COMPARISON OF INTRAPARTUM MANAGEMENT BETWEEN INTERNATIONAL STANDARDS WITH THE MALAYSIAN GUIDELINES

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Abstract

Evidence-based recommendations on intrapartum care are important to ensure the safety of mothers and neonates. The objective of this study was to compare two established guidelines for intrapartum care to provide clinicians with more comprehensive recommendations on intrapartum management. We carried out a descriptive analysis of guidelines from the Integrated Management of Pregnancy and Childbirth (IMPAC) guidelines published by the World Health Organization, and the Perinatal Care Manual published by the Ministry of Health Malaysia, on intrapartum care to determine differences, if any, with regards to management. Latent, active and the second phase of labour are defined differently in both guidelines. Both guidelines showed high similarity in the steps of clinical management for all phases of labour but differed in foetal monitoring methods, indications for episiotomy, mood and behavior assessment, universal precautions, pain management, and placental disposal. Both guidelines had similar managements for most of the problems encountered during the intrapartum period except for preterm labour and multiple births which have substantial differences. Malaysian guidelines highlight additional systems such as the red alert system, and referral and retrieval system, which would enhance the quality of intrapartum management. The IMPAC guidelines emphasize supportive care, birth companionship, maternal care and monitoring up to one hour after placental delivery; and home birth management; these are inadequately explained or lacking in Malaysian guidelines. From the comparison, it was seen that substantial variation exists in intrapartum management between both guidelines that indicates the need for better evidences to synthesize a more comprehensive set of guidelines for the improvement in intrapartum care.

Keywords: *Guideline, Management, Intrapartum, World Health Organization, Malaysia*

Introduction

Intrapartum is the time period spanning childbirth, from the onset of labour through delivery of the placenta. Labour is a process when the uterus contracts regularly with increasing frequency and intensity, accompanied by progressive cervical dilatation and effacement; and descent of the presenting part of the foetus. Rupture of membranes and leaking liquor may or may not occur during the early stage of labour (1). Annually, approximately one third of a million women die globally due to intrapartum-related complications and the majority of the mortalities were attributed to intra-partum emergencies such as haemorrhage, obstructed labour and infections (2, 3). Almost 70% of maternal deaths occur during the intra-partum and post-partum period; with nearly 50% of post-partum deaths occurring in the first 24 hours of the post-partum period (4, 5). According to the Report on The Confidential Enquiries into Maternal Deaths (CEMD) in Malaysia 2006-2008, the proportion of maternal deaths during the intrapartum period ranged from 8.3% until 15% out of the total cases of maternal death (6). As approximately three-quarters of maternal deaths worldwide are considered avoidable (7), comprehensive and appropriate guidelines to assist healthcare providers in managing patients, particularly during the intrapartum, is deemed necessary and important in efforts to reduce maternal and perinatal mortality and morbidity.

Hence, the Integrated Management of Pregnancy and Childbirth (IMPAC) published by the World Health Organization (WHO) and Malaysia Perinatal Care Manual published by the Ministry of Health Malaysia, are both designed to prevent maternal and infant deaths and the lifelong disability due to complications of pregnancy and childbirth. These guidelines are meant to be used by doctors, paramedics and midwives involved in the provision of standard and emergency care at different levels of service delivery (1, 8). Since intrapartum-related complications are among the leading causes of maternal mortality and morbidity, synthesis of a more comprehensive guideline for the improvement in intrapartum care is very much needed. The aim of this descriptive review is to contrast and compare two well-established guidelines for the management aspects of intrapartum care which would help us to synthesize more comprehensive recommendations on intrapartum care.

Materials and Methods

The WHO guideline on "Integrated Management of Pregnancy and Childbirth (IMPAC), Pregnancy, Childbirth, Postpartum and Newborn Care: A Guide for Essential Practice (Third edition)" and the "Perinatal Care Manual (Third edition)" by the Ministry of Health Malaysia were accessed on July 13, 2019, and the data were compared. A summary on the following aspects of intrapartum care was outlined: management differences by stages of labour, and differences in the management of intrapartum problems, and peculiarities of both guidelines. Recommendations of management and strength of evidence were reviewed based on each guideline's report. Due to the descriptive nature of our study and analysis, institutional review board approval is not required.

Results

The definitions of latent, active and second phases of labour between guidelines have slight discrepancies. Both guidelines show high index of similarity in the steps of clinical management for all phases of labour but differ in foetal monitoring methods, indications for episiotomy, mood and behaviour assessment, and placental disposal method. The differences in the management in accordance to stages of labour are summarized in Table 1.

Table 1: Summary of differences in the management according to stages of labour

PARAMETERS	IMPAC GUIDELINE, WHO (2015) (8)	PERINATAL CARE MANUAL, MALAYSIA (2013) (1)
LATENT PHASE OF LABOUR		
Definition	Cervix dilates 0-3cm. Contraction is weak (<2 contractions in 10 minutes)	Cervix dilates 0-4cm
Fetal heart rate monitoring	Hourly	Every 30 minutes

Table 1: Summary of differences in the management according to stages of labour (continued)

PARAMETERS	IMPAC GUIDELINE, WHO (2015) (8)	PERINATAL CARE MANUAL, MALAYSIA (2013) (1)
Contraction monitoring	Hourly	4-hourly
Blood pressure monitoring	4-hourly	4-hourly
Temperature monitoring	4-hourly	4-hourly
Maternal pulse rate monitoring	4-hourly	4-hourly
Cervix dilatation assessment	4-hourly	Not clearly explained
Mood and behavior assessment	Hourly	Not mentioned
Universal precautions and cleanliness	Emphasis on washing hands, wearing gloves, practice safe sharps and safe waste disposal; and sterilizing contaminated equipment	Not clearly explained
Urine check-up	Encourage two hourly passing of urine	On admission and encourage two hourly passing of urine
Pain assessment	Not clearly explained	Pain assessment and offer pain relief if possible, such as intramuscular narcotics, entonox, epidural analgesia or even non-pharmacological methods such as music, bath or massage
ACTIVE PHASE OF LABOUR		
Definition	Cervix dilates ≥ 4 cm	Cervix dilates > 4 cm
Foetal heart rate monitoring	Every 30 minutes Method no well-explained	Every 15 to 30 minutes Methods can either be Pinard foetoscope, daptone and continuous cardiotocography
Contraction monitoring	Every 30 minutes	Every 30 minutes
Partograph charting	Begins when cervical dilation is ≥ 4cm	Begins when contractions are ≥ 2:10 or when cervical dilatation is ≥ 4cm
Blood pressure monitoring	4-hourly	4-hourly
Temperature monitoring	4-hourly	4-hourly
Maternal pulse rate monitoring	4-hourly	4-hourly
Cervix dilatation monitoring	4-hourly	4-hourly
Mood and behavior assessment	Every 30 minutes	Not mentioned
Urine check up	Not mentioned	Every time passing urine
Supportive care	Allowed to eat, drink and mobilize	Allowed to eat, drink and mobilize

Table 1: Summary of differences in the management according to stages of labour (continued)

PARAMETERS	IMPAC GUIDELINE, WHO (2015) (8)	PERINATAL CARE MANUAL, MALAYSIA (2013) (1)
SECOND PHASE OF LABOUR		
Definition	When cervix dilates 10 cm or bulging thin perineum and head is visible	Starts from full dilatation of the cervix to the delivery of baby
Foetal heart rate monitoring	Every 5 minutes	Not clearly differentiated from Phase 1
Mood and behavior assessment	Every 5 minutes	Not mentioned
Universal precaution	Explained	Not clearly explained
Prevention of perineum trauma	Guide with 'hands on'	Guide with 'hands on' or 'hand poised'
Episiotomy	Not routinely done. Only done in the presence of physical obstruction due to lesions or scar tissues in the perineum	Selectively and not routinely done. Only done in complicated vaginal deliveries (breech, shoulder dystocia, vacuum delivery) or for previous third- and fourth-degree tears
Position of mother	In comfortable position. Do not lie flat (horizontally) on her back	Change of mother's position (for effective pushing)
Empty bladder	Yes	Yes
Skin-to-skin contact	Immediately post-delivery	Immediately post-delivery
Initiation of breastfeeding within first hour	Yes	Yes
THIRD PHASE OF LABOUR		
Definition	Between birth of baby and delivery of placenta	From delivery of baby to delivery of placenta (15-30 minutes)
Uterine contraction monitoring	Every 5 minutes	Not clearly explained
Mood and behavior assessment	Every 5 minutes	Not mentioned
Baby's breathing monitoring	Every 15 minutes	Explained in the neonatal care section of the manual
Baby's temperature monitoring by touching	Every 15 minutes	Explained in the neonatal care section of the manual
Placental delivery	Controlled cord traction	Controlled cord traction
Oxytocin administration	Administration of 10 units of oxytocin.	Administration of 10 units of oxytocin
In case of uncontracted uterus and ongoing bleeding;	Do uterine massage until uterine is hard, with administration of oxytocin. If worsens, for referral to tertiary centre	Do uterine massage every 5 minutes for the first hour, with administration of oxytocin. If worsens, for uterine conservation using Bakri balloon and B-Lynch suture; and referral to tertiary centre

Table 1: Summary of differences in the management according to stages of labour (continued)

PARAMETERS	IMPAC GUIDELINE, WHO (2015) (8)	PERINATAL CARE MANUAL, MALAYSIA (2013) (1)
Placental disposal	Incinerate or bury at 10 meters away from water source in 2 meters depth	Not mentioned

Intrapartum problems that are discussed in both guidelines are summarized in Table 2. Both guidelines depict similar managements in most of the problems encountered during intrapartum except for multiple births and preterm labour, in which the management is not mentioned and have substantial differences, respectively. The managements for preterm labour and multiple births in the respective guidelines are summarized in Table 3.

Table 2: Intrapartum problems which are discussed in both guidelines

IMPAC GUIDELINE, WHO (2015) (8)	PERINATAL CARE MANUAL, MALAYSIA (2013) (1)
Hypertensive disorder, severe anaemia, shoulder dystocia, postpartum haemorrhage, prolonged labour, abnormal foetal heart rate, abnormal lie, maternal pyrexia, cord prolapse, meconium stain liquor, preterm labour.	
HIV positive, multiple births, still birth, mother severely ill or separated from the child.	Diabetes mellitus, heart disease, intrauterine growth retardation, maternal collapse, retained placenta, uterine inversion.

Table 3: Summary of differences in the management of preterm labour and multiple births

INTRAPARTUM PROBLEMS	IMPAC GUIDELINE, WHO (2015) (8)	PERINATAL CARE MANUAL, MALAYSIA (2013) (1)
Preterm labour	1. Assess presentation 2. Lie on left side 3. Use magnesium sulphate ($MgSO_4$) in women at risk of imminent preterm birth before 32nd week period of gestation (to prevent cerebral palsy) 4. Conduct delivery carefully (small baby easily pops out) 5. Prepare neonatal resuscitation	1. Administer dexamethasone intra-muscularly 2. For tocolysis 3. For NICU admission

INTRAPARTUM PROBLEMS	IMPAC GUIDELINE, WHO (2015) (8)	PERINATAL CARE MANUAL, MALAYSIA (2013) (1)
Multiple births	1. Prepare room, equipment and staff 2. Deliver and resuscitate if necessary 3. Label the twin 4. Determine the lie of the second baby and rupture the membrane 5. Do vaginal examination and check for prolapsed cord, then deliver the baby 6. Do not deliver placenta and give oxytocin until all babies are born 7. Observe closely for vaginal bleeding as the women is at higher risk of postpartum hemorrhage (PPH)	Not mentioned

As for the peculiarities of each guideline, the Malaysian guideline highlights additional systems such as red alert system, and referral and retrieval systems, which would enhance the quality of intrapartum management. The IMPAC guideline emphasizes on supportive care, birth companionship, management of multiple births, maternal care and monitoring up to one hour after placental delivery, and home-birth management; these are inadequately explained or lacking in the Malaysian guideline. The distinctive features of each guideline are summarized in Table 4.

Table 4: Summary of distinctive features of both guidelines

IMPAC GUIDELINE, WHO (2015) (8)	PERINATAL CARE MANUAL, MALAYSIA (2013) (1)
Supportive care throughout labour is emphasized in terms of : **1. Communication** **2. Cleanliness** **3. Mobility** **4. Urination** **5. Eating** **6. Drinking** **7. Breathing technique** **8. Pain and discomfort relief.**	**Red alert system: a system to help improve emergency response time and reduces maternal morbidity and mortality.** **In emergency obstetric case, personnel will activate red alert by contacting hospital phone operator. Then, the phone operator will initiate "call system" to call all involved doctors to attend case immediately.** **The indications to activate red alert are:** **1. severe antepartum hemorrhage** **2. postpartum hemorrhage** **3. intrapartum/postpartum collapse** **4. eclampsia** **5. uterine inversion**

Table 4: Summary of distinctive features of both guidelines (continued)

IMPAC GUIDELINE, WHO (2015) (8)	PERINATAL CARE MANUAL, MALAYSIA (2013) (1)
Birth companion: Psychological support from chosen birth companion is encouraged and the roles of birth companion are: 1. Always be with the woman 2. Encourage her 3. Help her to breathe and relax 4. Rub her back, wipe her brow with a wet cloth, do other supportive actions 5. Give support using local practices which do not disturb labour or delivery 6. Encourage woman to move around freely as she wishes and to adopt the position of her choice 7. Encourage her to drink fluids and eat as she wishes 8. Assist her to the toilet when needed	**Referral and retrieval system:** a system to facilitate referral procedure for optimal mother outcome. A checklist of intrapartum risk factors according to stage of labour will be used for risk stratification. Based on checklist of intrapartum risk factors, high risk cases of pregnancy are detected, referred and transferred to tertiary hospital with intrapartum referral form. A retrieval team act to transport trained medical personnel from tertiary centre to provide assistance in the referring centre, and bring mother to the hospital. When the mother is discharged, the hospital will attach intrapartum reply form to keep the primary care team well-informed. This effective communication between centres will ensure continuity of care for the mother.
Care and monitoring of the mother within the first hour of delivery of placenta: 1. Assess uterus – hard and round 2. Assess vaginal bleeding 3. Eat and drink 4. Companion be with mother 5. Encourage to pass urine	
Care and monitoring of the mothers one hour after delivery of placenta: 1. Monitor mothers at 2nd, 3rd and 4th hour and then 4-hourly a. Assess uterus – hard and round b. Check for perineal problem c. Check for pallor d Vital signs 2. Never leave them alone 3. Do not discharge before 24 hours	
Home delivery: Provides information on home delivery which includes: 1. Preparation for home delivery 2. Delivery care 3. Immediate postpartum care of mother 4. Postnatal care of newborn	

Discussion

The definition for latent phase differs between both guidelines in terms of the upper limits of normal latent phase. The latent phase of labour is complicated as studies usually ignore the assessment of this phase of labour due to the subjective nature of the onset determination. Generally, cervical dilatation of 4 cm is taken as the

endpoint of latent phase and the beginning of active phase (9). The start of the active phase is defined as 4 cm of cervical dilatation in the IMPAC guideline while the Malaysian guideline is set as beyond 4 cm of cervical dilatation. According to a previous study, once the cervix has dilated by 4 cm, less than 50% of women entered the active phase and increased to 74% by 5 cm of cervical dilatation. If arrested labours were excluded, 60% of the patients had reached the latent-active transition by 4 cm and 89% by 5 cm. Hence, it was concluded that once a normal patient has reached 5 cm of cervical dilatation, she should be in the active phase of labour. Otherwise, there is a higher possibility of labour dystocia (10). Both guidelines set full cervical dilatation (10 cm) as the start of the second phase of labour, but IMPAC outlines an optional criterion which is the presence of bulging thin perineum and visibility of head. By consensus, second stage is defined as activity beyond full dilation (defined as 10 cm of cervical dilation) and ending with the birth of the baby (11).

The clinical managements in each stage of labour do not differ significantly between the two guidelines except for certain clinical procedures. Methods of foetal heart monitoring are well-explained in the Malaysian Perinatal Care Manual as compared to the IMPAC guideline. In Malaysia, foetal heart monitoring can be done using intermittent ausculatation with a Pinard foetoscope or Dopple monitor detector (Daptone), or electronic foetal monitoring with cardiotocography (CTG). Auscultation is performed in between contractions and should be done every 15 to 30 min in the labour process, while CTG should be performed on every mother in labour for 20 min upon admission. Continuous CTG monitoring should be done if the reading is suspicious or abnormal, and urgent referral to tertiary centres should be done (1). A study has shown that performing CTG during labour reduced significantly the incidence of neonatal seizures, but showed no significant difference in the incidence of cerebral palsy and infant mortality. Surprisingly, continuous CTG monitoring has led to the increase of instrumental vaginal births and caesarean sections (12). Besides, there were 3-fold improvement in the intrapartum foetal death rate for the electronically monitored group versus intermittent auscultation as CTG gives clear cut information of foetal condition and is able to predict foetal distress (13).

Both guidelines do not advocate for routine episiotomy but they differ in the indications for episiotomy. The IMPAC guideline proposes episiotomy if there is physical obstruction due to scar tissue or lesions in the perineal area whereas the Malaysian guideline allows episiotomy in complicated vaginal deliveries such as breech, shoulder dystocia, or for previous third- and fourth-degree tears. A study published in The Lancet reported that out of 2606 participants who were in labour, episiotomy was done in 30.1% in a selected group, and 82.6% in the routine group. The main outcome measure was severe perineal trauma in which it was uncommon in both groups but was slightly less frequent in the selected group. Therefore, routine episiotomy should be abandoned and episiotomy rates above 30% cannot be justified (14).

It is crucial to assess for mood and behavior according to the IMPAC guideline in which they assess whether the patient is anxious or distressed for further intervention. This particular assessment is lacking in the Malaysian guideline. Intervention such as massage to overcome anxiety and distress during labour is important to ensure good outcome for maternal and neonatal health. A previous study in Florida, United States of America, reported that mothers who were massaged showed a reduction in depressed mood, anxiety and pain, and showed more a positive effect following the first massage during labour. Moreover, they had significantly shorter labours, shorter hospital stays and were less likely to have postpartum blues (15). Therefore, we may conclude that assessment of mood and behaviour is equally important to improve delivery outcome and should be emphasized as well in the Malaysian guideline.

IMPAC also emphasized universal precautions and cleanliness in managing patients during intrapartum as these aspects are parts of the principles of good care. As outlined in the IMPAC guideline, washing hands, wearing gloves, practising safe sharps and safe waste disposal, and sterilizing contaminated equipment, were among the universal precautions that should be observed to protect the woman and her offspring, and the healthcare provider, from getting infected with pathogens, including HIV (16). Blood and body fluids might contain blood-borne viruses or other pathogens that can pose health hazards to the surrounding patients and health care personnel. As it is usually almost impossible to recognize who is infected with these pathogens, the Malaysian Perinatal Care Manual should also prioritize infection control measures, principally on universal precautions during childbirth. These can avert the exposure to biohazardous samples such as body fluids and blood which are presumed to be potentially infective (17).

Intrapartum is usually associated with pain and discomfort. In the Malaysian guideline, pain management and pain relief are clearly highlighted as compared to the IMPAC guideline. Appropriate analgesia of different choices should be offered to all mothers in labour, ranging from pharmacologic to non-pharmacologic agents. Intramuscular narcotics, nitrous oxide in the form of inhaled gas and epidural analgesia are among the pharmacologic agents of choice. Acupuncture, music and aromatherapy are among the proven non-pharmacologic methods for pain relief during intrapartum (18-20). Pain relief does not give any negative impact on the mode of delivery and certainly improves maternal satisfaction (21). Due to the great benefits of pain relief, it should be discussed extensively in the IMPAC guideline.

Proper placental disposal method is not discussed in the Malaysian Perinatal Care Manual, especially the Islamic way of disposal, Islam being Malaysia's official religion. In Islam,

placental tissue is considered part of the human body and should therefore be buried and not incinerated (22). In IMPAC, however, placental disposal is thoroughly discussed in which the placenta should be incinerated or buried at 10 meters away from water sources, at 2 meters depth. A systematic review reported that out of almost 200 cultures worldwide searched in the database, half of them properly treated or discarded the placenta after delivery. The most common placental disposal method is the burial method (55.0%). Other methods of placental disposal worldwide include intentional disposal of the placenta in a specific location without burying it (15%), incinerating the placenta (9.4%) and also placing the placenta in a tree (8.3%) (23).

Most of the problems encountered during intrapartum are discussed in both guidelines and share almost similar steps of management. However, certain problems such as preterm labour and multiple birth are managed differently or not even discussed in either of the guidelines. The IMPAC guideline proposes the use of magnesium sulphate ($MgSO_4$) in women at risk of imminent preterm birth before the 32nd week of gestation, which is not advocated in the Malaysian guideline. A study reported lower prevalence of cerebral palsy among preterm infants weighing less than 1500 grams who were given $MgSO_4$ *in utero*, denoting a protective effect of $MgSO_4$ against cerebral palsy in these very low birth-weight infants (24). As the incidence of preterm labour in Malaysia is quite substantial (25), the Malaysian guideline should consider the use of $MgSO_4$ in the management of preterm labour.

As for the management of multiple births, only the IMPAC guideline outlines, in detail, the steps to deliver twins or multiple babies. Second twins, born at term, are at higher risk than first twins, of death due to complications of delivery (26). According to the National Obstetric Registry of Malaysia, the multiple pregnancy rate in 2010 was 10.4 per 1000 deliveries (1.04%) (27). Therefore, due to the high prevalence of multiple births in Malaysia, management of multiple births should be included in the Malaysian Perinatal Care Manual.

The IMPAC guideline highlights several points which distinguish it from the Malaysian guideline, such as psychological support, birth companionship, maternal care and monitoring up to one hour after placental delivery, and home birth management. Supportive care and birth companionship are important elements in intrapartum management which are discussed in detail in the IMPAC guideline. A previous study proved that mothers who are supported psychologically would result in improved outcomes for both the mothers and babies; these include reduction in analgesia use, reduction of caesarean sections, shorter labours and improved Apgar scores of the babies (28).

Maternal care and monitoring up to one hour after placental delivery is important as postpartum haemorrhage due to uterine atony or retained placenta occurs in up to 18 percent of births (29). Besides, the IMPAC guideline also clearly proposed that mothers should not be discharged before 24 hours after delivery. This could be related to reducing maternal and neonatal complications, maternal concerns, and patient satisfaction (30).

The safety of home birth is controversial. However, studies have shown that home birth is an acceptable alternative to hospital confinement for selected pregnant women, and leads to reduced medical interventions, should the delivery be properly managed and attended by skilled birth attendants (31, 32). Therefore, IMPAC provides information on preparation and care for home birth which would assist mothers who are keen for home delivery. As the number of mothers opting for home birth is increasing in Malaysia (6), similar home birth management aspects as in IMPAC should be incorporated in the Malaysian Perinatal Care Manual as well, with having skilled birth attendants during home birth as mandatory. This is due to the fact that there was an increase of home birth deaths due to absence of skilled birth attendants, from 7 in 2008 to 13 in 2014 (33). Tajuddin *et al.* (2020) reported that women may choose unassisted home birth to express their personal views and values, at the expense of the health risks. Hence, the Malaysia Perinatal Care Manual should include measures to increase mothers' awareness of the possible complications arising from unassisted home births, and to improve our intrapartum services to provide better birth experiences in healthcare facilities that resonate with the mothers' beliefs and values.

The Malaysian Perinatal Care Manual also has its own management systems that help to enhance the quality of care for mothers in labour, namely the red alert system and referral and retrieval system. Delayed treatment is a recognized prognostic factor that can be prevented by efficient organization of care (34). Therefore, the red alert system was developed to help enhance emergency response time and avert maternal morbidity and death. Meanwhile, the referral and retrieval system facilitates referral procedure for optimal mother outcome. It is evidently shown in a Tanzanian intervention study involving the referral system of pregnant women to tertiary centres. The results indicated that the maternal mortality ratio fell from 933 to 186 per 100,000 live births over the period 1984–1991 with the use of the referral system (35).

Conclusion

The strength of our review includes harmonizing the recommendations from major guidelines on the aspects of intrapartum care and management. By comparing these recommendations, we may converge and revise a more comprehensive guideline to assist healthcare providers in managing patients during intrapartum as it is evident that complications during intrapartum remains one of the major causes of maternal morbidity and mortality in both developed and developing countries.

Competing interests

The authors have no conflicts of interest to declare.

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