MINIMISING BLOOD TRANSFUSION AND PREGNANCY

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Blood transfusion and Pregnancy

Obstetric haemorrhage and blood transfusion - getting the balance right!

How much blood do we use in obstetrics, when, where and why?

How to minimise use of blood in obstetrics

Blood transfusion in obstetrics

Need to avoid giving blood if possible

- Transfusion reaction
- Antibody formation
- Potential infection
- Availability of blood

Need to avoid maternal morbidity/mortality

- Massive haemorrhage
- Maternal death

- Women continue to bleed
- Recovering from CS
- Going home with newborn baby to look after

Obstetric Haemorrhage

- Postpartum Haemorrhage - > 500mls
- Major obstetric haemorrhage is defined as:
  - An estimated blood loss of more than 1000mls.
  - A smaller blood loss associated with clinical signs of shock - hypotension, increased respiratory rate, oliguria or delayed peripheral capillary filling
  - A fall in Hb ≥40g/l
- It can be further divided into:
  - Moderate haemorrhage (1000 – 2000mls)
  - Severe (more than 2000mls)

Cause of Haemorrhage in Obstetrics

Antepartum haemorrhage

- Placenta praevia, placental abruption

Postpartum haemorrhage

- Tone - Uterine atony most common cause - 70% of cases
- Tissue – retained placenta, placenta accreta
- Trauma –vaginal, cervical, uterine rupture, broad ligament haematoma
- Thrombin - disseminated intravascular coagulation (DIC)

Severe Haemorrhage - > 2 litres

The incidence of severe bleeding in childbirth is estimated at 3.7 per 1000 maternities

(1 in 270 deliveries)

Estimated 4000 cases of severe haemorrhage a year in the UK

Majority of women need a blood transfusion

http://www.rcog.org.uk/files/rcog-corp/uploaded-files/GT47BloodTransfusions1207amended.pdf

http://www.rcog.org.uk/files/rcog-corp/GT52PostpartumHaemorrhage0411.pdf

Maternal Morbidity

Major obstetric haemorrhage, resulting in massive transfusion, accounts for 80% of all maternal morbidity in both developed and developing countries

Disseminated intravascular coagulopathy (DIC)

- occurs early on in the course of the haemorrhage (unlike DIC that follows major haemorrhage in trauma or surgery).
- volume resuscitation with fluid and blood can lead to dilutional coagulopathy.

ITU admission

Renal/liver dysfunction

ARDS

Increase in perinatal mortality

Scottish Confidential Audit of Severe Maternal Morbidity - 9th Annual report - 2011

- The rate of major obstetric haemorrhage (MOH) is increasing in UK and worldwide. Other causes of severe morbidity in pregnancy are declining.
- There are deficiencies in the prevention and the management of MOH
  - Fewer than half of women identified antenatally at high risk of MOH had an action plan for management
  - Deficiencies in some aspects of the resuscitation, investigation and monitoring
  - The pharmacological treatment of uterine atony frequently failed to follow guidelines.
- 1 in 5 women experiencing MOH not attended directly by a consultant obstetrician (1 in 3 overnight)
- The mean amount of blood transfused to each case of MOH has fallen in recent years

Saving Mothers' Lives Report 2006 – 2008: Reviewing maternal deaths to make motherhood safer

(published March 2011)

Maternal Mortality

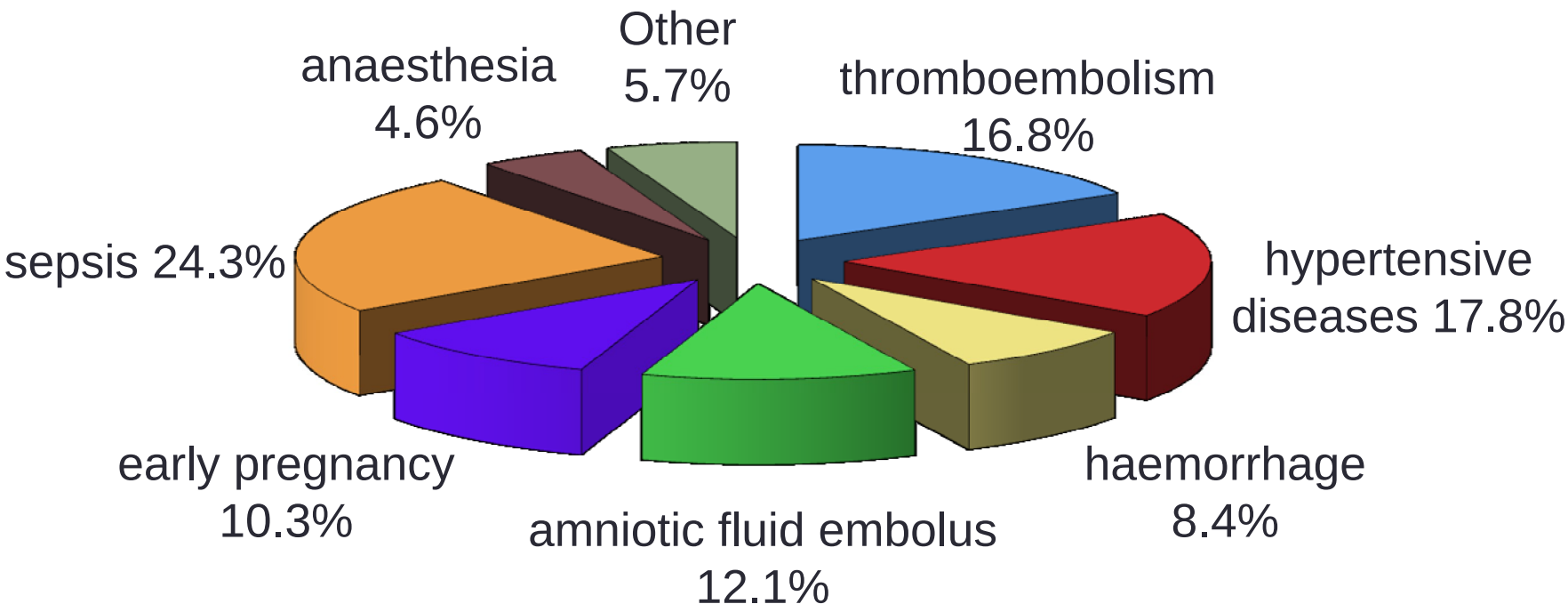
Obstetric haemorrhage remains a major cause of maternal mortality in UK:

9 deaths in the last triennia

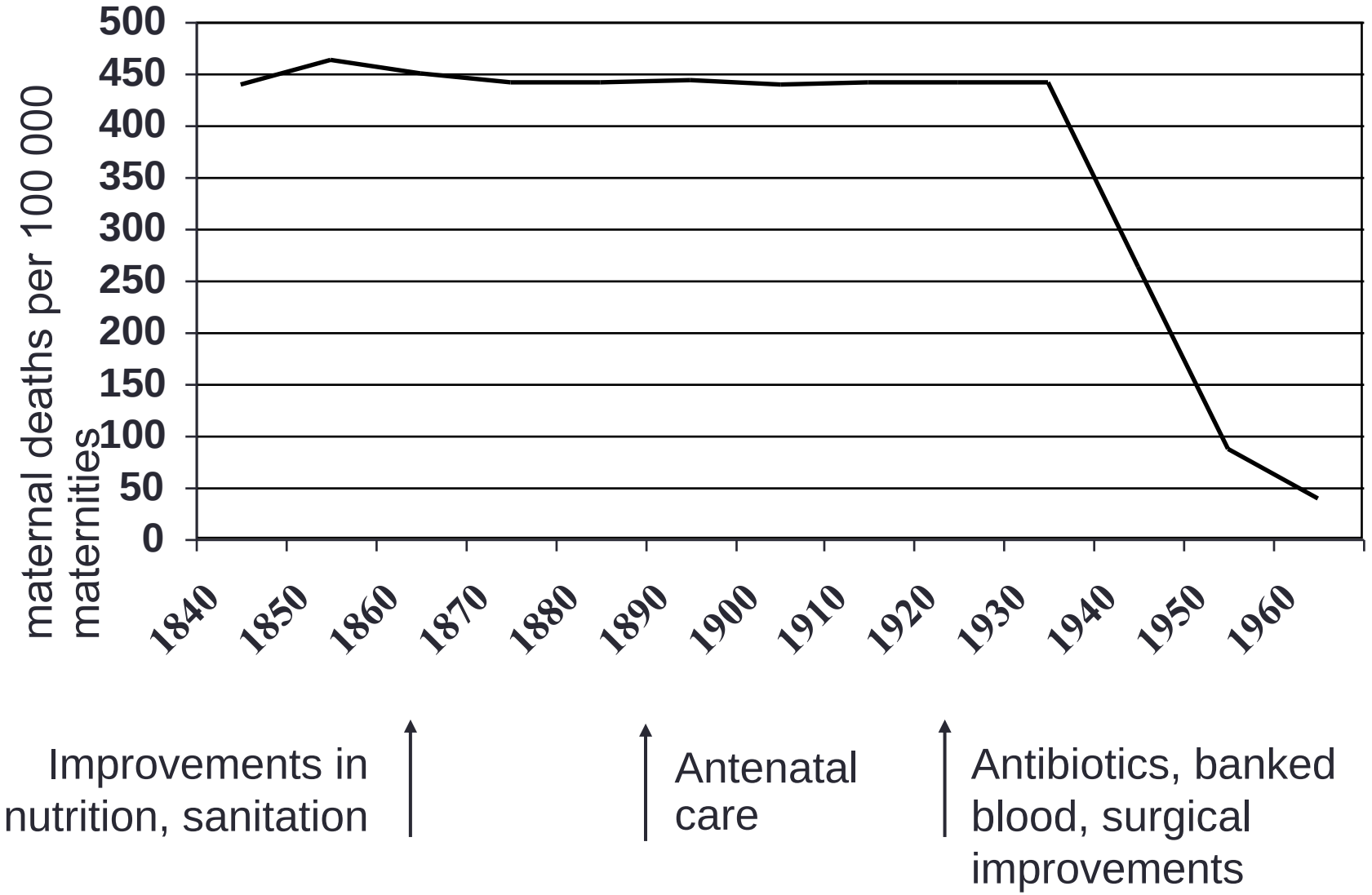
8.4% of direct maternal deaths in the UK

Substandard care in 80% cases

Direct maternal deaths in the UK (2006-2008) - 107



Maternal mortality in the UK 1840 –1960



Blood use in Obstetrics

Major haemorrhage:

Obstetrics second highest user of blood after trauma

RVI – Review of blood use - 2012

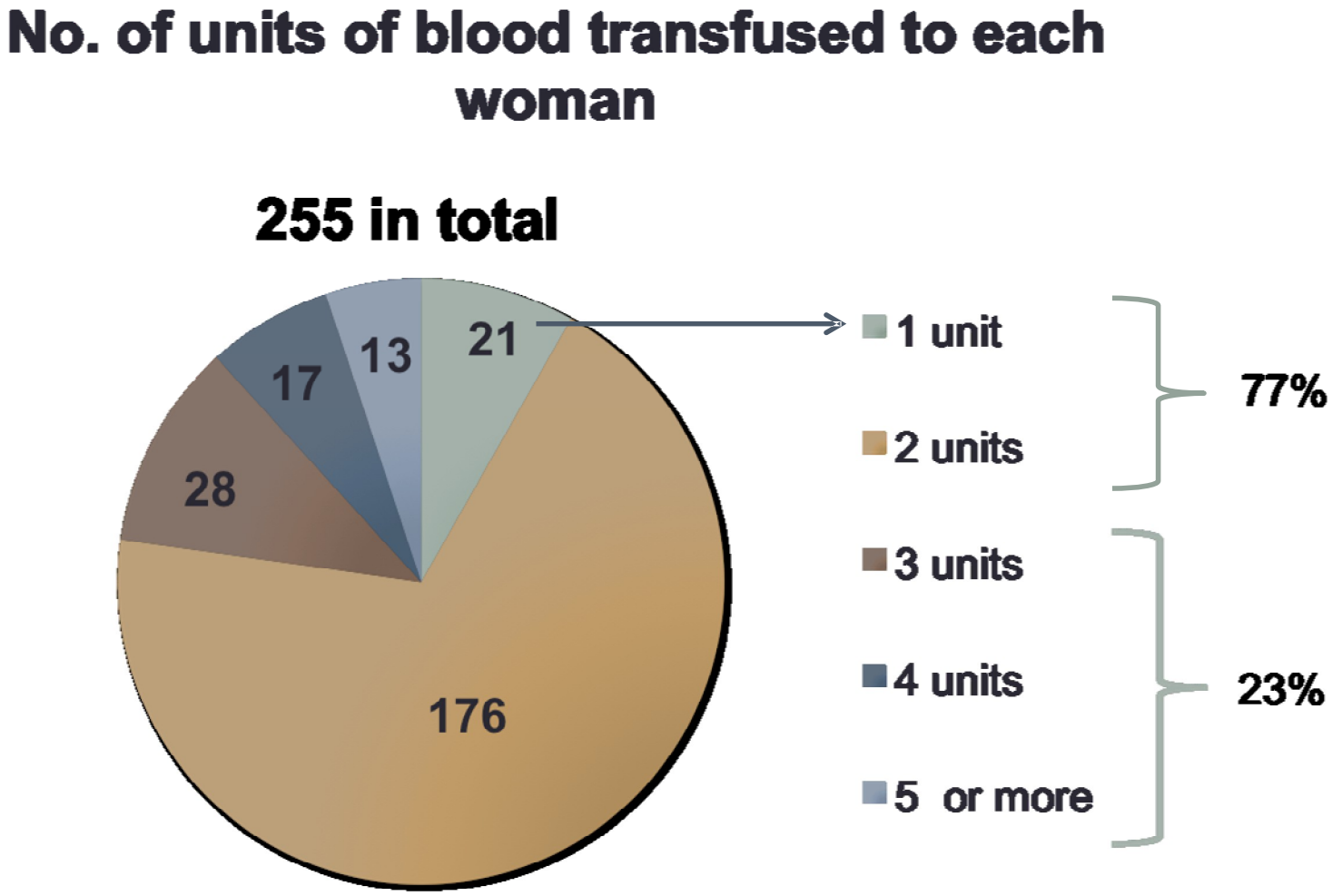
7428 deliveries in 2012

255 (3.4%) women had a blood transfusion

If deliver at RVI:

1 in 30 chance of having a blood transfusion

Review of Blood Transfusion – RVI 2012



5 units or more!

No of units	No of women
5	2
6	3
7	2
8	2
10	1
12	1
14	1
18	1

10 - Previous massive abruption and IUD with DIC. Identical presentation at 32 weeks

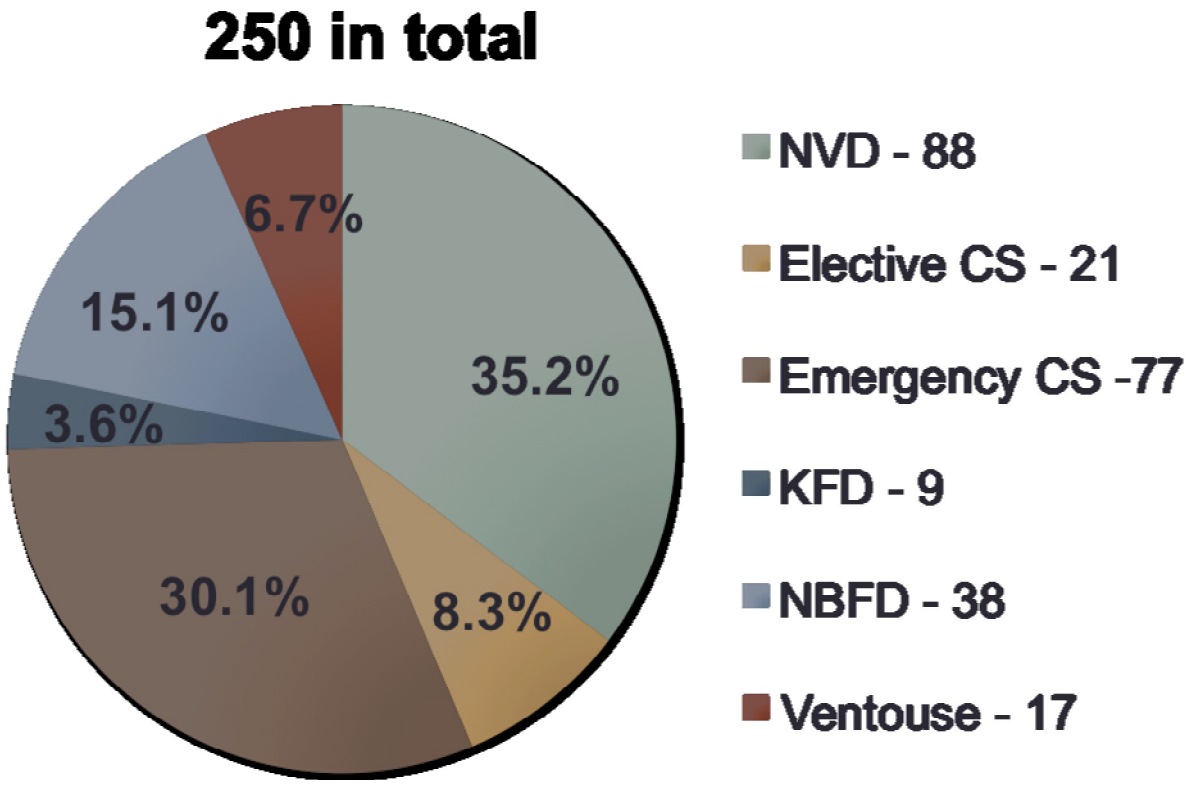
12 - Para 3 – IOL for SPD 37 weeks, NBFD, ongoing bleeding – laparotomy – ruptured uterus – hysterectomy, ITU

14 - Heavy bleeding from 16 weeks, miscarried at 24 weeks – antenatal transfusion

18 - Para 0, transfer from NBC. KFD in theatre. Placenta accreta, laparotomy, EBL10 litres, ITU

Review of Blood Transfusion – RVI 2012

Mode of delivery of women receiving blood



NVD – 35%, CS – 38%, Operative delivery – 66%

Review of Blood Transfusion – RVI 2012

Chance of blood transfusion with mode of delivery

Mode of delivery	No.	% of total deliveries	No. had blood transfusion	% chance of blood transfusion with type of delivery
NVD	4379	60%	88	2%
Elective CS	947	12.7%	21	2.2%
Emergency CS	1073	14.4%	77	7.2%
NBFD	600	8.1%	38	6.3%
Ventouse	211	2.8%	17	8.1%
KFD	172	2.3%	9	5.2%
Breech	46	0.6%	0	0
Total	7428			

22 women (8.7%) had blood following repair of 3/4 degree tear or MR Placenta
15 following NVD, 7 after NBFD/ventouse

Review of Blood Transfusion – RVI 2012
Timing/Place of transfusion

Timing/Place of transfusion	No. women transfused
Antenatal	3 (1%)
Delivery Suite	205 (80%)
Postnatal Ward	48 (19%)

Summary of Review of Blood Use at RVI 2012

- 1 in 30 women had a blood transfusion
- 1 in 250 had 4 units of blood or more
- Most women (77%) received 1 - 2 units of blood
- More likely if operative delivery
  - Emergency CS
  - Elective CS - accounted for almost 10% of women receiving blood (7/21 - 4 units or more) **but** very low overall as percentage of total elective CS - ? because consultant presence at all elective CS
  - NBFD/ventouse higher than KFD - ? because KFD in theatre/cons
- Almost 1 in 10 of women were delivered in the room but then taken to theatre for either repair 3rd degree tear or manual removal of placenta - ? delay
- Major haemorrhage – some issues identified with Mx
- Most transfused on delivery suite but significant amount of women transfused on postnatal ward

How to minimise use of blood

Antenatal

Intrapartum

Postnatal

Anaemia and Pregnancy

Aim is to diagnose and treat anaemia antenatally so that women have a HB >105 g/l at the onset of labour

Anaemia is defined by:

Hb <110g/l in first trimester

Hb <105g/l in second and third trimesters

Hb <100g/l in postpartum period

Haemoglobin, haematocrit and red cell count fall in pregnancy (physiological anaemia)

But there is a 2-3 fold increase in the requirement for iron

Iron deficiency - the commonest cause of anaemia in pregnancy

Over half of women with a haemoglobin less than 110g/l are iron deficient as judged from serum ferritin levels

Anaemia and Pregnancy

Many women begin pregnancy iron deficient (with or without anaemia) due to

- menorrhagia, inadequate diet, previous recent pregnancies

Other risk factors include multiple pregnancy and chronic disease e.g. Crohn’s disease

Management of Anaemia in Pregnancy

- Antenatal iron prophylaxis only in high risk groups
  - Inadequate diet, previous recent pregnancies, multiple pregnancy, chronic disease, women who decline blood products, women at risk of PPH – check ferritin
- Screening antenatally – Booking and 28 weeks
  - Ferrous Sulphate 200mg bd if anaemic – ferritin if no ↑ in Hb
- Iron infusion if intolerant of oral iron or fail to respond
  - Ferrinject at the RVI – 1000mg over 20 mins – MAU
- Blood transfusion only if risk of further bleeding or symptoms requiring immediate attention

http://www.bcshguidelines.com/documents/UK_Guidelines_iron_deficiency_in_pregnancy.pdf

Antenatal – Plan for high risk groups

Placenta praevia

Management of antenatal anaemia

CS earlier than usual

Consultant obstetrician/anaesthetist involvement

Cell salvage

Suspected Placenta Accreta*

Previous Caesarean section - placental site should be accurately determined by ultrasound – if anterior and low consider MRI

If placenta accreta/percreta is suspected or diagnosed there should be Consultant led multidisciplinary planning for delivery.

Haemophilia/Von Willebrands

Plan for delivery – tranexamic acid, FFP, Cryoprecipitate

specific clotting factors

Intrapartum – Prevention of PPH

- Active management of the third stage
- High risk groups*
  - Syntometrine/Ergometrine for third stage, early use of other uterotonics, prophylactic syntocinon infusion
- Avoid prolonged second stage
- Elective CS/Emerg CS
  - Careful planning for complicated CS – relevant/senior staff available
  - Cell salvage/consider interventional radiology
  - Consultant presence if CS at full dilation/high BMI

Intrapartum - Management of PPH

- Clear guideline with step by step management
  - Call for help
  - Rub up uterus, catheter, expel clot
  - Uterotonics
    - Further IV syntocinon, ergometrine, Carboprost
  - Theatre/EUA
  - Balloon tamponade, Laparotomy/BLynch suture, hysterectomy
- Delivery suite skill drills for all staff – teamwork/human factors

Act quickly, always put out emergency call

Call senior staff early

Consider theatre/other measures early

Close observation once bleeding settled

Watch for ‘tricklers’!

Waiting for theatre

- 1 in 10 of women who were transfused were delivered in the room - then taken to theatre for either repair 3rd degree tear or manual removal of placenta
- RVI Guidelines say 15 mins observations should be performed
- Preliminary review of PPHs through risk management at RVI showed very few had any observations done whilst waiting for theatre

Vigilance for ongoing 'bleeding/trickling' whilst waiting for theatre with 15 mins obs. Reprioritise if any concerns

Perineal Tears

- Theatre if any doubt of extent of trauma/light/assistance needed
- Ongoing accurate assessment of blood loss
- Manage atony as normal - make sure have help
- Regular observations
- Avoid prolonged time for suturing – call senior help if struggling, taking a long time, ongoing bleeding

Vigilance for underestimation of ongoing blood loss in these situations

Situational awareness – task fixation

Postnatal – minimising transfusion

- Vigilance on postnatal ward for women who continue to bleed heavily
  - Regular observations - MEWS chart
  - Assessment of fundus/inspection of pads
  - Call medical staff early

Postnatal – Management of Anaemia

Blood loss >500ml, uncorrected anaemia detected in the antenatal period or symptoms suggestive of anaemia postnatally - should have Hb checked within 48 hours

Hb > 80 g/l but <100g/l	• Oral ferrous sulphate 200mg once daily for 3 months • Consider iron infusion if unable to tolerate oral iron
Hb 70 – 80g/l	• Asymptomatic – oral ferrous sulphate 200mg twice daily for 3 months or consider iron infusion if unable to tolerate oral iron. Inform woman to alert midwife if symptomatic at home • Symptomatic - discuss blood transfusion – inform patient of risks/benefits – aim to bring Hb to > 90g/l (1 unit blood per 10g/l). Home on oral iron.
Hb < 70 g/l	• Discuss blood transfusion – inform patient of risks/benefits • Aim to bring Hb to > 90g/l (1 unit blood per 10g/l). • Home on oral iron.

Summary

- Haemorrhage common in obstetrics
- Good at:
  - Screening for and treating anaemia
  - Planning for placenta praevia/accreta once diagnosed
  - Active management of third stage
  - Acute management of PPH
- But substandard care evident in the majority of women who haemorrhage in obstetrics

Should be able to reduce the number of units a woman is transfused with vigilance and attention to management

Minimising Blood Transfusion in Obstetrics - Summary

Antenatal iron prophylaxis in high risk groups

Follow up of iron deficiency anaemia during pregnancy

More use of iron infusion antenatally in women intolerant of iron

Careful delivery planning in high risk groups

Prevention of PPH – avoid unnecessary IOL, high risk groups

Prompt recognition and management of PPH – ‘tricklers’

Early involvement of senior staff/taking to theatre

Consider balloon/B-Lynch/hysterectomy

Vigilance re delivered women waiting for theatre

Vigilance for ongoing bleeding on postnatal ward

Consider iron infusion as alternative to blood postnatally

Thank you

Questions?