SSAI Advanced Obstetric Anaesthesia Training Programme
Copenhagen Course 2nd-4nd May 2018

Postpartum Haemorrhage

DGI-Byen, Copenhagen

The Scandinavian Society of Anaesthesiology and Intensive Care Medicine

The Scandinavian Society of Anaesthesiology and Intensive Care Medicine

The speakers:

Anne Wikkelsø, Dept of Anesthesia and Intensive Care Medicine, Hvidovre Hospital.

Jakob Stensballe, Dept of Anesthesia, Centre of Head and Orthopaedics, and Section for Transfusion Medicine, Capital Region Blood Bank, Rigshopitalet.

Kim Ekelund, Dept of Anesthesia, Mother and Child Section, JMC, Rigshospitalet.

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Postpartum Haemorrhage

- Anne, Jakob and Kim (Charlotte & Hellen)
- Case-based & inputs from the speakers.
- Danish everyday. Evidence based.
  - Can be done differently…
- 08:00-10:30

The Scandinavian Society of Anaesthesiology and Intensive Care Medicine

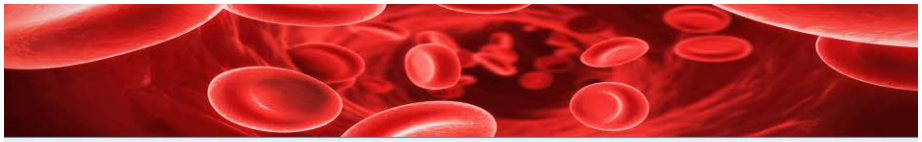
Obstetric Anaesthetists' Association
Promoting the highest standards of anaesthetic practice in the care of mother and baby

SESSION 7 – Obstetric haemorrhage		
13.30	The WOMAN trial - tranexamic acid for all? 1E01, 2B05, 3B00	Prof Beverley Hunt
13.55	Managing PPH - obstetric perspectives 3B00	Dr Christina Cotzias
14.25	Managing PPH - anaesthetic perspectives 2A05, 2B05, 2B06	Dr James Bamber
14.50	Discussion	

Massive Obstetric Haemorrhage: an obstetric perspective

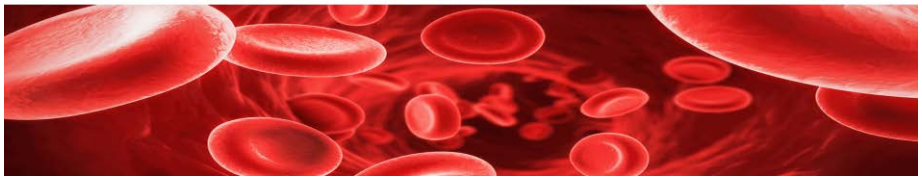
NOVEMBER 2017

Christina Cotzias
Obstetrician & Gynaecologist
West Middlesex Site
Chelsea & Westminster NHS Foundation Trust



Managing PPH
An anaesthetic perspective

Jim Bamber
Cambridge University Hospitals



The anaesthetic perspective

- **Delivery of critical care**
- Resuscitation and perioperative **anaesthesia care**
- Involvement in **multidisciplinary planning** of women with high risk of PPH e.g. coagulopathy, abnormal placentation, Jehova Witness etc.
- Participation in **guideline development**, skills, drills and **multidisciplinary training** (local, regional and national)
- Involvement in **Audit and Quality Improvement**
- Engagement with **Serious Incident Reviews**

The anaesthetic perspective

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8.3 Summary of the key findings 2009–13

In the UK and Ireland there were 22 women who died from obstetric haemorrhage between 2013–15, one of these women died more than 42 days after the end of pregnancy (Table 8.1). This represents an overall mortality rate of 0.88 (95% CI 0.55 to 1.33). Of note, 9 women died from haemorrhage in association with abnormal placentation, 8 of whom had placenta accreta, increta or percreta.

Table 8.1: Direct deaths by type of obstetric haemorrhage 1994–2015

Time period	Placental Abruption	Placenta Praevia/ accreta	Postpartum haemorrhage		Total deaths from haemorrhage	Direct haemorrhage death rate per 100,000 maternities	
			Atony	Genital Tract Trauma		rate	CI
1994–6	4	3	5	5	17	0.77	0.45–1.24
1997–99	3	3	1	2	9	0.42	0.19–0.80
2000–2	3	4	10	1	18	0.9	0.53–1.42
2003–5	2	3	9	3	17	0.8	0.47–1.29
2006–8	2	2	3 +2	(0/2)	9	0.39	0.18–0.75
2009–12†	2	1	7	7	17	0.49	0.29–0.78
2013–15†	3	9*	9**	1	22	0.88	0.55–1.33

†Figures for UK and Ireland. All other figures are UK only.
*One placenta praevia alone, 8 accreta/increta/percreta
**5 post caesarean delivery

8.5 Conclusions

It is disappointing that many of the messages regarding the care of women who died from haemorrhage remain very similar to those reported in 2014 (Knight, Kenyon et al. 2014). Assessors noted improvements in care, which may have made a difference to outcome, in almost 60% of women (Table 8.2). There is thus clear potential for preventing more deaths from haemorrhage and AFE in the future. Of particular concern

Table 8.2: Classification of care received by women who died from haemorrhage or AFE, UK and Ireland, 2013–15

Classification of care received	Number (%) N=31
Good care	10 (32)
Improvements to care which would have made no difference to outcome	3 (10)
Improvements to care which may have made a difference to outcome	18 (58)

Postpartum Haemorrhage – what are we talking about?

- Antepartum
- Peripartum
- **Postpartum**
  - Vaginal delivery
  - Caesarean section

- **Postpartum**
  - Primary
  - Secondary

- MOH
  - Massive Obstetrical Haemorrhage
  - Major Obstetrical Haemorrhage

- Severe Obstetrical Haemorrhage
- Severe Postpartum Haemorrhage

- **”Postpartum haemorrhage” in PubMed.*gov*:**
  - 6903 (19. May 2014)
  - 8139 (13. May 2016)
  - 9286 (24. April 2018)

Definitions of PPH: By volumes

- **WHO (2012)**
  PPH= Blood loss ≥ 500 ml within 24 hours of birth (vaginally)
  Severe PPH = Blood loss ≥ 1000 ml within 24 hours
- **RCOG (2016)**
  Minor PPH = Blood loss 500–1000 ml
  Major Moderate PPH = Blood loss 1001-2000 ml
  Major Severe PPH = Blood loss > 2000 ml
- **ACOG (2017)**
  PPH = Blood loss ≥ 1000 ml or *blood loss accompanied by signs or symptoms of hypovolemia within 24 hours after the birth process (includes intrapartum loss) regardless of route of delivery*
- **NHS England Maternity Dashboard Metrics (2017)**
  PPH = Blood loss ≥ 1500 ml

Definitions of PPH: By volumes
Definitions of PPH: By transfusion
By rate of loss or blood volume loss

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BMJ

RESEARCH

Effect of a collector bag for measurement of postpartum blood loss after vaginal delivery: cluster randomised trial in 13 European countries

Wei-Hong Zhang, senior researcher,[1] Catherine Deneux-Tharaux, senior researcher,[2] Peter Brocklehurst, professor of perinatal epidemiology,[3] Edmund Juszczak, senior medical statistician,[3] Matthew Joslin, general practitioner,[1] Sophie Alexander, professor of public health[1] on behalf of the EUPHRATES Group

Setting:

- 13 European countries. 78 maternity units. 25 381 women.
- A collector bag vs. visually assess postpartum blood loss after
- vaginal delivery

Results:

- Severe PPH occurred in 189 of 11 037 of vaginal deliveries (1.71%) vs 295 of 14 344 in the control group (2.06%).

Conclusion:

- Compared with visual estimation of postpartum blood loss the use of a collector bag after vaginal delivery **did not reduce the rate of severe PPH.**

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Hancock et al. BMC Pregnancy and Childbirth (2015) 15:230
DOI 10.1186/s12884-015-0653-6

BMC Pregnancy & Childbirth

RESEARCH ARTICLE Open Access

Is accurate and reliable blood loss estimation the 'crucial step' in early detection of postpartum haemorrhage: an integrative review of the literature

Angela Hancock[1*], Andrew D. Weeks[2] and Dame Tina Lavender[1]

Results:

- Thirty-six studies were included
- Health professionals were highly inaccurate at estimating blood loss as a volume.
- Blood collection bags improved the accuracy of estimation.
  - But did not prevent delays or progression to severe PPH.

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Hancock et al. BMC Pregnancy and Childbirth (2015) 15:230
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BMC Pregnancy & Childbirth

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Angela Hancock[1*], Andrew D. Weeks[2] and Dame Tina Lavender[1]

Results:

- Training resulted in short term improvements in skills.
  - But not retained and did not improve clinical outcomes.
- Multi-faceted interventions changed some clinical practices.
  - But did not reduce the incidence of severe PPH or the timing of responses to excessive bleeding.
- Practitioners commonly used the nature and speed of blood flow, and the condition of the woman to indicate that the blood loss was abnormal.

Royal College of Obstetricians & Gynaecologists

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Postpartum Haemorrhage, Prevention and Management (Green-top Guideline No. 52)

Published: 16/12/2016

Patient information leaflet

Patient information about heavy bleeding after birth (postpartum haemorrhage)

Postpartum Haemorrhage, Prevention and Management (Green-top Guideline No. 52)

This guideline provides information about the prevention and management of postpartum haemorrhage (PPH), primarily for clinicians working in obstetric led units in the UK

Sonderdruck aus

FRAUEN-ARZT

54. Jahrgang ■ November 2013

DIAGNOSTIK + THERAPIE

Warnings-systems.
Built-in-algorithms

Management der postpartalen Blutung

Interdisziplinäre D-A-CH-Konsensusgruppe PPH

The American College of Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

ACOG PRACTICE BULLETIN

Clinical Management Guidelines for Obstetrician–Gynecologists

NUMBER 183, OCTOBER 2017 *(Replaces Practice Bulletin Number 76, October 2006)*

Committee on Practice Bulletins—Obstetrics. This Practice Bulletin was developed by the American College of Obstetricians and Gynecologists' Committee on Practice Bulletins–Obstetrics in collaboration with Laurence E. Shields, MD; Dena Goffman, MD; and Aaron B. Caughey, MD, PhD.

Postpartum Hemorrhage

The Scandinavian Society of Anaesthesiology and Intensive Care Medicine

The Scandinavian Society of Anaesthesiology and Intensive Care Medicine

Guideline task

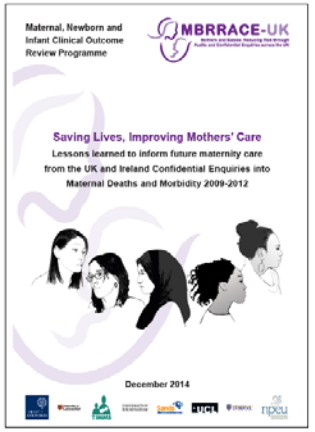
Postpartum Haemorrhage

SSAI Nordisk Anæstesiologisk Forening

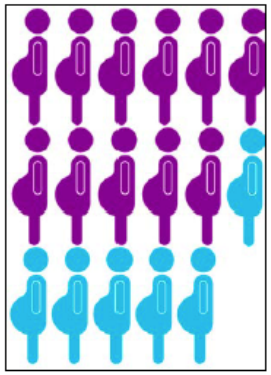
The Scandinavian Society of Anaesthesiology and Intensive Care Medicine

Advanced Obstetric Anaesthesia Training Programme

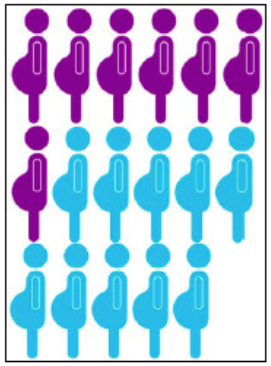
2011-2013



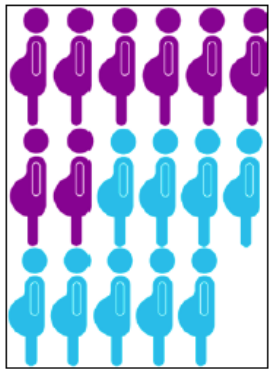
Recognition of haemorrhage and the deteriorating woman



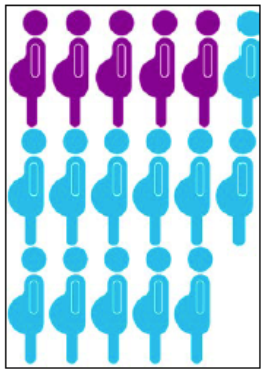
Severity of bleeding not recognised in 11 women



Inadequate observations were a feature in 7 women



Estimating blood loss was a problem in 8 women



Abnormal observations were not escalated in 5 women

Anaesthetic management?

Early recognition!
Early treatment!

Classification of hemorrhage AND clinical impact?

15. Benedetti T. Obstetric haemorrhage. In: Gabbe SG, Niebyl JR, Simpson JL, eds. A pocket Companion to Obstetrics, 4th edn. New York: Churchill Livingstone, 2002

Table 1 Classification of hemorrhage[15]

Hemorrhage class	*Acute blood loss* (ml)	*P*
1	500	
2	1000	
3	1500	
4	2000	

British Journal of Anaesthesia **103** (BJA/PGA Supplement): i47–i56 (2009)
doi:10.1093/bja/aep303

OBSTETRICS

Maternal haemorrhage

M. Walfish*, A. Neuman and D. Wlody

Table 1 Stages of hypovolaemic shock

	Stage			
	I Compensated	**II Mild**	**III Moderate**	**IV Severe**
Blood loss	<15%; 750–1000 ml	15–30%; 1000–1500 ml	30–40%; 1500–2000 ml	>40%; ≥2000 ml
Heart rate (beats min^{-1})	<100	>100	>120	>140
Arterial pressure	Normal; vasoconstriction redistributes blood flow, slight increase in diastolic pressure	Orthostatic changes in arterial pressure, vasoconstriction intensifies in non-critical organs (skin, muscle, gut)	Markedly decreased (systolic arterial pressure <90 mm Hg); vasoconstriction decreases perfusion to abdominal organs	Profoundly decreased (systolic arterial pressure <80 mm Hg); decreased perfusion to vital organs (brain, heart)
Respiration	Normal	Mild increase	Moderate tachypnoea	Marked tachypnoea—respiratory failure
Mental status	Normal, slightly anxious	Mildly anxious, agitated	Confused, agitated	Obtunded
Urine output (ml h^{-1})	>30	20–30	<20	None (anuria)
Capillary refill	Normal (<2 s)	>2 s; clammy skin	Usually >3 s; cool, pale skin	>3 s; cold, mottled skin

500–1000	10–15	Normal	Palpitations, dizziness, tachycardia
1000–1500	15–25	Slightly low	Weakness, sweating, tachycardia
1500–2000	25–35	70–80	Restlessness, pallor, oliguria.
2000–3000	35–45	50–70	Collapse, air hunger, anuria

Shock Index HR/SBP – trafic-light-action?

RESEARCH ARTICLE

Vital Sign Prediction of Adverse Maternal Outcomes in Women with Hypovolemic Shock: The Role of Shock Index

Alison M. El Ayadi[1]*, Hannah L. Nathan[2], Paul T. Seed[2], Elizabeth A. Butrick[1], Natasha L. Hezelgrave[2], Andrew H. Shennan[2], Suellen Miller[1]

Conclusions

For women with hypovolemic shock from obstetric hemorrhage, shock index was consistently a strong predictor of all adverse outcomes.

In lower-level facilities in low resource settings, we recommend a shock index threshold of ≥ 0.9 indicating need for referral, ≥ 1.4 indicating urgent need for intervention in tertiary facilities and ≥ 1.7 indicating high chance of adverse outcome.

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Mutschler et al. Critical Care 2013, 17:R42
http://ccforum.com/content/17/2/R42

CRITICAL CARE

RESEARCH Open Access

Renaissance of base deficit for the initial assessment of trauma patients: a base deficit-based classification for hypovolemic shock developed on data from 16,305 patients derived from the TraumaRegister DGU®

Manuel Mutschler[1,2*], Ulrike Nienaber[3], Thomas Brockamp[1], Arasch Wafaisade[1], Tobias Fabian Bertil Bouillon[1], Marc Maegele[1] and the TraumaRegister DGU[4]

Mutschler et al. Critical Care 2013, 17:R172
http://ccforum.com/content/17/4/R172

CRITICAL CARE

RESEARCH Open Access

The Shock Index revisited – a fast guide to transfusion requirement? A retrospective analysis on 21,853 patients derived from the TraumaRegister DGU®

, Matthias Münzberg[4], Christoph Wölfl[4], Herbert Schoechl[5,6], c Maegele[1] and The TraumaRegister DGU®[7]

THE JOURNAL OF MATERNAL-FETAL & NEONATAL MEDICINE

http://informahealthcare.com/jmf
ISSN: 1476-7058 (print), 1476-4954 (electronic)

J Matern Fetal Neonatal Med, 2016; 29(23): 3812–3814
 DOI: 10.3109/14767058.2016.1147552

Taylor & Francis
Taylor & Francis Group

ORIGINAL ARTICLE

Application of the perfusion index in obstetric bleeding

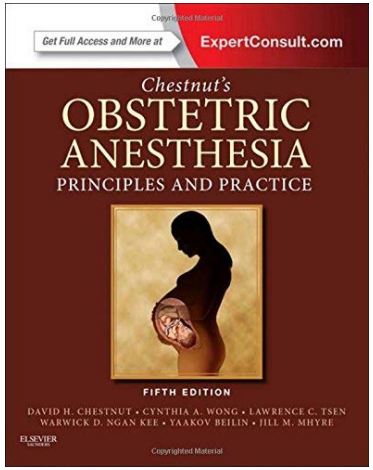
Hiroaki Tanaka[1,2], Shinji Katsuragi[3], Kayo Tanaka[1], Takuya Kawamura[1], Masafumi Nii[1], Michiko Kubo[1], Kazuhiro Osato[1], Yoshihito Sasaki [2], and Tomoaki Ikeda[1]

[1]Department of Obstetrics and Gynecology, Mie University School of Medicine, Mie, Japan, [2]Department of Obstetrics and Gynecology, Kuwana City Medical Center, Kuwana, Japan, and [3]Department of Obstetrics and Gynecology, Sakakibara Heart Institute, Tokyo, Japan

Anaesthetic management?

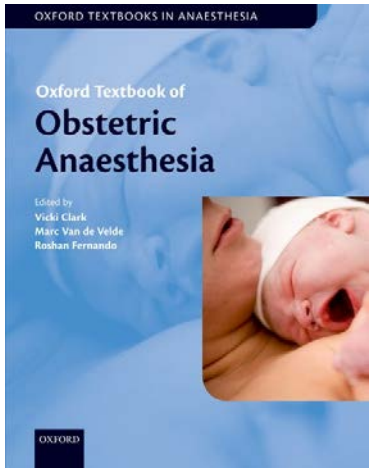
Stable or unstable patient?
Regional or general anaesthesia?

Regional or General Anaesthesia?



”Rapid sequence induction of GA is the preferred technique for bleeding patients. The choice of intravenous induction agent depends on the degree of cardivascular instability….”

Chapter 37 p 814 DC Mayer & KA smith



”Neuraxial anaesthesia is relatively contraindicated in a patient who is actively bleeding ….
GA is the technique of choise with judicious use of induction agents to avoid vasodilation and hypotension….”

Chapter 35, p 562 JE Norman and V. Clarck.

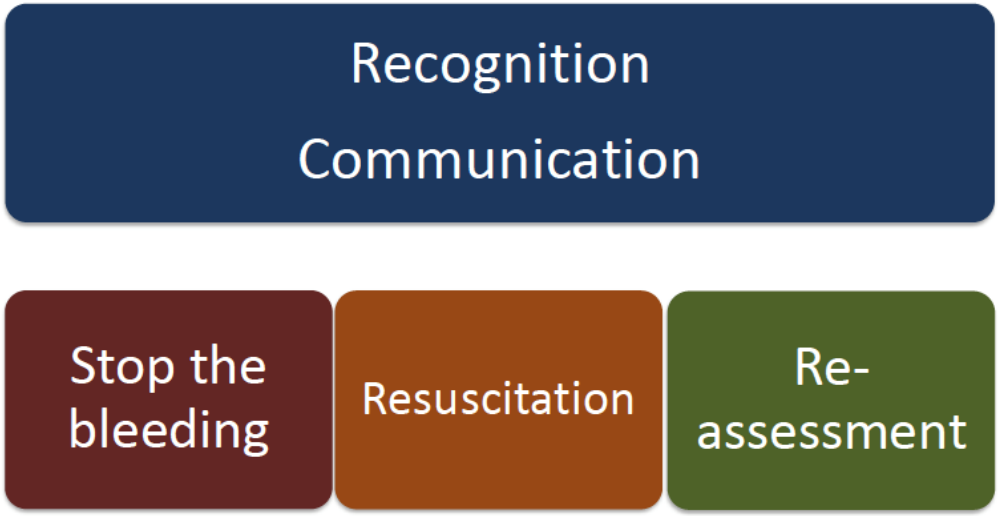
Anaesthetic management?

Anaesthetic management(D)

- The method used is based on the **clinical judgement**
- Regional anaesthesia is relative contraindicated but may be used if the patient is not hypovolemic and the bleeding has stopped….
- Spinal anaesthesia (1.5 ml bupivacain 0.5% heavy) or "top-up" epidural (10 ml lidocain 2% + adrenalin) if hemodynamic stable and/or blood loss replaced by resuscitation fluid
- General anaesthesia in all other cases. Consider use of ketamine in hemodynamic unstable patients.

Anaesthetic management?

When is the patient unstable?
What decides, that the patient is stable?



Anaesthetists Non Technical Skills – ANTS

- Situation awareness
- Decision making
- Team working
- Task management / Leadership

Anaesthetic management

- Optimize circulation before anaesthesia?
- Maintaining Oxygen Delivery!
- Improve metabolic and haemostatic derangement
- Reduce distress

- Monitoring? A-line?
- How many IV-lines?
- Level 1 Rapid Infuser?
- Cell-Saver®?
- REBOA®?
- Post-operative care? ICU?

- **Tone, Tissue, Trauma, Thrombin?**

Take Home Message:

- 1. Early recognition
- 2. Early control of bleeding
- 3. Early haemostasis