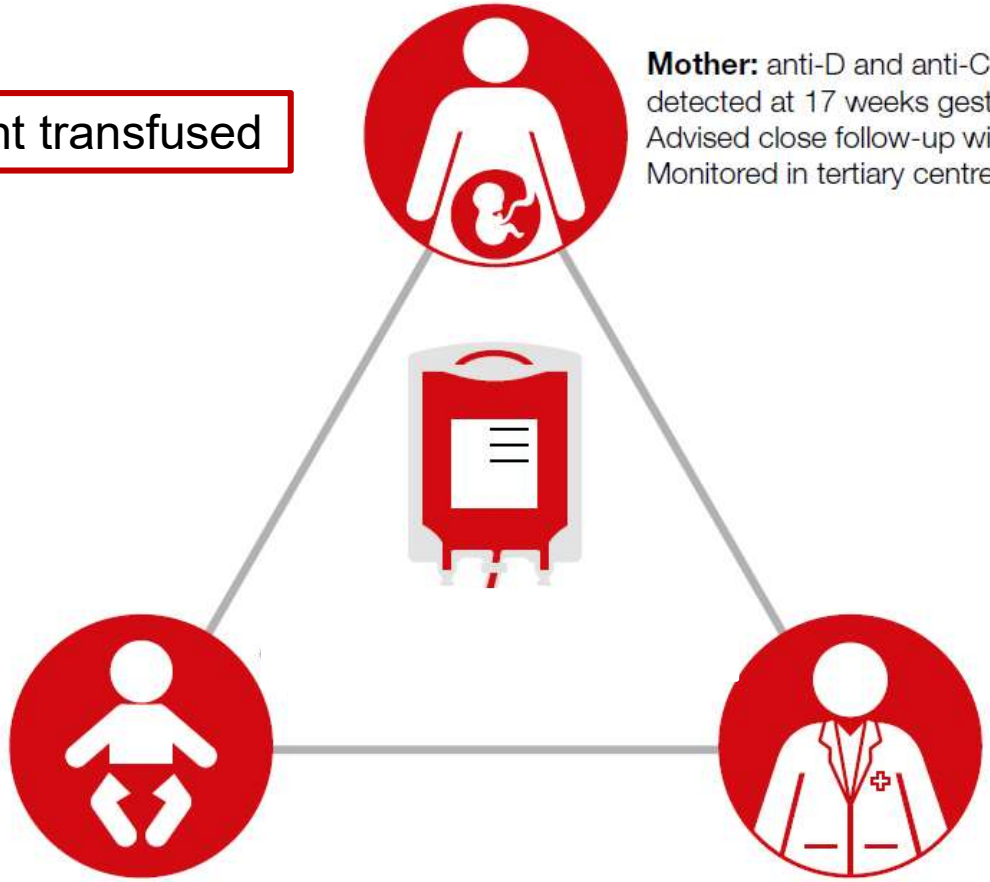
Algorithm from BSH Guidelines
Transfus Med 2016, 26: 246-263

Specific requirements missed (Clin)

- 5 cases of communication confusion about pregnancy so CMV-screened units not issued
- 1 patient with major obstetric haemorrhage did not receive irradiated red cells (PH Hodgkin lymphoma)
- 1 patient with SCD where the laboratory was not informed

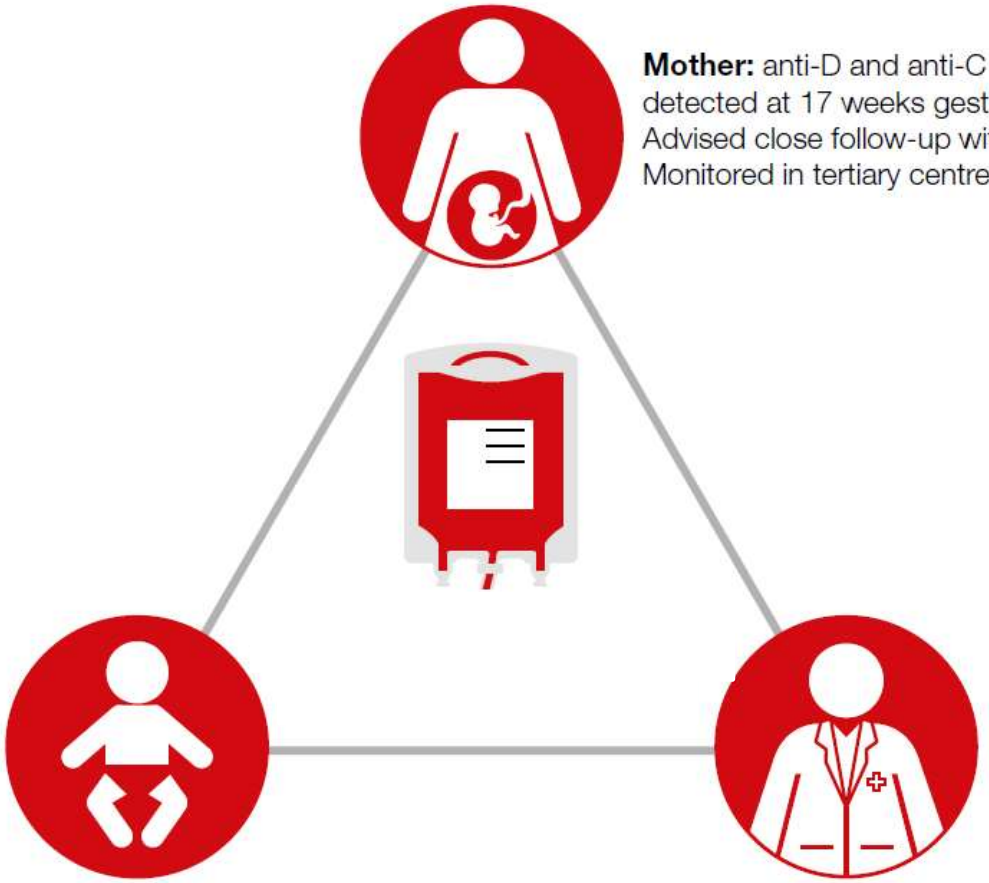
Laboratory error and poor communication

Wrong component transfused



Mother: anti-D and anti-C
detected at 17 weeks gestation
Advised close follow-up with titres
Monitored in tertiary centre

Laboratory error and poor communication



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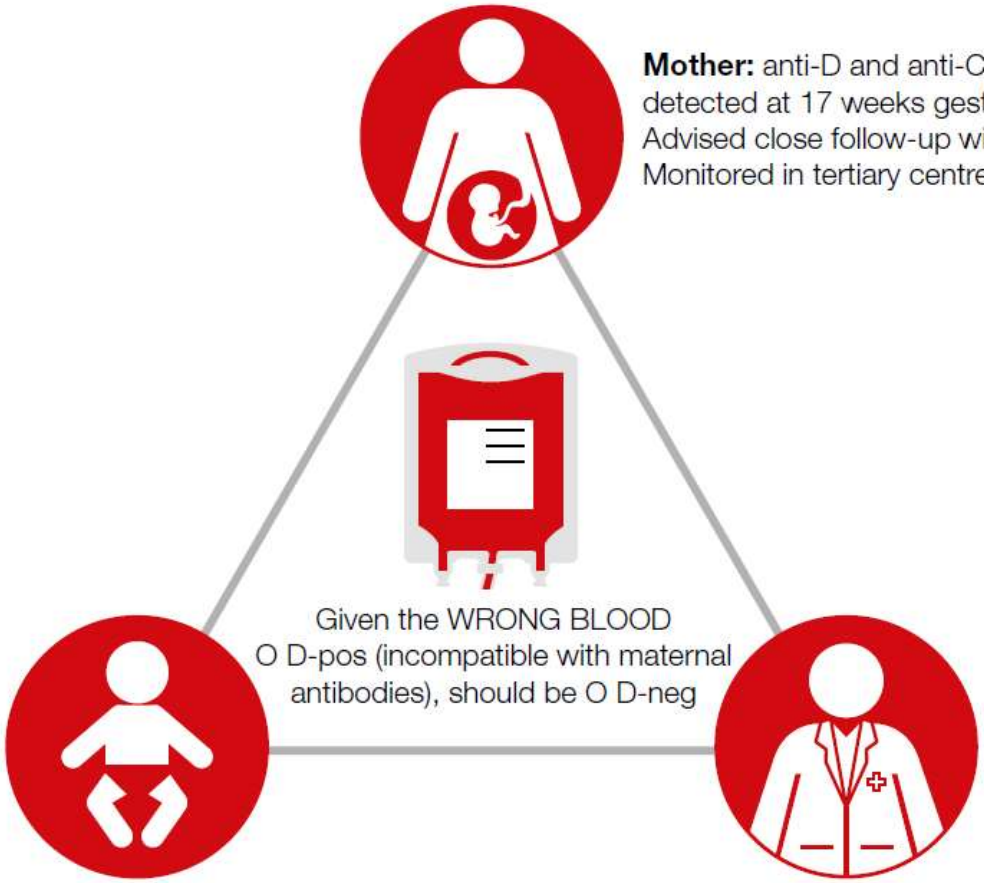
Baby: induced delivery at 36 weeks in local centre: hyperbilirubinaemia, Group O D-pos
NICU staff were not aware of this baby prior to delivery; **not discussed in obstetric high risk meeting**

Laboratory error and poor communication



Mother: anti-D and anti-C detected at 17 weeks gestation
Advised close follow-up with titres
Monitored in tertiary centre

Given the WRONG BLOOD
O D-pos (incompatible with maternal antibodies), should be O D-neg

Baby: induced delivery at 36 weeks in local centre: hyperbilirubinaemia, Group O D-pos
NICU staff were not aware of this baby prior to delivery; **not discussed in obstetric high risk meeting**

Policies not followed:
Day 3: Verbal requests for urgent blood for exchange
2 BMS did not look at maternal results so provided wrong group

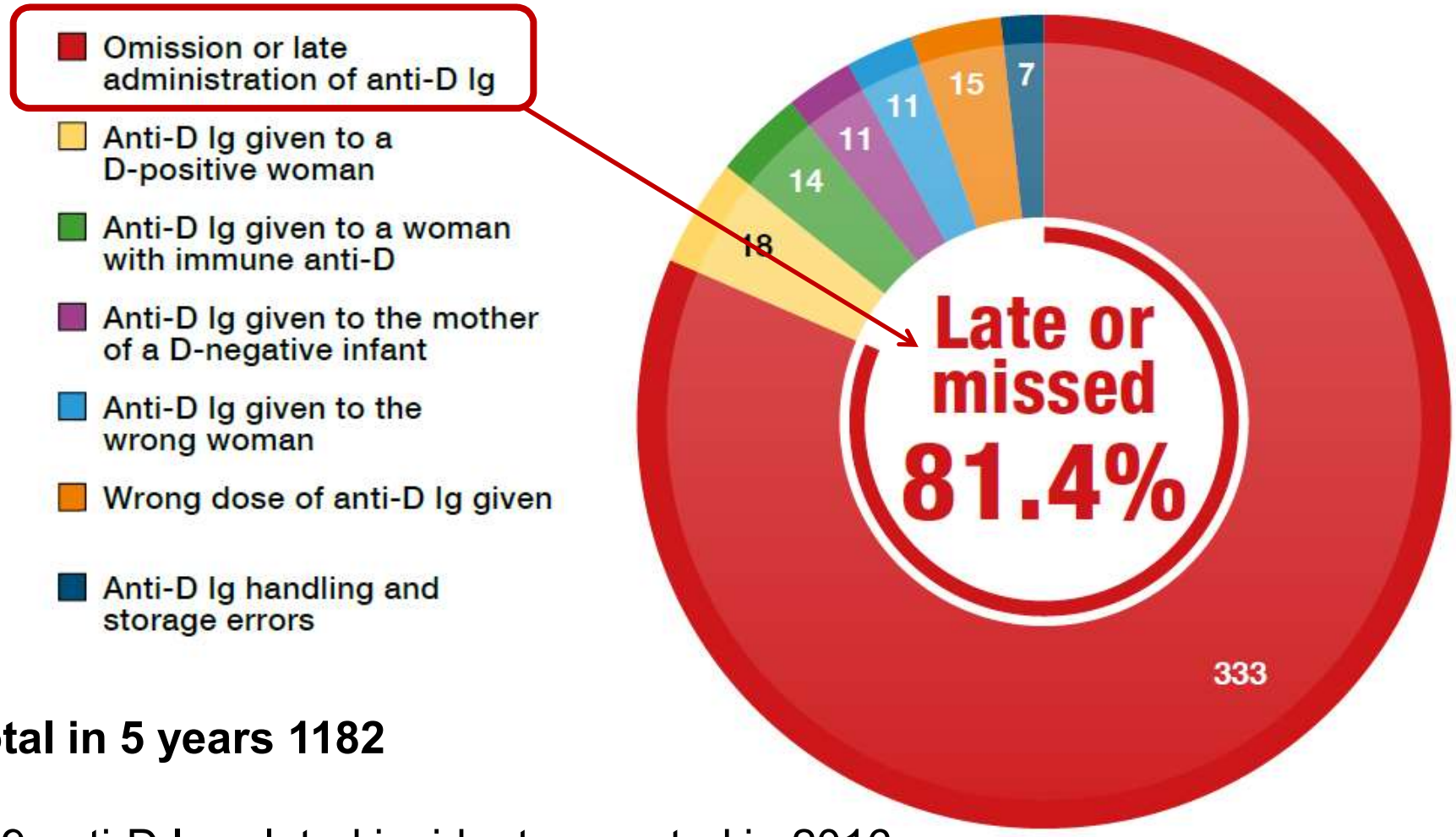
The baby required repeat exchange transfusion with O D-negative on day 6

What went wrong….

- Day 3 – clinician alerted laboratory, BMS did not review maternal details and issued O+ red cells (baby's group)
- All requests were by telephone, handover not effective and no follow up request form received by laboratory
- On several occasions BMS did not check mothers blood group and antibody results and issued O+ red cells without crossmatching against the mother's sample
- Multiple other human factors contributed

- Kleihauer test was inappropriate due to the mother having immune anti-D and laboratory staff should not have issued anti-D Ig

Anti-D immunoglobulin errors 2016



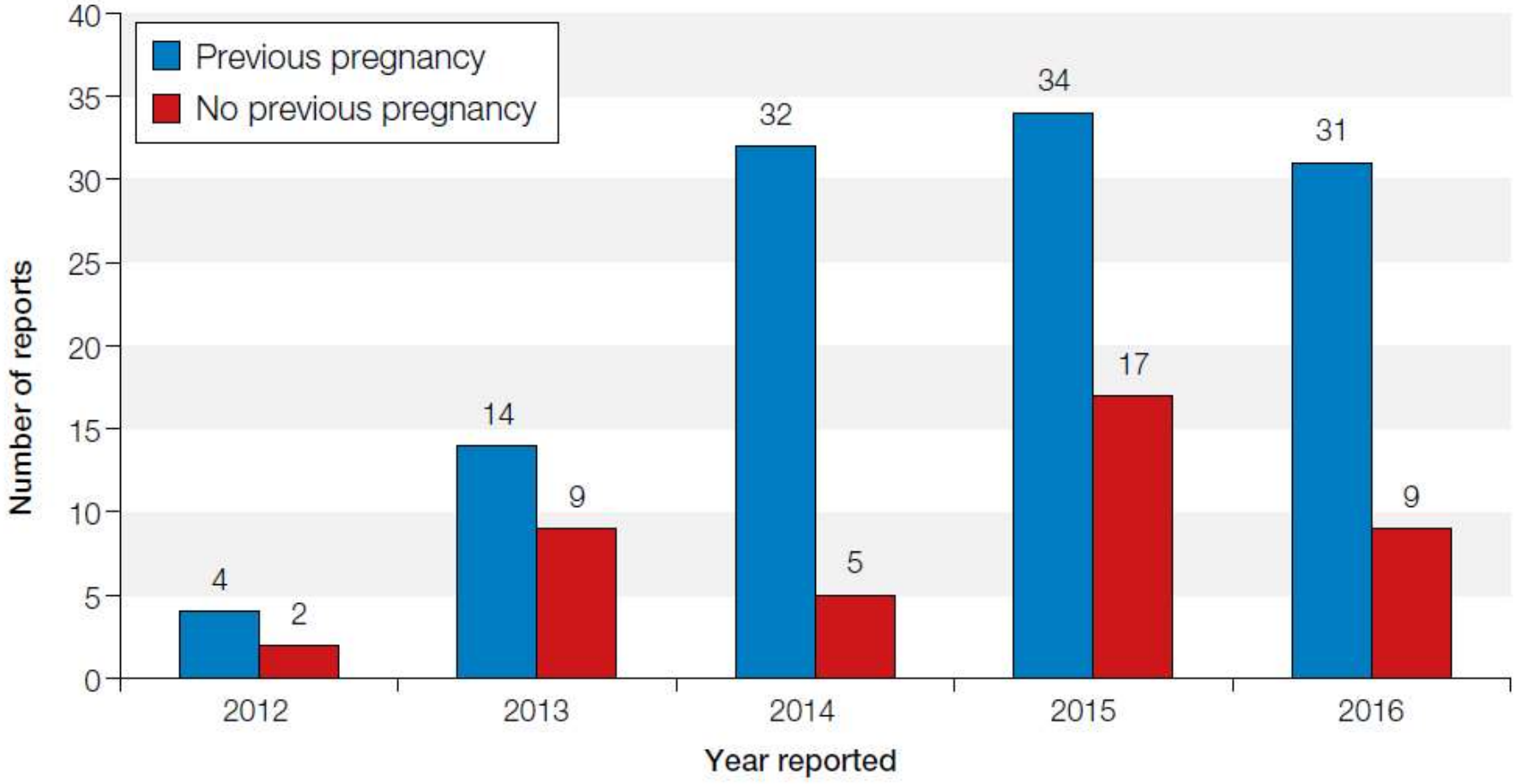
Total in 5 years 1182

409 anti-D Ig-related incidents reported in 2016
2 women known to have developed immune anti-D

We do not know how many of these women are sensitised because they are not followed up

New study of women found to have a new anti-D in pregnancy from 2012

Anti-D immunisation study – more questions than answers



Immune anti-D discovered in pregnancy

Jane Keidan

- Total 42 with no previous pregnancy (NPP)
- Total 115 who had a previous pregnancy (PP)
  - 18/50 (36%) PP women found to be immunised at booking apparently had ideal management in the previous pregnancy
- Still worth giving anti-D Ig >72h and up to 10 days after a sensitising event (PSE)

Risk factors for sensitisation

- 14/61 (23%) weight >80kg
- 16/83 (19%) did not receive antenatal prophylaxis
- 19/28 (68%) PSE correctly managed
- 9/58 (16%) gestation beyond 40 weeks
  - National data:17.5% pregnancies extend >40 w
- Postpartum prophylaxis correct in 62/102, missed in 8 and no information in 27

More questions than answers

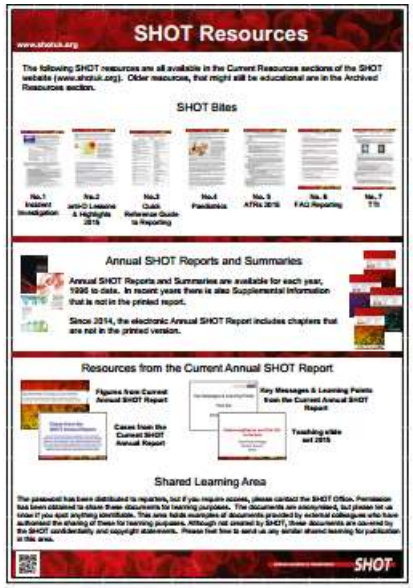
- Should obese women receive increased dose?
- Should extra dose be given if pregnancy >40 weeks?
- Do twin pregnancies have increased risk?
- Is anti-D Ig required for medical termination without instrumentation?


Trigger phrase
Inform
Transfusion boss
Discuss
Clinical assessment
Policy
Review
Practice
Team leader
Debrief
Runners
Porters
Transport
Contact
Stand down
Communication lead
Drill
Protocol
Communication
Alert
Telephone

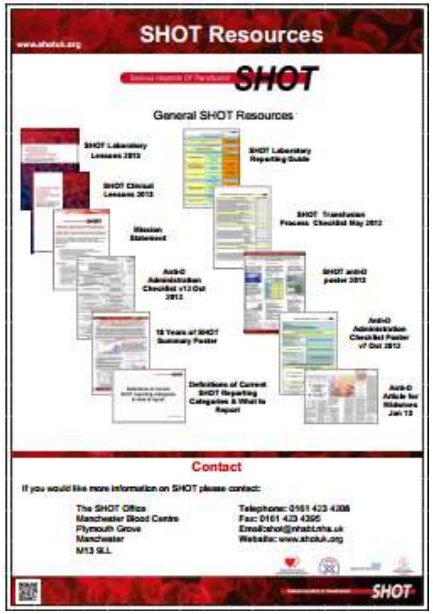
Additional Information

Following documents available on website **www.shotuk.org**

- Teaching slide set
- SHOT cases
- SHOT reporting definitions
- Clinical lessons
- Laboratory lessons
- SHOT Bites



Also available:
Previous SHOT reports
SHOT summaries



Acknowledgements

- SHOT Team in Manchester
- SHOT Working and Writing Expert Group
- SHOT Steering Group
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SHOT Symposium 2018

The Lowry Centre, Salford Quays

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