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ACE

A newsletter for Provincial Assessors of
Confidential
Enquiries into Maternal Deaths

Editor
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Members of the NCCEMD

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Dear Assessors,

Professor Emeritus J Moodley for the NCCEMD

Foreword

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6. Lessons learnt from baseline evaluations of compliance with minimum standards for safe caesarean section at KZN hospitals (N.Moran)

1. Reducing deaths and disability due to neonatal encephalopathy

The recent SA Saving Babies report (covering the 2014-2016 triennium) showed that there was no decrease in the percentage of babies dying from intra-partum asphyxia compared to previous years, with 18% of deaths in babies >1000g attributed to apshyxia. In real numbers, this is more than 10 000 babies over a three year period. A closer analysis of the data shows that two-thirds of deaths in term babies (2500g and more) who were alive on admission to the labour ward but died after delivery, were due to intra-partum events collectively called intra-partum asphyxia (in PIPP). Of these term pregnancies, 72 per cent of deaths occurred in low-risk mothers with no obstetric condition. An individual breakdown of modifiable factors shows that 53.4 per cent of avoidable factors were medical personnel related, with the top three being: fetal distress not detected (fetus monitored); fetal distress not detected (fetus not monitored) and prolonged second stage.

PPIP terminology and the selection of probable or possible avoidable factors has been in use for several years, but using the term ‘intrapartum asphyxia’ or ‘peripartum asphyxia’ implies that the major factor leading to the demise was due to birth injuries and poor management of the first or second stage. When there is unexpected severe morbidity after birth, with a baby born with poor Apgar scores, it is common to use the term ‘birth asphyxia’ in the clinical notes. In medico-legal cases, this can be interpreted as an admission of negligence or poor management. The more appropriate term to use is ‘neonatal encephalopathy’, which is defined by the America College of O&G as a syndrome of disturbed neurologic function in a newborn baby at 35 weeks’ gestation or more, manifested by a depressed level of consciousness or seizures, often with difficulty in initiating and maintaining respiration and with depressed tone and reflexes. This term does not imply any specific underlying pathophysiology as there could be many causes. Only when there is real evidence that underlying hypoxia and ischaemia related to birth was the cause for neonatal encephalopathy, can the term HIE (hypoxic-ischemic encephalopathy) be used. However, since there are so many associated factors and the pathophysiology of HIE is poorly understood, it is still more advisable to use the term ‘presumed HIE’ in clinical notes.

Bearing this in mind, there is an alarming number of babies dying or surviving with severe morbidity after an apparently uncomplicated pregnancy and delivery. The well-grown and healthy fetus has a remarkable ability to adapt to the stresses of labour and delivery. It is difficult to diagnose late onset placental insufficiency (LOPI) but in recent years there is increasing evidence that LOPI is associated with late stillbirths or a decreased ability to deal with the birth process. There are many other factors during the late first stage and second stage of labour that can potentially contribute or be associated with HIE, including hypertonus (uterine contractions lasting more than 2 minutes) or tachysystole (6 or more contractions during 10 minutes) or a fetal heart rate that fails to return to the baseline after contractions or prolonged labour. All of these can be detected using meticulous observations. Such observations need to be done more frequently in the second stage of

labour, but as the health care worker doing the delivery is often alone and scrubbed during the procedure, the documentation of the process is done retrospectively and there is currently, in the national SA Maternity Case Record, no dedicated form to document the fetal heart rate observations that are recommended to be done every 5 minutes. There will be a renewed focus on the second stage and improved documentation thereof in the next few years with a revised maternity case record and intra-partum care guidelines currently in development. It is hoped that this will contribute to a better outcome for labour-related adverse events.

2. Additions to Postpartum Haemorrhage algorithms

It is encouraging that the seventh Saving Mothers report showed a 22% reduction in maternal deaths from obstetric haemorrhage from 2011-2016. Nevertheless absolute numbers remain high (624 in 2014-2016 compared to 684 in 2011-2013). In 2018 three new components have been added to the PPH algorithms used for South Africa:

1. Inclusion of tranexamic acid (TXA) in medical management of PPH. This includes uterotonic drugs to contract the uterus which are given sequentially; oxytocin infusion followed in 10-15 minutes if no response by syntometrine or ergometrine (if no hypertension or cardiac pathology) plus tranexamic acid. The latter, a fibrinolytic inhibitor, was not previously in the South African PPH protocol but the WOMAN trial published in 2017 indicated it reduces PPH mortality compared to placebo, when given in addition to standard therapy [(1)]. A dedicated WHO guideline on its use has been published which specifies the importance of using it early in the PPH algorithmic approach since its effect is reduced if given after 3 hours of onset of PPH [(2)]. It is now included in the new SA PPH protocol. Contraindications include artificial heart valves and current or previous thrombo-embolic disease.
2. Balloon tamponade is a useful method to reduce uterine bleeding in cases of uterine atony not responding to medical therapy and placental site bleeding at CS. It also has a role in reducing bleeding during patient transfer and/or until senior help arrives. Up to now methods of balloon tamponade have included purpose-made devices such as the Bakri balloon or Rusch catheter, or cheaper home- made devices; the condom balloon or surgical glove balloon tamponade system. Recently, a more affordable purpose-made device, the Ellavi balloon, has been developed by the University of Stellenbosch with a technical team. It is based on the same principles as the surgical glove balloon system and is now available in South Africa. Contact Professor G.Theron for details: gbth@sun.ac.za
3. The recent Saving Mothers report (2014-2016) has cited major problems during referral of critically ill patients especially following haemorrhage. Many are transferred in severe shock with a shock index (pulse/systolic BP) more than 1.7. Many of these women die en-route or shortly after arrival at the next facility. Also many do not have a paramedic accompanying them to continue resuscitation. This problem has been assisted in some countries such as Ethiopia, where referral times

are long due to mountainous terrain, by the NASG (non-pneumatic anti- shock garment). The NASG is a neoprene garment with compression panels on the lower limbs and abdomen which treats shock by maintaining blood flow to essential organs during transit [3]. A systematic review in 2015 of six observational studies showed a 50% reduction MMR using NASG (significant) with one cluster RCT showing a non-significant reduction MMR but significantly faster recovery from shock.

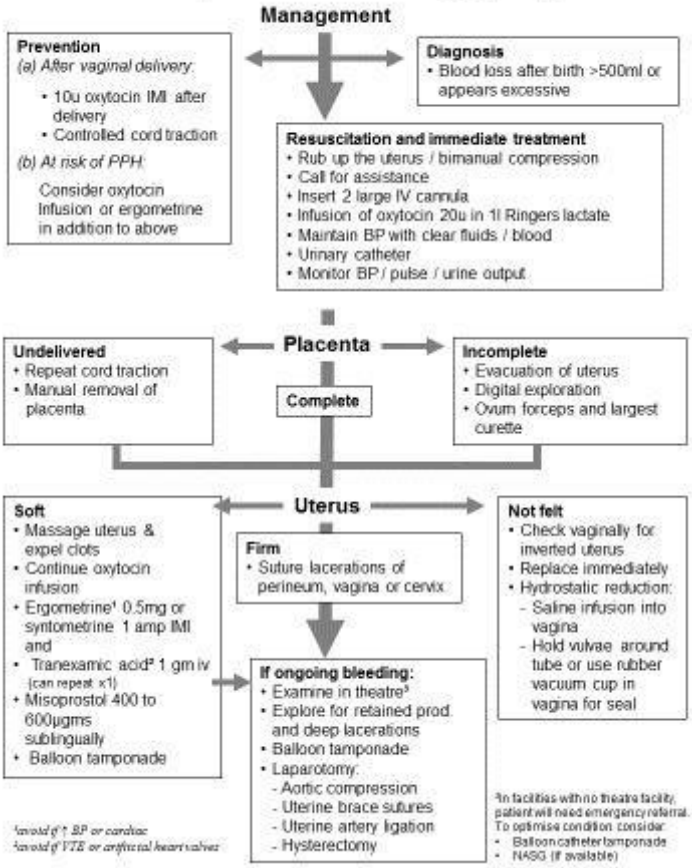
It is currently being procured in South Africa and will be piloted in KZN. The garment is reusable after washing and the aim is for it to be carried by ambulances for transporting shocked patients between facilities. Vaginal and abdominal surgery can also be performed with the garment still applied if the patient is still unstable. Removing the NASG needs to be done slowly and in a systematic way or sudden decompensation will occur.

These additions have been incorporated into the revised PPH algorithms used in the revised ESMOE PPH module which follow

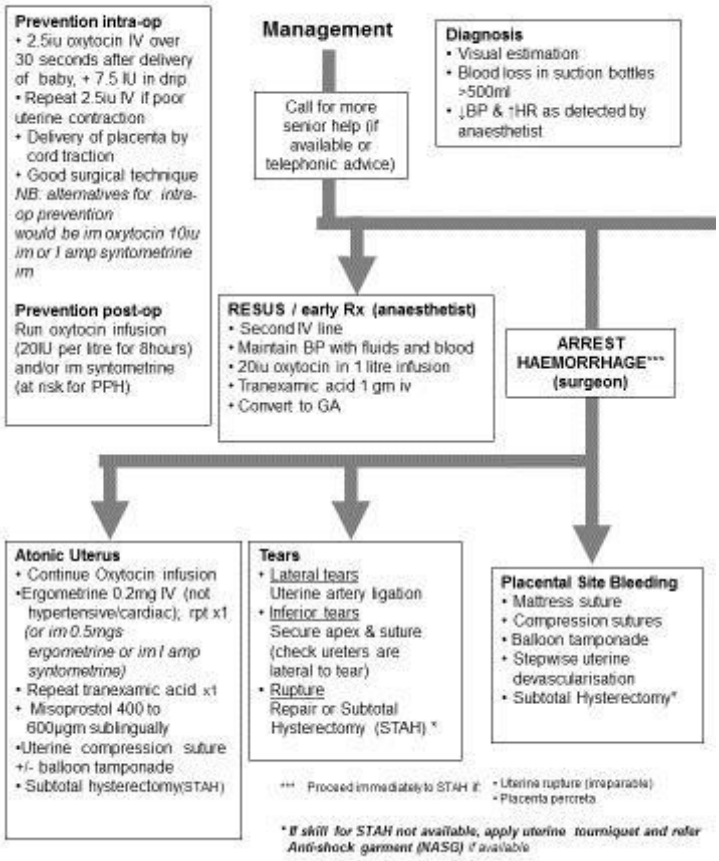
References

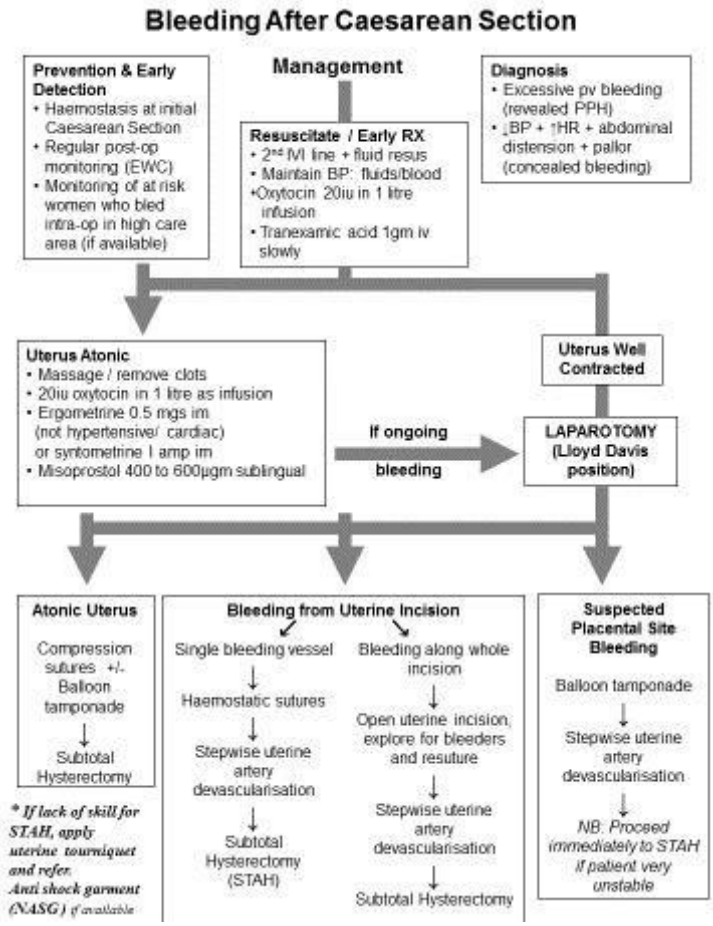
1. WOMAN Trial Collaborators. Effect of early tranexamic acid administration on mortality, hysterectomy, and other morbidities in women with post-partum haemorrhage (WOMAN): an international, randomised, double-blind, placebo controlled trial. Lancet. 2017; 389(10084): 2105-16.doi:10.1016/S0140-6736(17) 30638-4. E Pub 2017 April 26
2. WHO recommendation on tranexamic acid for the treatment of postpartum haemorrhage. Geneva: World Health Organization; 2017. Licence: CC BY-NC-SA 3.0 IGO.
3. Pileggi-Castro C, Nogueira-Pileggi V, Tuncalp O, Oladapo O, Vogel JP, Souza JP. Non-pneumatic anti-shock garment for improving maternal survival following severe postpartum haemorrhage : a systematic review. Reproductive Health 2015; 12: 28. DOI 10.11861s2978-015-0012-0

Postpartum Haemorrhage (PPH)



Bleeding At Caesarean Section





3. Management of cardiopulmonary arrest in pregnancy and Perimortem Caesarean delivery

Cardiopulmonary arrest during pregnancy necessitates immediate and urgent management, bearing in mind that there are two patients, the mother and her baby. Importantly, the management of these patients requires a multidisciplinary approach, involving anaesthesiology, obstetrics and paediatrics.
The algorithms from basic and advanced life support should be used, with minor modifications for the gravid uterus.

The key principles for cardiopulmonary resuscitation should include:

- Call for help, including an obstetrician.
- If the uterus is at or above the umbilicus, displace the uterus manually to the left. (Upward and leftward) Do not tilt the patient as this leads to ineffective CPR.
- Initiate chest compression using standard hand placement.
- Simultaneously initiate gentle bag mask ventilation with 100% oxygen.
- Place intravenous access above the diaphragm, as drugs administered into the femoral vein may not reach the maternal heart until the baby is delivered.
- Secure the airway early. Assume that the patient has a difficult airway prior to intubating; get assistance, particularly to avoid regurgitation and aspiration.
- Do not delay defibrillation (for a shockable rhythm) and administration of resuscitation drugs such as adrenalin.

- Remove/disconnect foetal monitoring prior to defibrillation.
- **Ask the obstetrician to perform a perimortem caesarean delivery (resuscitative hysterotomy) if no response to CPR within 4 minutes; the baby must be delivered within 5 minutes of the cardiopulmonary arrest, and this must occur wherever the arrest happened** (often not in an operating theatre). Start planning for a peri-mortem caesarean delivery as soon as CPR is started. Incision should start by 4 minutes so that delivery can be achieved by 5 minutes. DO NOT MOVE THE PATIENT TO THEATRE. Moving the patient is associated with inefficient CPR efforts.
- Continue with cardiac massage and ventilation until reversible causes have been treated and all resources have been exhausted.

- Mnemonic for reversible causes to consider in pregnant patients: BEAUCHOPS
    - B Bleeding/DIC
    - E Embolism (Thrombus, air, amniotic fluids)
    - A Anaesthetic complications
    - U Uterine atony
    - C Cardiac disease
    - H Hypertensive complications of pregnancy
    - O Other (5H's and T's)
    - P Placenta abruptio/praevia
    - S Sepsis

4. Gauteng Maternal and Neonatal Health summit

Introduction

The Gauteng province held a Maternal and Neonatal Health Summit on 4-5 May 2018. It was a 2 day event. The theme was **''Commitment to Quality Health Services : Accelerating Service Delivery Improvement for Maternal and Neonatal health ".**

The summit provided a platform for more than 200 Maternal Health Practitioners, Health Systems Leaders, Specialists in Maternal and Neonatal Health, Service recipient (patients) on Women and neonatal related issues to engage on how to accelerate performance improvements in services to mother and children.

The steering committee comprised of the expert teams and public health representatives who helped to drive the planning and post planning of the summit. WHO and UNICEF were participants. A discussion note consolidating all the plans and priorities on maternal and child health including health system challenges impacting on delivery of services linked to these target groups was drafted in preparation for the summit. Checklist and Templates were used to facilitate inputs and plans to enable a post conference steering committee to consolidate the work.

Purpose:

The summit was held in order to develop strategies that are going to help the province in improvement of the health of women and neonates across the province. The Project Owner was the Provincial MCWH Director. The aim is to harmonise strategies and accountability plans with the aim of accelerating improvement in quality of care.

Outputs :

On day 2 following the commissions and interactions short, medium and long term solutions were drafted.

Lessons learnt :

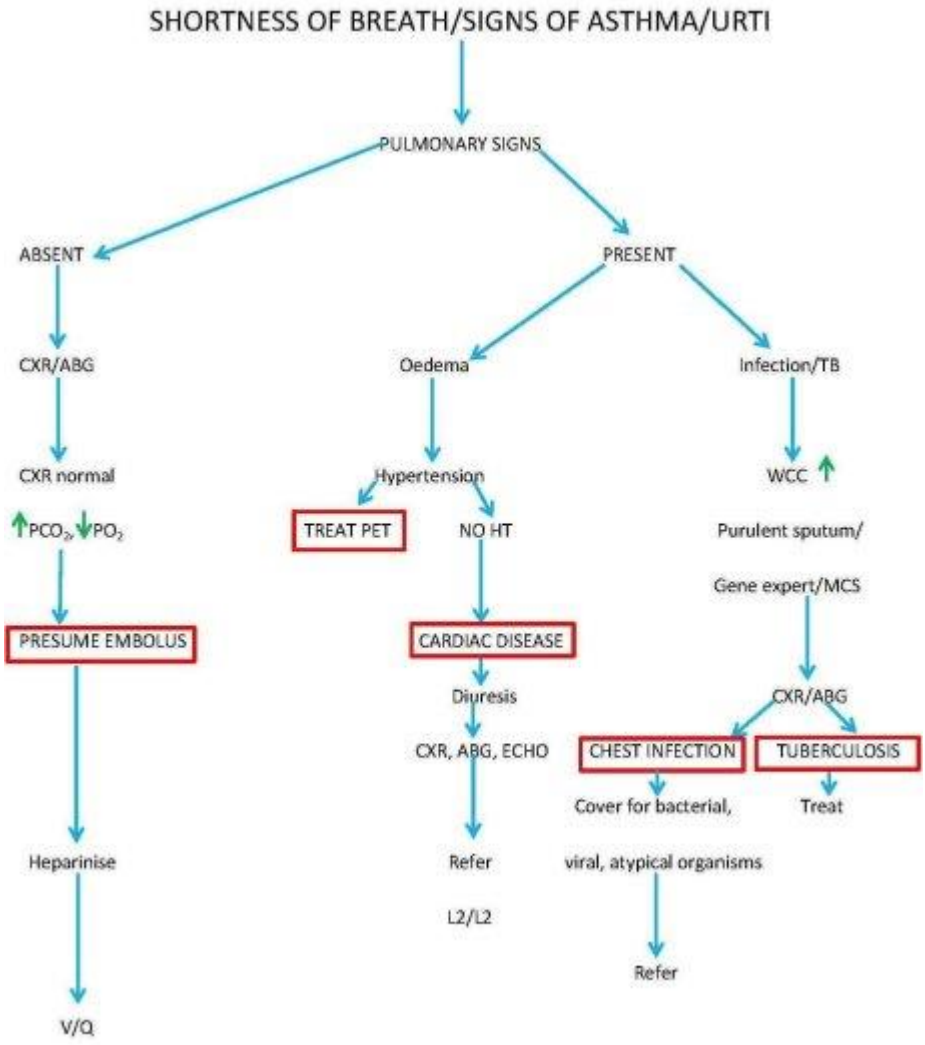
1. Involvement and consultation of the provincial executive with the end users- Participatory involvement of acting HOD and MEC
2. Understanding root causes from implementers.
3. Importance of involvement of recipients of the service - patients (a patient gave her experience of the service and suggested improvements)
4. Involvement and participation of midwives (international midwifery day celebrated on day 2)
5. Participation and recommendations by legal department

At the end of the summit , the MEC' s concluding remarks was on 5 areas of improvement namely promotion of patient safety, service based recovery plan , prioritising human resource and labour relations , strengthening of delegation and governance and modernisation of health systems.

5. Managing patients with shortness of breath

Acute dyspnoea or shortness of breath (SOB) was a common presenting symptom among women who died due to underlying medical or surgical disease in pregnancy in South Africa between 2014 – 2016.About a third of these women presented in the post-partum period. Clinicians should have a low threshold for investigating pregnant or recently delivered women (up to 6 months post-partum) especially those with cardiovascular risk factors (hypertension or diabetes) or suspected rheumatic heart disease.

Although many women experience episodes of shortness of breath in pregnancy, severe or sudden onset SOB accompanied by other symptoms are suggestive of a respiratory or cardiac condition. .A complete history about the nature, onset and duration of SOB should be taken. Appropriate investigations include: ECG, chest X-ray, echocardiogram and CT pulmonary angiography. If a clinician is not confident in interpreting any of the above investigations, he should seek assistance. Below is an algorithm of how women presenting with SOB should be investigated further.



6. Lessons learnt from baseline evaluations of compliance with minimum standards for safe caesarean section at KZN hospitals

Background

The November 2016 edition of the ACE newsletter contained an introduction to the concept of minimum standards for safe caesarean section, and listed the minimum standards that had been agreed upon for South Africa. These standards were subsequently refined and the May 2017 ACE newsletter contained a tool for evaluating compliance with these standards.

This article describes the process of hospital evaluations used in KwaZulu-Natal (KZN) Province to promote compliance with the minimum standards with a view to reducing maternal deaths related to caesarean section (CS).

Promoting compliance with Minimum standards

- The standards were organized into a set of twelve standards, which were set out in an evaluation tool similar to the one in the ACE newsletter of May 2017

- An accreditation system was devised, whereby the hospital would be accredited as safe for caesarean section as follows, based on an evaluation by an external assessor:
  - Gold status accreditation: 12 out of 12 standards compliant

- Silver status accreditation: 11 out of 12 compliant
- Bronze status accreditation: 10 out of 12 compliant

- A hospital not complying with 3 or more of the 12 standards could not be accredited at any level as being safe for CS.

- A circular about the minimum standards evaluation and hospital accreditation process, signed by the Head of Health in the Province, was sent out to all District managers and hospital CEOs

- The circular emphasized that within the 2017/2018 financial year, all hospitals performing CS would have to be evaluated by an external assessor. The Provincial O+G specialist would evaluate at least one hospital in each of the 11 KZN Districts, together with one or more members of the DCST, and the remaining hospitals would be evaluated by the DCST.

- Each facility to be visited for evaluation was informed a few days in advance, through an email addressed to the Hospital CEO, listing the required attendees from the hospital.

- Each evaluation visit started with a meeting with relevant clinical staff and top hospital management, to explain the evaluation and accreditation process and where necessary to clarify any of the expected standards. The actual evaluation then took place, using the tool as a guide. The hospital team participated in the evaluation, which included a walk around specified areas of the hospital to check on certain factors as per tool. Once the evaluation was concluded, the whole team reconvened, and the external evaluators presented the findings. Any gaps identified were immediately brought to the attention of the hospital management, and plans for rectifying the deficiencies were discussed.

- All 52 hospitals were evaluated (baseline external evaluation) between July 2017 and April 2018. Only two hospitals were found to be fully compliant with all standards. Therefore the baseline assessments identified areas for intervention to improve the safety of caesarean sections at almost all hospitals in the Province

Lessons learnt through this process of baseline evaluations:

- The signing of the circular by the Head of Health was important in facilitating the external evaluation visits, particularly in ensuring that top hospital management availed themselves and participated in the process. There was good cooperation with the process from almost all the hospitals

- Despite considerable detail about the concept of minimum standards for safe caesarean section in the circular, including a recommendation that hospital management should conduct an internal evaluation of compliance with the standards, many of the hospital managers appeared to have no prior knowledge of the minimum standards before the evaluation visit. Hence the need to have an initial meeting to explain the concepts

- While at face value some of the standards appeared very basic, with several hospital managers presuming that compliance could be taken for granted; on most visits the managers were surprised to find that their hospital was non-compliant with some of these basic standards (eg doctors not doing ward rounds on post CS patients). This confirmed the value of conducting the evaluation
- It was important to physically assess compliance by checking documents such as patient charts on the ward and by speaking to staff on the wards, rather than relying on what was said by the senior clinicians and managers participating in the meeting, as there was often a discrepancy between what was expected to be done and what was actually done in practice.
- The whole evaluation including feedback took on average about two hours and was therefore not too disruptive to the routine hospital activities
- Conducting the evaluation together with DCST members meant that they became familiar with the evaluation process and could repeat the same at other hospitals, while the hospital clinicians and managers who joined the evaluation would be able to assess improvements in compliance through internal evaluations.
- Feedback from the DCSTs and from the hospital management was very positive regarding the evaluation process, in that it was found to be easy to conduct, understand and score, and identified important areas of risk which could often easily be rectified
- Due to the inadequate compliance with the standards at most hospitals, it will be necessary to repeat external evaluations within the next year. Improvement in compliance will surely lead to reduced CS-related morbidity and mortality