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Who and JCHCO reducing maternal mortality alter PPH

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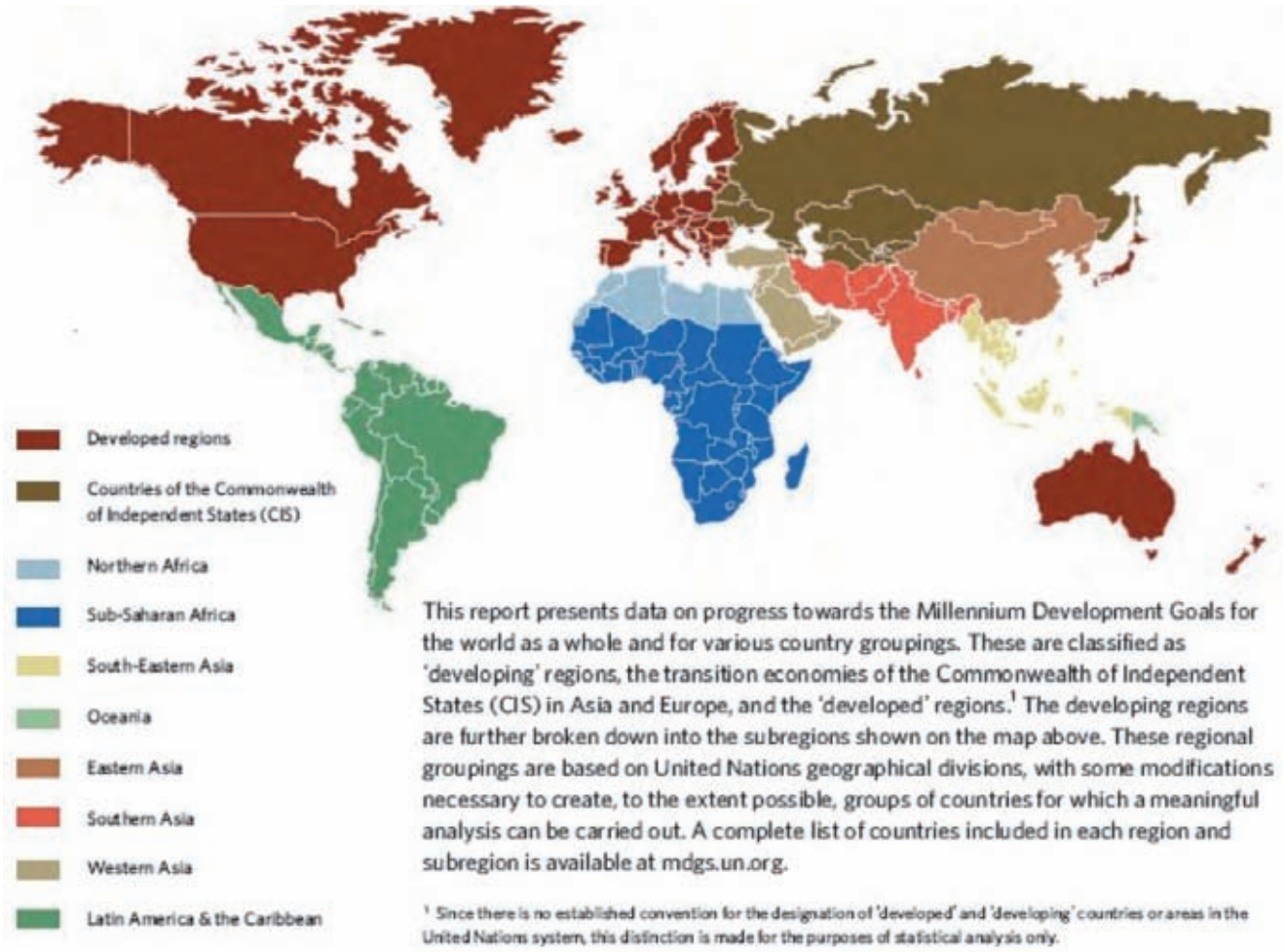
OBSTETRIC HEMORRHAGE

- Procrastination in dealing with pelvic hemorrhage only accentuates the problem. Hoping that hemorrhage will spontaneously cease is useless, and steps should be taken immediately

An obstetric operating room in Philadelphia 1894

Those considered extremely poor accounted for almost half of the developing World's population in 1990, ten years before the mogs were established. In 2005, 5 years into the MDGS. They accounted for just over a quarter.

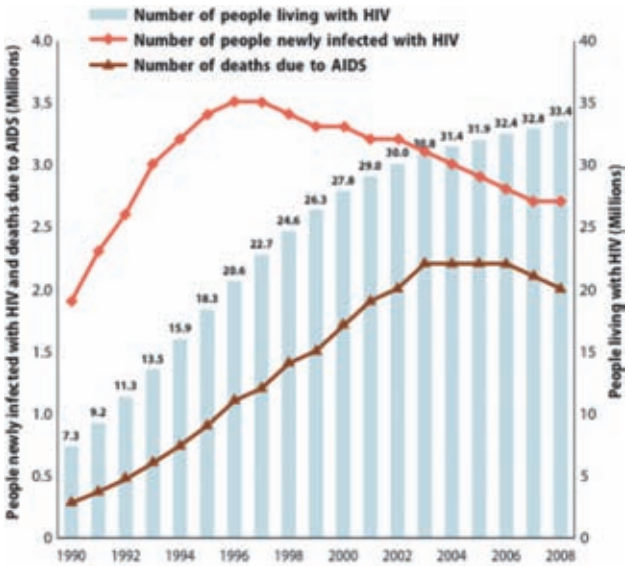
UNITED NATIONS MILLENNIUM DEVELOPMENT GOALS REPORT 2009
HTTP://WWW.UN.ORG/MILLENNIUMGOALS/PDF/MDG_REPORT_2009_ENG.PDF
REGIONAL GROUPINGS



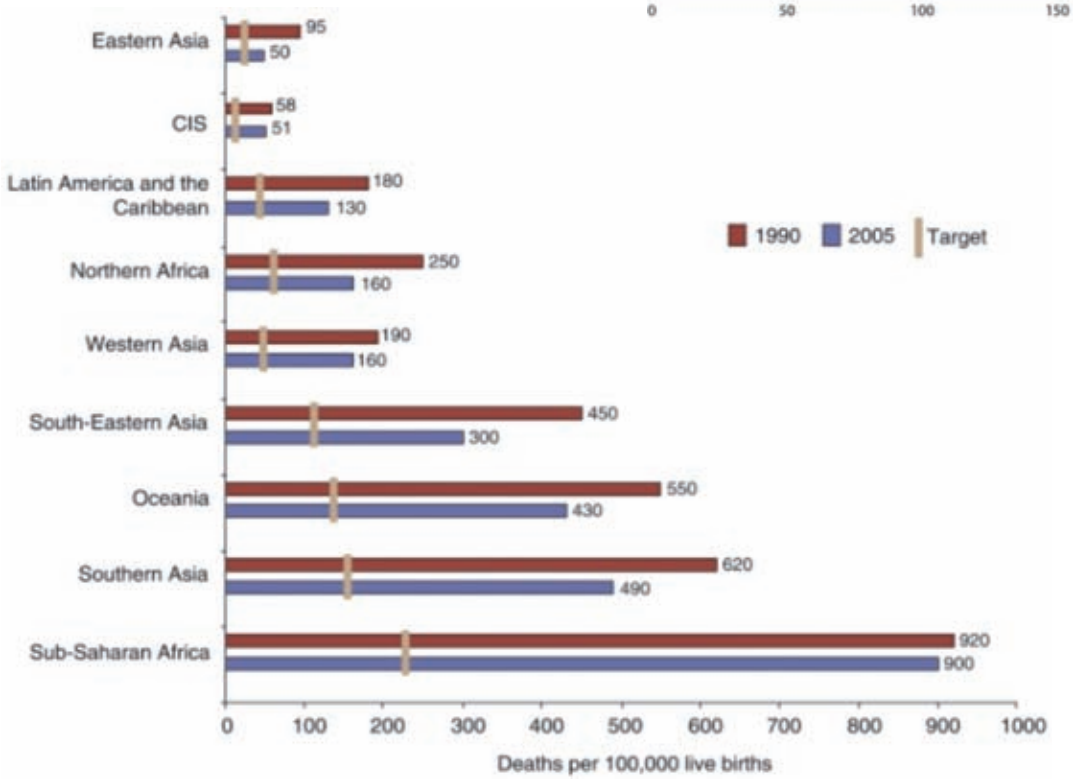
This report presents data on progress towards the Millennium Development Goals for the world as a whole and for various country groupings. These are classified as 'developing' regions, the transition economies of the Commonwealth of Independent States (CIS) in Asia and Europe, and the 'developed' regions.[1] The developing regions are further broken down into the subregions shown on the map above. These regional groupings are based on United Nations geographical divisions, with some modifications necessary to create, to the extent possible, groups of countries for which a meaningful analysis can be carried out. A complete list of countries included in each region and subregion is available at mdgs.un.org.

[1] Since there is no established convention for the designation of 'developed' and 'developing' countries or areas in the United Nations system, this distinction is made for the purposes of statistical analysis only.

NUMBER OF PEOPLE LIVING WITH HIV, NUMBER OF PEOPLE NEWLY INFECTED WITH HIV AND NUMBER OF AIDS DEATHS WORLDWIDE, 1990-2008 (MILLIONS)

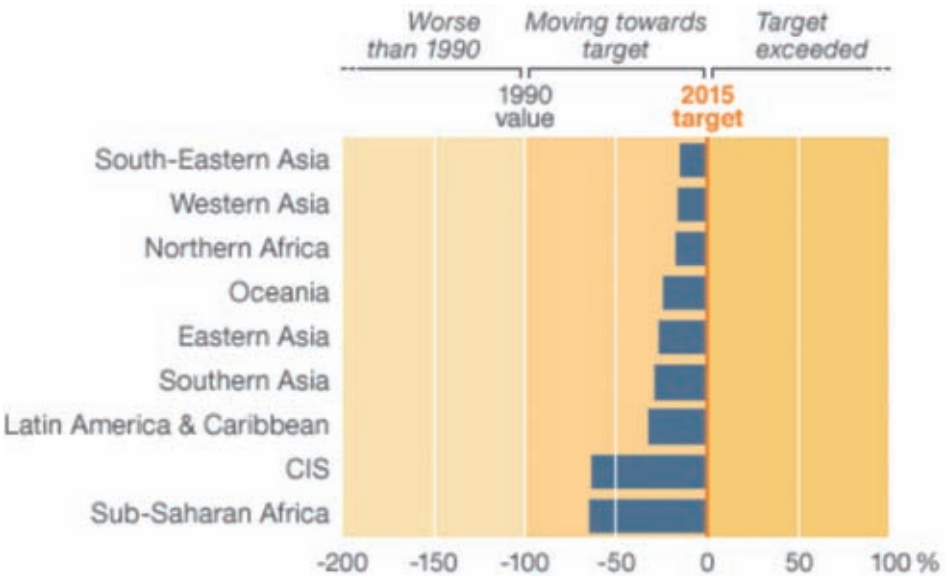


UNDER-FIVE MORTALITY RATE PER 1,000 LIVE BIRTHS, 1990 AND 2008

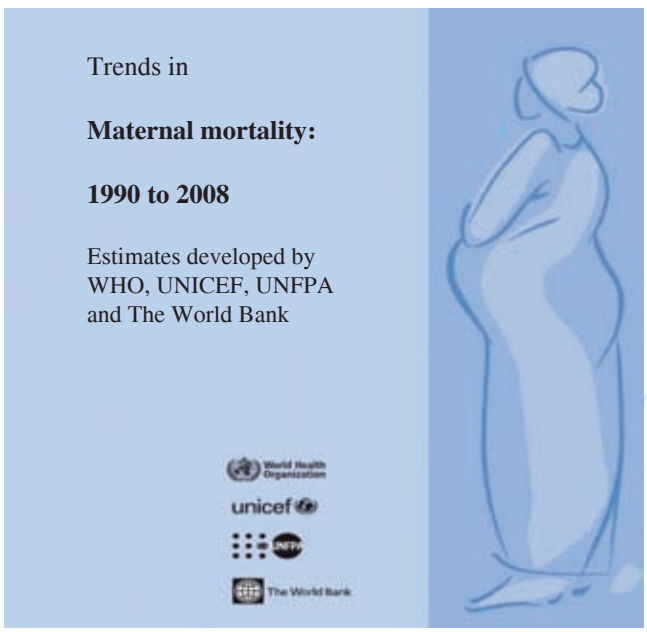


GOAL 5: IMPROVE MATERNAL HEALTH

DATA: Maternal deaths per 100,000 live births
KEY TARGET: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio



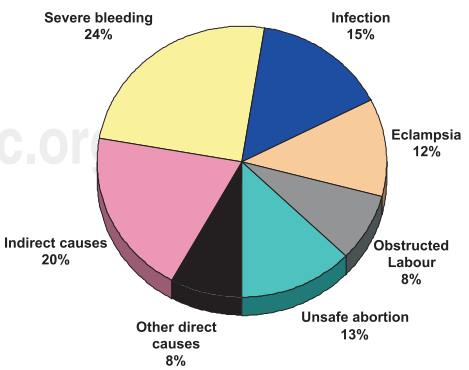
Source: UN, WHO estimates



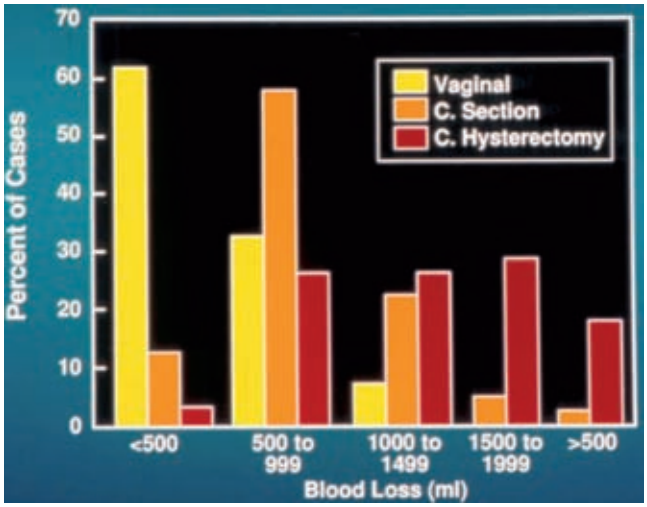
MATERNAL MORTALITY

- 358,000 maternal deaths worldwide 2008
- 140,000 maternal deaths from PPH
- 34% decline from 1990
- 99% (355,000) in developing countries
- 87% Sub-Saharan Africa and South Asia
- Adult lifetime risk of maternal death is highest in sub-Saharan Africa at 1 in 31

CAUSES OF MATERNAL DEATH



BLOOD LOSS AT PARTURITION



AVERAGE BLOOD LOSS AND COMPLEXITY OF DELIVERY

- Vaginal delivery-500 mL
- Cesarean section-1,000 mL
- Repeat cesarean section & TAH-1,500 mL
- Emergency hysterectomy-3,500 mL

Pritchard AJOB 1961
Clark Obstet Gynecol 1984

PHILOSOPHY

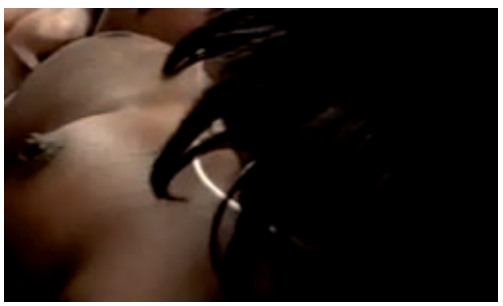
«What matters in health care is identifying and using interventions that have been shown by strong research evidence to achieve the best outcomes within available resources for everyone».
Fletcher R, Lancet 1999

EFFECTIVE INTERVENTIONS TO REDUCE MATERNAL MORTALITY/SEVERE MORBIDITY

Effective intervention		Condition prevented/treated
Parenteral antibiotics	→	Sepsis
Uterotonics	→	PPH
Anticonvulsants	→	Convulsions
Removal of placenta and retained products	→	PPH, abortion complications
Assisted vaginal delivery and cesarean section	→	Obstructed labor
Blood transfusion	→	PPH/severe anemia
Iron/folate	→	Postpartum anemia
Iodine	→	Cretinism
Antiretrovirals	→	MTCT of HIV
Malaria prophylaxis	→	LBW
Support in labor	→	Clinical procedures, increases breastfeeding
External cephalic version at term	→	Breech deliveries

WHO guidelines
for the management of
postpartum haemorrhage
and retained placenta

World Health Organization



UTEROTONIC AGENTS FOR POSTPARTUM HEMORRHAGE

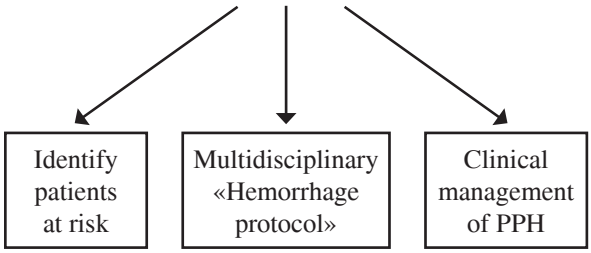
Drug	Dose	Route Primary (Alternative)	Frequency of dose	Comments and contradictions
Oxytocin (Syntocinon)	10-40 Units in 1000 mL N saline or LR	IV (IM, IMM)	Continous infusion	No C/I
Methylergonovine (Methergine)	0.2 mg	IM (IMM)	Every 2-4 hours	Hypertension/ toxemia
15 Methyl PGF2 (Hemabate)	0.25 mg	IM (IMM)	Every 15-90 min, not to exceed 8 doses	Active cardiac, pulmonary, renal or hepatic disease
Dinoprostone	20 mg	PR	Every 2 hours	Avoid in hypotensive patient because of vasodilation. If available, 15 M PGF2 is preferable

ALTERNATIVE AGENTS FOR PREVENTION OF POSTPARTUM HEMORRHAGE

- *Misoprostol*
  - Synthetic analog of PGE1
  - 1996-1st trial outlining its use to prevent 3rd stage
  - 24 randomized controlled trials from 1998-2003
  - 3 systematic reviews (2002, 2002, 2003)
    - Oral and rectal misoprostil not as effective as conventional injectable uterotonics
    - High rate of side effects
  - May be useful in less-developed countries where administration of parenteral uterotonic agents are problematic

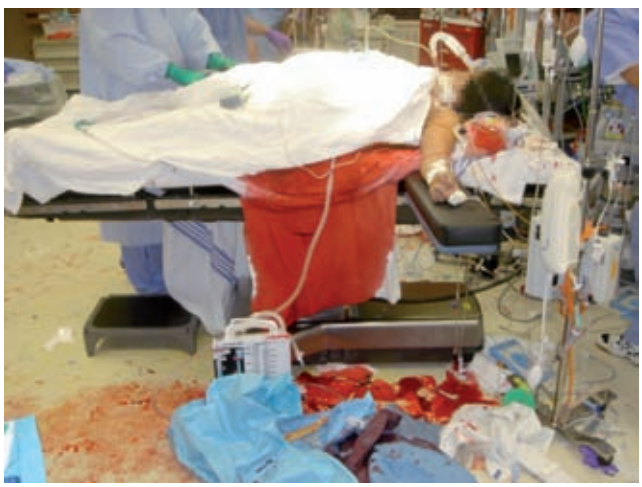
MATERNAL MORTALITY

- Obstetrical Hemorrhage -



MISOPROSTOL AVAILABILITY (2002)

CAN WE PREDICT WHO WILL BLEED?



18TH EXPERT COMMITTEE ON THE SELECTION AND USE OF ESSENTIAL MEDICINES

Geneva, 2010

Proposal for the inclusion of misoprostol in the who model list of essential medicines

Submitted on behalf of
Gynuity Health Projects, NY, USA

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MATERNAL MORTALITY

- Obstetrical hemorrhage -

1. Identify pat. at risk →

- PI previa/accreta
- Anticoagulation Rx
- Coagulopathy
- Overdistended uterus
- Grand multiparity
- Abn labor pattern
- Chorioamnionitis
- Large myomas
- Previous history of PPH

MATERNAL MORTALITY

- Obstetrical hemorrhage -

Patients at risk → Pre-delivery management

1. Prepare for PPH
2. Optimize patient's hemodynamic status
3. Timing of Delivery
4. Surgical planning
5. Anesthesia /I.V. access/ invasive monitoring
6. Modify obsterical management
7. Increased postpartum/postop surveillance

MATERNAL MORTALITY

- Obstetrical hemorrhage -

1. Prepare for PPH

Personel
- Obstetrician
- Anesthesia
- Nursing
- Lab and Blood Bank
- Others (I.R.)

Drugs/ equipment
- Pitocin
- Methergine
- Hemabate
- Cytotec
- Colloids
- Blood/Bl. products
- Surg. instruments
- Intrauterine balloon (Cook, S-B, Foley)

IF ACTIVE BLEEDING OCCURS…

- Expedite control of hemorrhage
- Limit crystalloid infusion
- Maintain anesthesia and paralysis
- Keep BP low (80-100 systolic)
- Resuscitate with blood: 1:1:1 RBC/plasma
- Follow labs closely-especially calcium and pH

Dutton RP. *Pharmacotherapy.* 2007;27(9 pt 2):85S–92S.

FLUID AND BLOOD COMPONENT REPLACEMENT

- Whole blood *vs* components, debate continues
- Maintain urine output > 30 cc/hr
- Maintain hematocrit > 30% (with acute blood loss)
- Choice of components:
  - Hemoglobin – packed red blood cells
  - Fibrinogen-cryoprecipitate
  - Other clotting factors-fresh frozen plasma
  - Platelets-platelet packs
  - Volume-lactated Ringer's solution

MATERNAL MORTALITY

- Obstetrical hemorrhage -

Identify patients at risk | Multidisciplinary «Hemorrhage protocol» | Clinical management of PPH

1. How/Who triggers the «H.P.»
2. Identify «The response team»
3. Transfusion protocol
4. Define the logistics involved
5. Conduct drills
6. Post-op care

MATERNAL MORTALITY

- Obstetrical hemorrhage -

Identify patients at risk | Multidisciplinary «Hemorrhage protocol» | Clinical management of PPH

2. The «Response team»
   - Nursing
   - Anesthesia
   - Ob surgery (MFM, Gyn Onc, Ob-Gyn,)
   - Intervention radiology
   - Urology
   - Hematology

MATERNAL MORTALITY

- Obstetrical hemorrhage -

Identify patients at risk	Multidisciplinary «Hemorrhage protocol»	Clinical management of PPH

3. Transfusion protocol
   - Immediate release of O neg blood if required
   - How fast can Crossmatched blood be made available
   - Physical transport of blood → O.R. and samples O.R.→ Lab/blood Bank

MATERNAL MORTALITY

- Obstetrical hemorrhage -

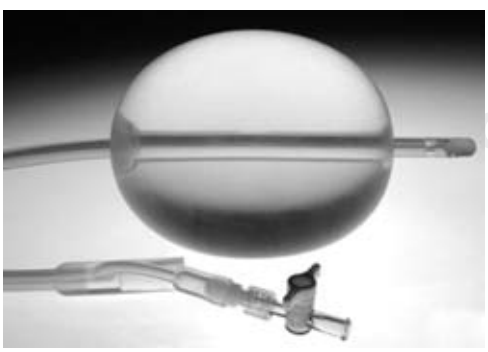
Identify patients at risk	Multidisciplinary «Hemorrhage protocol»	Clinical management of PPH

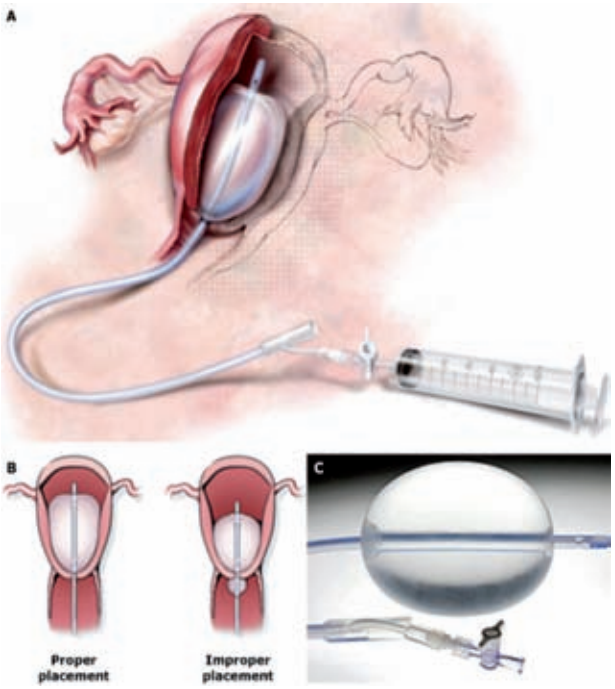
5. Drills
   - Conduct drills 3-4 x/year
   - Evaluate the performance
   - Review the results with the entire team

SURGICAL THERAPY

- Uterine packing
- Intrauterine balloon tamponade
- Uterine artery ligation
- Internal iliac (hypogastric) artery ligation
- Hysterectomy
- Suture techniques

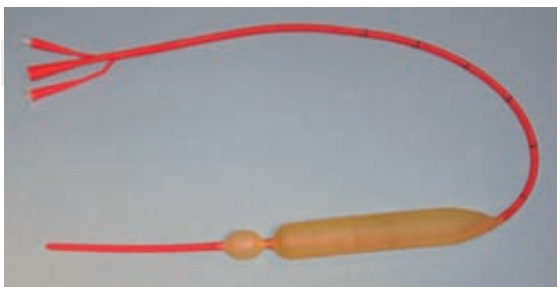
BAKRI POSTPARTUM BALLOON



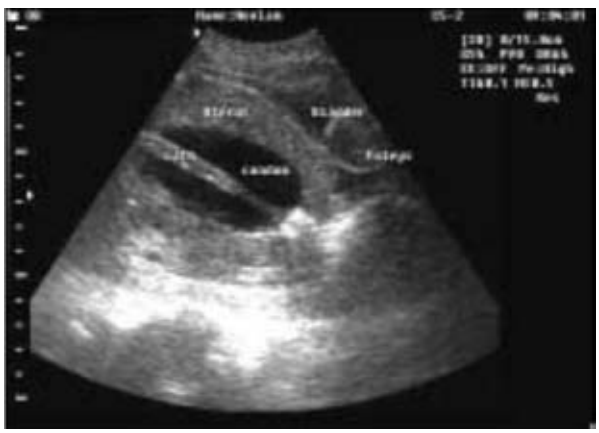


RUSCH BALLOON

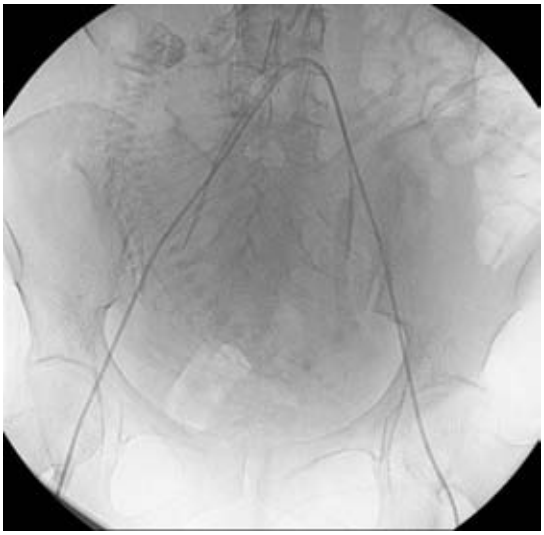
INTRAUTERINE BALLOON SENGSTAKEN-BLAKEMORE

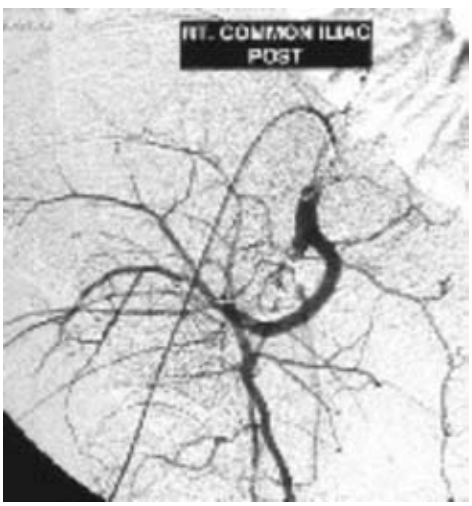


CONDOM TAMPONADE



UTERINE ARTERY EMBOLIZATION





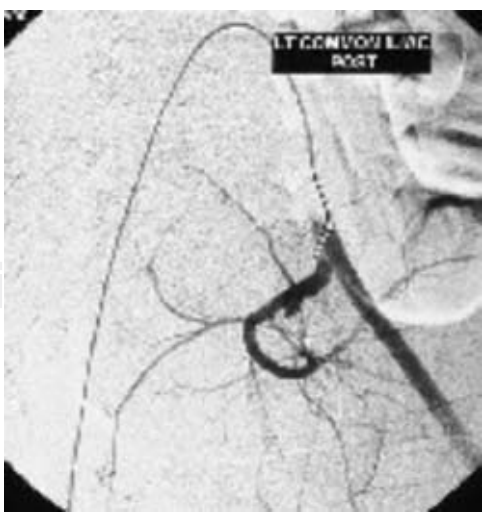


Figure 1. Transabdominal ultrasound view of inflated condom catheter (without inflated balloon) within the uterine cavity. A second Foley catheter (with inflated balloon) is placed within the urinary bladder

MATERNAL MORTALITY

- Obstetrical hemorrhage -

Uterine artery ligation

Over a 30 yr period 256 Ut artery ligation were performed for PPH.

- Successful 246 cases
- Failed 10 cases

O'Leary, J J Reprod Med 1995

MATERNAL MORTALITY

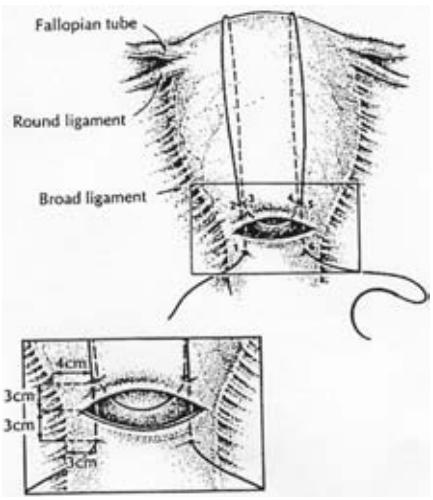
- Obstetrical hemorrhage -

Hypogastric artery ligation

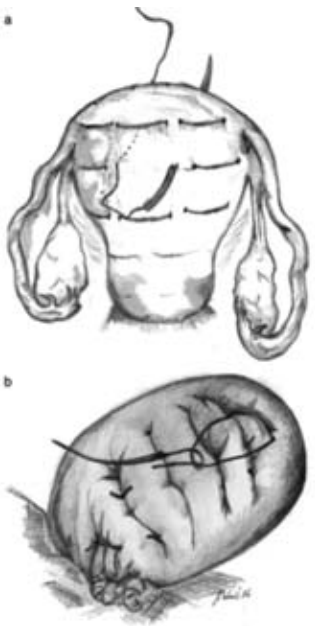
- Decreases blood flow by → 48%
- Controls severe PPH in → 50% of cases

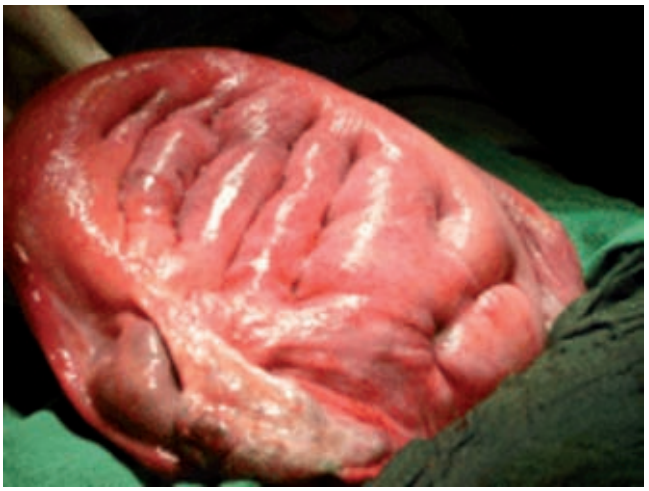
Clark et al Ob-Gyn 1985

B-LYNCH COMPRESSION SUTURE



COMPRESSION SUTURES

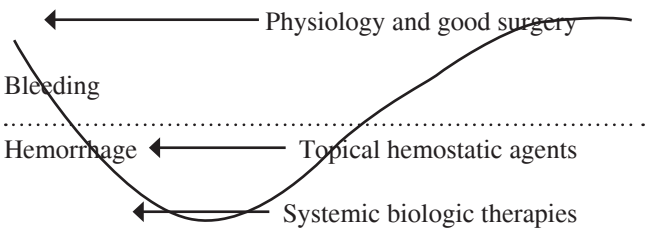




ACHIEVING OPTIMAL OPERATIVE HEMOSTASIS

Thrombosis

Clotting

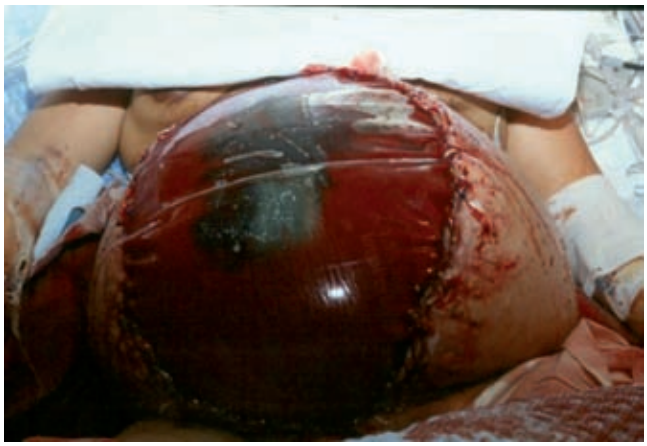


Adapted from Lawson JH, et al. *Semin Hematol*. 2004;41(suppl):55-64.

CATASTROPHIC OBSTETRICAL HEMORRHAGE

Conclusions

- Incidence low, but significant M/M
- Visual estimation, underestimates blood loss
- Earlier the intervention, less the blood loss
- Organized approach essential to management
- Precise fluid and blood component therapy



WHERE IS THE BABY?

ACTIVE MANAGEMENT OF THE THIRD STAGE OF LABOR

- Uterotonic administered following delivery
- Controlled cord traction
- Uterine massage after delivery of the placenta