



## Complete Summary

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### GUIDELINE TITLE

Management of preterm labour.

### BIBLIOGRAPHIC SOURCE(S)

Singapore Ministry of Health. Management of preterm labour. Singapore: Singapore Ministry of Health; 2001 May. 28 p. [20 references]

## COMPLETE SUMMARY CONTENT

SCOPE  
METHODOLOGY - including Rating Scheme and Cost Analysis  
RECOMMENDATIONS  
EVIDENCE SUPPORTING THE RECOMMENDATIONS  
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS  
QUALIFYING STATEMENTS  
IMPLEMENTATION OF THE GUIDELINE  
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT  
CATEGORIES  
IDENTIFYING INFORMATION AND AVAILABILITY

## SCOPE

### DISEASE/CONDITION(S)

Preterm labour

### GUIDELINE CATEGORY

Diagnosis  
Management  
Prevention  
Risk Assessment

### CLINICAL SPECIALTY

Obstetrics and Gynecology

### INTENDED USERS

Advanced Practice Nurses  
Allied Health Personnel  
Nurses

Physician Assistants  
Physicians

#### GUIDELINE OBJECTIVE(S)

- To address the prevention of preterm labour
- To address the prediction of pregnancies destined to end prematurely
- To address the prompt and effective management once preterm labour is diagnosed

#### TARGET POPULATION

Pregnant women at-risk for preterm delivery

#### INTERVENTIONS AND PRACTICES CONSIDERED

##### Prediction of Preterm Labor

1. Assessment of risk factors for preterm labor
2. Vaginal examination to assess the cervical status
3. Ultrasound visualization of cervical length and dilatation
4. Detection of foetal fibronectin in cervicovaginal secretions (considered but not recommended)

##### Prevention of Preterm Labor

1. Advice on bed rest and abstinence from sexual intercourse
2. Prophylactic cervical cerclage
3. Antibiotic treatment with ampicillin, erythromycin, or metronidazole for women with bacterial vaginosis

##### Management of Preterm Labor

1. Full history and clinical examination, including speculum examination of the cervix, digital examination of cervix, assessment of foetal presentation, and estimated foetal weight
2. Vaginal and cervical microbiological cultures and midstream specimen of urine culture
3. Tocolysis using beta-agonists, such as salbutamol, ritodrine, or terbutaline
4. Tocolysis with oxytocin antagonists, such as atosiban
5. Other tocolytic agents, such as nitric oxide donors, magnesium sulphate, indomethacin, and nifedipine (considered but not recommended)
6. Bed rest, reduced physical activity, and abstinence from sexual intercourse
7. Maternal corticosteroid administration

##### Monitoring and delivery

1. Monitoring of maternal pulse, blood pressure, fluid balance, urea, electrolytes, and lung auscultation during beta-agonist administration
2. Foetal monitoring during labour (e.g., cardiotocography)

3. Delivery of preterm infant in obstetric facility with neonatal intensive care facilities

#### MAJOR OUTCOMES CONSIDERED

- Perinatal morbidity and mortality due to preterm birth
- Incidence of preterm delivery
- Rate of use of tocolytic agents and corticosteroids prior to preterm delivery
- Adverse effects of tocolytic agents and corticosteroids

## METHODOLOGY

#### METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

#### DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The workgroup conducted an exhaustive search of the obstetric literature with focus placed on data obtained from randomised controlled trials and robust observational studies. Clinical Practice Guidelines issued by the Royal College of Obstetricians and Gynaecologists (United Kingdom) and the American College of Obstetricians and Gynaecologists were also used as references during the formulation of these guidelines.

#### NUMBER OF SOURCE DOCUMENTS

Not stated

#### METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

#### RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

Level I a: Evidence obtained from meta-analysis of randomised controlled trials.

Level I b: Evidence obtained from at least one randomised controlled trial.

Level II a: Evidence obtained from at least one well-designed controlled study without randomisation.

Level II b: Evidence obtained from at least one other type of well-designed quasi-experimental study.

Level III: Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.

Level IV: Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

#### METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses  
Systematic Review

#### DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

#### METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

#### RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grades of Recommendation

Grade A (evidence levels Ia, Ib): Requires at least one randomized controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation.

Grade B (evidence levels IIa, IIb, III): Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation.

Grade C (evidence level IV): Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates absence of directly applicable clinical studies of good quality.

Good Practice Points: Recommended best practice based on the clinical experience of the guideline development group.

#### COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

#### METHOD OF GUIDELINE VALIDATION

Not stated

#### DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

## RECOMMENDATIONS

### MAJOR RECOMMENDATIONS

Each recommendation is rated based on the level of the evidence and the grades of recommendation. Definitions of the grades of the recommendations (A, B, C, Good Practice Points) and level of the evidence (Level I-Level IV) are presented at the end of the Major Recommendations field.

C - Women at increased risk of preterm delivery may be identified by various risk factors in the obstetric history. (Grade C, Level IV)

C - Good antenatal care is important in the prevention of preterm delivery. Advice on bed rest and abstinence from sexual intercourse should be given to the high-risk patient. In selected patients, prophylactic cervical cerclage and antibiotic treatment of women with bacterial vaginosis may be associated with a reduction in preterm delivery. (Grade C, Level IV)

C - Inhibition of preterm labour is contraindicated if delivery is in the best interest of the mother and/or the baby. Medical therapy used to inhibit labour should be discontinued if labour progresses. (Grade C, Level IV)

A - Intravenous beta-agonists administered between 20 and 36 weeks of gestation are useful in achieving uterine tocolysis in premature labour. (Grade A, Level Ia)

C - To reduce the risk of pulmonary oedema, beta-agonists should be administered intravenously with the minimum volume of fluid. Beta-agonists should also be used with caution in a woman with multiple pregnancy. (Grade C, Level IV)

C - Beta-agonists should be administered via a controlled infusion device. The infusion rate should be increased at regular intervals until contractions have ceased or until the maternal pulse reaches 130 to 140 per minute. (Grade C, Level IV)

A - Oxytocin antagonists may also be useful in inhibiting preterm labour with potentially fewer maternal side effects than beta-agonists. (Grade A, Level Ib)

A - Maternal corticosteroid administration is beneficial in the preterm patient to reduce the incidence of respiratory distress syndrome in the newborn. (Grade A, Level Ia)

A - Beta-agonists should be used to delay delivery for 24 to 48 hours in order to administer corticosteroids to promote foetal lung maturity. (Grade A, Level Ia)

A - Maternal corticosteroid administration should be given using two doses of 12 mg of betamethasone/dexamethasone intramuscularly 12 to 24 hours apart. (Grade A, Level Ia)

C - During intravenous administration of beta-agonists, maternal pulse and blood pressure should be monitored at regular intervals. A record of fluid balance should also be kept. (Grade C, Level IV)

C - Delivery of the preterm foetus should be in an obstetric unit with neonatal intensive care facilities. Foetal monitoring during labour is important to ensure foetal well-being. (Grade C, Level IV)

#### Grades of Recommendation

Grade A (evidence levels Ia, Ib): Requires at least one randomized controlled trial as part of the body of literature of overall good quality and consistency addressing the specific recommendation.

Grade B (evidence levels IIa, IIb, III): Requires availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation.

Grade C (evidence level IV): Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates absence of directly applicable clinical studies of good quality.

Good Practice Points: Recommended best practice based on the clinical experience of the guideline development group.

#### Levels of Evidence

Level Ia: Evidence obtained from meta-analysis of randomised controlled trials.

Level Ib: Evidence obtained from at least one randomised controlled trial.

Level IIa: Evidence obtained from at least one well-designed controlled study without randomisation.

Level IIb: Evidence obtained from at least one other type of well-designed quasi-experimental study.

Level III: Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.

Level IV: Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.

#### CLINICAL ALGORITHM(S)

None provided

## EVIDENCE SUPPORTING THE RECOMMENDATIONS

### TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

## BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

### POTENTIAL BENEFITS

- Preterm birth is a major contributor to perinatal mortality and morbidity in developed countries. Approximately 6% of singleton births in Singapore occur at a gestation period of less than 37 weeks. Optimal management of preterm labour is crucial in reducing the perinatal morbidity and mortality associated with premature delivery. Doctors and other healthcare staff involved in the care of the pregnant patient should be aware of the risk factors and methods available to predict preterm labour.
- A meta-analysis of 15 randomised controlled trials indicates that antenatal corticosteroid therapy reduces the incidence of respiratory distress syndrome. There is an associated reduction in the risk of neonatal death and intraventricular haemorrhage. The efficacy of neonatal surfactant therapy is enhanced by antenatal exposure to corticosteroids.

### POTENTIAL HARMS

#### Side Effects and Risks of Beta-agonists

Palpitations, tremors, nausea, vomiting and headaches are commonly reported symptoms. Serious side effects and risks which have been reported are as follows:

- A frequent dose-related effect is maternal tachycardia. Heart rate should not be allowed to exceed 130-140 beats per minute due to the associated risk of pulmonary congestion.
- Pulmonary oedema is commonly associated with aggressive intravenous hydration. Fluid balance should be carefully monitored. If pulmonary oedema occurs, the treatment should be discontinued and diuretic treatment be considered.
- Myocardial ischaemia is an uncommon but serious side effect due to increased maternal cardiac output with beta-agonist administration.
- Diabetic patients will need additional monitoring and adjustment of glucose levels as beta-agonists influence carbohydrate metabolism, especially when combined with maternal corticosteroid administration.

#### Side Effects and Risks of Corticosteroids

- Impaired glucose tolerance may occur if repeated doses of corticosteroids are given, especially in conjunction with beta-agonist therapy.
- The extremely rare complication of adrenal insufficiency should be considered if there is an unexplained collapse of either the mother or baby who are exposed to repeated courses of neonatal corticosteroids.

Subgroups Most Likely to be Harmed:

Diabetic patients will need additional monitoring and adjustment of glucose levels as beta-agonists influence carbohydrate metabolism, especially when combined with maternal corticosteroid administration.

Beta-agonists should be used with caution in a woman with multiple pregnancy as there is a higher risk of cardiac failure and pulmonary oedema from the intravenous therapy as compared with its use in a singleton pregnancy.

Corticosteroids may be used with caution in patients with severe pre-eclampsia/hypertension.

## QUALIFYING STATEMENTS

### QUALIFYING STATEMENTS

These guidelines are not intended to serve as a standard of medical care. Standards of medical care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge advances and patterns of care evolve.

The contents of the guideline document are guidelines to clinical practice, based on the best available evidence at the time of development. Adherence to these guidelines may not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care. Each physician is ultimately responsible for the management of his/her unique patient in the light of the clinical data presented by the patient and the diagnostic and treatment options available.

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

In view of the data from randomised controlled trials that intravenous agents for tocolysis confer a significant benefit in delaying delivery by 24 to 48 hours to allow concomitant corticosteroid administration to accelerate foetal pulmonary maturity, key criteria for monitoring and audit may include:

- Incidence of preterm delivery in each obstetric unit
- Frequency of use of intravenous tocolytic agents and corticosteroids prior to preterm delivery, i.e., the proportion of preterm deliveries given both tocolytic agents and corticosteroids

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Getting Better  
Staying Healthy

### IOM DOMAIN

Effectiveness  
Patient-centeredness  
Safety

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

Singapore Ministry of Health. Management of preterm labour. Singapore: Singapore Ministry of Health; 2001 May. 28 p. [20 references]

### ADAPTATION

Not applicable: The guideline was not adapted from another source.

### DATE RELEASED

2001 May

### GUIDELINE DEVELOPER(S)

Chapter of Obstetricians and Gynaecologists, Academy of Medicine (Singapore) - Medical Specialty Society  
National Medical Research Council (Singapore Ministry of Health) - National Government Agency [Non-U.S.]  
Singapore Ministry of Health - National Government Agency [Non-U.S.]

### GUIDELINE DEVELOPER COMMENT

These guidelines on management of preterm labor were developed by a workgroup consisting of specialists in the field of obstetrics and gynaecology appointed by the Chapter of Obstetricians and Gynaecologists, Academy of Medicine, Singapore.

## SOURCE(S) OF FUNDING

Singapore Ministry of Health

## GUIDELINE COMMITTEE

Workgroup on Management of Preterm Labour

## COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Workgroup members: Dr. Chang Tou Choong (Chairperson); Dr. Selina Chua; Dr. Denas Chandra; Dr. Ann Tan; Dr. Tan Kok Hian; Dr. Yu Su Ling; Dr. Wong Yee Chee

## FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

## GUIDELINE STATUS

This is the current release of the guideline.

An update is not in progress at this time.

## GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [Singapore Ministry of Health Web site](#).

Print copies: Available from the Singapore Ministry of Health, College of Medicine Building, Mezzanine Floor 16 College Rd, Singapore 169854.

## AVAILABILITY OF COMPANION DOCUMENTS

None available

## PATIENT RESOURCES

None available

## NGC STATUS

This summary was completed by ECRI on October 25, 2001. The information was verified by the guideline developer on November 16, 2001.

## COPYRIGHT STATEMENT

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