This Policy Statement supersedes the Policy Statement Obstetrical No. 19, released in December 1995

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ACKNOWLEDGEMENT

The SOGC would like to acknowledge the contribution of the participating organizations and their representatives, the members of our Society and dedicated staff at the National Office who participated in this task force.

The Board of Directors of the Canadian Paediatric Society has approved this Policy Statement.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>EXECUTIVE SUMMARY</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTRODUCTION</td>
<td>2</td>
</tr>
<tr>
<td>LIST OF PARTICIPANTS</td>
<td>4</td>
</tr>
</tbody>
</table>

## CLINICAL ASPECTS OF CEREBRAL PALSY AND ASPHYXIA

- Significance and Diagnosis of Intrapartum Fetal Asphyxia (Hypoxic Acidaemia)   | 7    |
- Fetal Asphyxia and Brain Damage                                                | 11   |

## REPORTS OF SUBCOMMITTEES

- Report of the Medico-Legal Subcommittee                                        | 13   |
- Report and Recommendations of Definitions and ICD Classification Subcommittee    | 19   |
- Report of the Risk Management Subcommittee                                      | 26   |
  - RISK MANAGEMENT PROGRAMME MODEL                                                | 29   |
  - RISK MANAGEMENT STRATEGIES                                                    |       |
    - Asphyxia and Neonatal Resuscitation                                         | 34   |
    - Breech Delivery                                                             | 36   |
    - Forceps and Vacuum Delivery                                                 | 39   |
    - Intrauterine Growth Restriction (IUGR)                                      | 43   |
    - Multiple Gestation                                                          | 46   |
    - Post-Term Pregnancy                                                         | 49   |
    - Pregnancy Induced Hypertension (PIH)                                        | 52   |
    - Preterm Labour and Preterm Rupture of Membranes (PROM)                     | 55   |
    - Shoulder Dystocia                                                           | 59   |
  - Vaginal Birth after Caesarian Section (VBAC)                                   | 62   |

*Appendix A:* Advanced Labour and Risk Management Course (ALARM)                    | 64   |
*Appendix B:* Criteria for Obstetric Adverse Outcomes Register                    | 67   |
*Appendix C:* Attendance at Labour and Delivery                                   | 68   |
*Appendix D:* Management Strategy                                                 | 70   |

## FINAL RECOMMENDATIONS

- Medico-Legal Subcommittee                                                      | 71   |
- Definitions and ICD Classifications Subcommittee                               | 71   |
- Risk Management Subcommittee                                                    | 72   |
EXECUTIVE SUMMARY

The cause of cerebral palsy is still unknown and is most often unrelated to events during labour and delivery. The prime purpose of this task force is to provide better obstetric health care to decrease the risks of adverse outcomes in labour and delivery. The present report includes the recommendations of the Risk Management Subcommittee and the Medico-Legal Subcommittee. Along with the SOGC documents on Fetal Health Surveillance, Dystocia and Attendance at Labour and Delivery, these guidelines should promote better obstetrical care and decrease the need for medico-legal interventions.

INTRODUCTION

At the induction of the SOGC President in 1993, the new President, Dr. Robert Lea, proposed a Task Force on Cerebral Palsy and Asphyxia. The prime purpose was to provide better obstetric health care to decrease the risks of adverse outcomes to women and their families in Canada. Every year there are, unfortunately, adverse outcomes in labour and delivery. For many years there was a popular belief that cerebral palsy was directly related to cerebral asphyxia and that this was somehow related in the majority of the cases to adverse events occurring during labour and delivery. Though there has been considerable documented research throughout the world, the cause of cerebral palsy is still unknown and is most often unrelated to events during labour and delivery. Recent developments also point out that increased caesarean section rates and increased use of fetal monitoring has not decreased the incidence of cerebral palsy or cerebral asphyxia in newborns.

The Task Force was to bring together the major obstetric health partners in Canada, that is the Society of Obstetricians and Gynaecologists of Canada (SOGC), the Canadian Health Care Association (CHA), the Canadian Institute of Health Information (CIHI), the Canadian Medical Association (CMA), the Canadian Medical Protective Association (CMPA), the Canadian Nurses Association (CNA), the Canadian Nurses Protective Society (CNPS), the Canadian Paediatric Society (CPS) and the College of Family Physicians of Canada (CFPC). It was felt that Executive Directors and/or delegates of these associations would form a steering committee that would support the work of three subcommittees. The three subcommittees would address issues in the medico-legal area, ICD 9 & 10 definition problems and finally a clinical group would address risk management during labour and delivery.

The task undertaken was overwhelming and took the efforts of many physicians and non-physicians across Canada in order to bring this Task Force to its final report. We are pleased to present the report of the Cerebral Palsy and Asphyxia including the recommendations of the subcommittees.
This Task Force report is most timely as it is being presented at the same time as three important documents produced by SOGC in the field of obstetrics; the guidelines on Fetal Health Surveillance,\textsuperscript{1} \textit{Dystocia},\textsuperscript{2} and Attendance at \textit{Labour}.\textsuperscript{3} Together with the recommendations of this Task Force, these guidelines should change substantially the practice of obstetrics in Canada. Through a combination of reorganization and such new guidelines as intermittent fetal auscultation, measuring cord blood gas levels at birth, close continuous support during labour and new definitions and interpretations of ICD 10, physicians, nurses and hospital personnel should bring about a significant change in the practice and audit of obstetrics. In the end, these efforts will promote better obstetrical care while decreasing the need for medico-legal intervention.

Two important recommendations are highlighted in this report. The first is the development of a comprehensive hands-on Canadian \textit{labour} and delivery risk management course (ALARM) by SOGC and APOG using the expertise of a national working group of family physicians and obstetricians. This two-day course will lead to certification similar to the neonatal resuscitation course. The second major recommendation is to develop with such partners as the CMPA, the CMA, and the CFPC a generic risk management model for obstetrics that could be used in every hospital with a \textit{labour} and birth unit in Canada. This would become part of a routine hospital committee structure. This recommendation will be forwarded to the Canadian Council on Hospital Accreditation.

The report will be sent to all obstetrical units in Canada for implementation and follow-up.

Robert H. Lea, \textbf{MD}, FRCSC  
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REFERENCES


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1. CLINICAL ASPECTS OF CEREBRAL PALSY AND ASPHYXIA

SIGNIFICANCE AND DIAGNOSIS OF INTRAPARTUM FETAL ASPHYXIA (HYPOXIC ACIDAEMIA)*

The objective of intrapartum fetal surveillance is the protection of the infant by the prediction and diagnosis of intrapartum fetal asphyxia (hypoxic acidaemia).

The Significance of Hypoxic Acidaemia
Hypoxic acidaemia of a particular degree and duration during labour may result in a number of problems. These include:

* intrapartum or early neonatal death due to damage to the central nervous system;
* complications in the cardiovascular system, respiratory system, central nervous system and kidney of the newborn;\(^2\text{5}\) and
* brain damage with resultant deficits in surviving children.

It is difficult to determine the contribution of fetal asphyxia prior to or during labour to the brain damage accounting for deficits in children because of the other mechanisms which may compromise brain development or account for brain damage and deficits in children including:

1. genetic abnormalities;
2. teratogenic factors;
3. congenital infections;
4. metabolic disorders; and
5. endocrine disorders.

However, there is increasing evidence that hypoxic acidaemia can cause brain damage and deficits in children. Studies in the fetal monkey and lamb have consistently demonstrated that severe acidosis with concurrent hypotension will result in neurological damage.\(^\text{6-9}\) Similarly, in the human, perinatal neuropathology attributable to hypoxic acidaemia has been documented at the time of post mortem examination.\(^\text{11-12}\) The majority of these insults have occurred before the onset of labour.

A small proportion of deficits in children may be due to intrapartum fetal asphyxia (hypoxic acidaemia). Clinically, severe encephalopathy of the newborn attributed to intrapartum fetal asphyxia is associated with deficits in children\(^11,12\). Additionally, there are data to indicate that biochemically determined intrapartum fetal asphyxia (hypoxic acidaemia) is associated with an increased incidence of deficits in children born either term or preterm.\(^\text{13,14}\)

This section is taken from the SOGC Policy Statement on Fetal Health Surveillance, 1995.
Diagnosis of Fetal Asphyxia (Hypoxic Acidaemia)

In order to prevent or treat brain injury due to hypoxic acidaemia, we have to be able to recognize whether hypoxic acidaemia is present to a degree or for a duration that threatens neurologic integrity. The diagnosis acidaemia requires a blood gas analysis to show evidence of a metabolic acidosis. Diagnosis of intrapartum hypoxic acidaemia can be achieved by performing umbilical cord artery and vein blood gas and acid-base analyses at birth. The prevalence of intrapartum hypoxic acidaemia subject to the criterion of a significant degree of metabolic acidosis ranges from 0.5 percent to two percent.15

Identification of an increased risk of fetal asphyxia is possible based on characteristic changes in the fetal heart rate. These changes may be detected by intermittent auscultation, or sometimes by electronic fetal heart rate monitoring. In the absence of such changes the chance of fetal asphyxia is very low. In the presence of late decelerations, the chance of asphyxia with a metabolic acidosis greater than a base deficit of 12 mmol/L is probably in the order of 40 to 50 percent. Thus, a certain percent of fetuses with abnormal fetal heart rate patterns does not have fetal asphyxia with a significant metabolic acidosis. Definitive diagnosis requires the use of fetal blood gas analysis.16

A certain proportion of hypoxic acidaemia occurs just prior to delivery and is brief in duration. This will not be a cause of morbidity or mortality. Intervention is not required. However, a certain proportion of hypoxic acidaemia, possibly half, begins in early or mid labour and may be a cause of morbidity or mortality. This implies that with optimal prediction and diagnosis with a blood gas and acid-base assessment, the rate of management intervention for intrapartum hypoxic acidaemia should be less than one percent. This interpretative statement is based on the consistent observation that the prevalence of fetal asphyxia with significant metabolic acidosis is in the order of two percent. Clinical studies indicate that at least half of these newborns have no short term or long term morbidity or mortality. This is likely due to the short duration of the asphyxial episode.

This diagnosis, based upon analysis of fetal scalp blood during labour or of cord blood at birth, provides a measure of the severity of the metabolic acidosis, but it does not determine the duration of the intrapartum asphyxial event.5,13,14,17

In attempting to predict the likely effect of intrapartum fetal asphyxia, two factors must be considered:

1) The severity of the metabolic acidosis.
2) The duration of the asphyxial event as reflected in the biological response in the newborn following birth.
The essential characteristics of the newborn response to asphyxia of such a degree as to be likely to cause harm are:

* Apgar score 0 to 3 for ≥ 5 minutes;
* neonatal neurologic sequelae (e.g. hypotonia, seizures, coma);
* evidence of multi-organ system dysfunction in the immediate neonatal period;
* umbilical cord arterial pH < 7.0; and
* umbilical cord arterial base deficit ≥ 16 mmol/L.

All of these conditions must be present. In cases where such evidence is lacking, we cannot conclude that hypoxic acidaemia existed or had the potential to cause neurologic deficits.

The presence of hypoxic acidaemia confirms that an episode of intrapartum fetal asphyxia has occurred. If the neonatal signs are lacking, then the duration of the asphyxial episode has been short and the likelihood of brain damage and neurologic deficits is small. However, in those cases with hypoxic acidaemia at the time of delivery and with neonatal complications, the potential for brain damage and resultant neurologic deficits is present.
REFERENCES


**FETAL ASPHYXIA AND BRAIN DAMAGE**

Fetal asphyxia may occur before the onset of labour. The prevalence of these events and their significance in regard to brain damage is a major unanswered question. Perinatal neuropathology suggests that antepartum brain damage is more common than intrapartum brain damage.

Laboratory and clinical research has demonstrated an association between fetal asphyxia and brain damage. In spite of the long standing interest in this association, the magnitude of neurological handicap due to asphyxia remains to be determined.

Severity of asphyxia varies. The common mechanism in the clinical setting is hypoxia of variable degree and duration.

Fetal compensation protects the brain from most episodes of asphyxia.

Serial episodes of hypoxia may occur. The cumulative effect of such episodes has not been established.

The diagnosis of fetal asphyxia requires a blood gas analysis with determination of a metabolic acidosis.

Based upon the criteria used, the prevalence of intrapartum fetal asphyxia ranges from 0.5 to two percent.

Because of fetal compensation the majority of these children will have no evidence of brain damage.

A few children who have experienced intrapartum asphyxia of a particular degree and duration will have newborn complication and a few will have neurological handicap.

Although some children with cerebral palsy will also be mentally retarded, the handicap following asphyxia is usually a motor deficit.

**Conclusions from subsequent discussion included:**

Diagnosis of asphyxia requires a blood gas analysis with evidence of a metabolic acidosis.

The outstanding remaining problem is the prevalence of antepartum fetal asphyxia and its contribution to neurological handicap.

Obstetric risk scoring is a useful practice. However, it is of limited value in regard to fetal asphyxia. Approximately 40 percent of intrapartum fetal asphyxia occurs in low risk pregnancies.

Just because a pregnancy is low risk a normal newborn cannot be guaranteed.
Current methods of fetal assessment may be of assistance if the observations are obtained at a time when the fetus is hypoxic and acidaemic.

Appropriate tests of placental dysfunction which account for most cases of fetal asphyxia are not available at this time.

**Recommendations:**

1. Routine cord blood gas analysis at delivery is useful because:
   - a) Obstetric health care workers in the delivery room develop a good sense of the prevalence and possible significance of intrapartum asphyxia.
   - b) Definitive evidence that intrapartum fetal asphyxia did not occur in 98 percent of deliveries will be obtained.
   - c) The two percent of newborn who may have experienced some degree of intrapartum asphyxia and warrant observation in the nursery can be identified at the time of delivery.

2. Apgar scores are a useful adjunct to blood gas analysis at the time of delivery.

3. The electronic fetal heart rate monitor accurately records fetal heart rate behaviour during labour. The appropriate interpretation of the data and its application to decision-making in regard to intervention are still problematic.

4. There is no single answer to this diagnostic problem.
II. REPORTS OF SUBCOMMITTEES

REPORT OF THE MEDICO-LEGAL SUBCOMMITTEE

The Subcommittee on Medico-Legal aspects of Cerebral Palsy and Fetal Asphyxia met twice and made a presentation to the Task Force on Cerebral Palsy & Fetal Asphyxia on June 13, 1994.

The Subcommittee consisted of

Dr. Ferdinand Pauls, Chair, SOGC
Dr. Robert Lea, SOGC
Dr. Owen Hughes, CFPC
Ms. Patricia McLean, CNA/CNPS
Mr. Jacques Labelle, CHA
Dr. Stuart Lee, CMPA
SOGC Staff Resource Persons: Ms. Linda O’Rourke & Ms. Susan Maskill

At its first meeting, the Subcommittee looked at its Terms of Reference and decided that the four issues that they would address were:

1. Tort Reform Review
   a) No-Fault Insurance
   b) Fault-Based System
      i) Structured Settlements
      ii) Alternate Dispute Resolution

2. Information Brochure on Cerebral Palsy

3. Expert Witness

4. Practice Guidelines
1. **TORT REFORM REVIEW**

   a) **No-Fault Insurance**

   Initially, the Subcommittee looked at the viability of no-fault insurance for obstetric practitioners doing obstetrics. It became evident that the discussion needed to be wider with more options than what the no-fault insurance system suggested. To help the Committee, Mr. Ken Evans, a partner in Cowling, Strathey & Henderson from Ottawa was asked to review what had taken place in the area of tort reform with reference to the issues of professional liability and compensation. His recommendation which was thoroughly discussed and then endorsed by the Committee was that no-fault insurance in Canada was not practical at the present time. Some of the concerns that related to this conclusion were the difficulty of establishing criteria for no-fault insurance, delays in Court time and determining who is responsible for payment. The major concern of the Committee was that since professional responsibility is an important issue for practitioners and the assessment of financial responsibility needs to be determined, that the no-fault system was not applicable under these conditions.

   b) **Fault-Based System**

   Mr. Evans then went on to describe the compensation systems in Canada and provided the committees with the following information.

   The law of negligence governs the majority of civil actions brought against hospitals, physicians, and other health care professionals in Canada. To be successful, a negligence action must meet four requirements:

   1. The defendant must owe the plaintiff a duty of care;
   2. The defendant must breach the standard of care established by law;
   3. The plaintiff must suffer an injury or loss;
   4. The defendant’s conduct must have been the actual and legal cause of the plaintiffs injury.

   Assuming that the requirements for a finding of negligence have been proven, the judge, or jury if there is one, then has the task of assessing the **quantum** of damages, that is, attach a dollar value to the plaintiffs claim. The fundamental purpose of negligence law is the compensation of the victim, and the aim is to restore the plaintiff as nearly as possible to his or her position prior to the negligent act. This has been explained by one Canadian authority in this way:
Since *perfect* compensation in the sense of physical reconstruction of the victim to his pre-accident condition is generally impossible, the initial premise upon which damage awards are based is that damages should be computed so that the dollars awarded will be adequate compensation for the loss which was suffered by the injured party. To the extent that money damages can make the victim whole again, the award of compensation is considered to be the fairest solution to both plaintiff and defendant.

Tort (or fault-based) liability is the central operating principle, but it is only one component of a system that includes a number of public and private compensation systems such as workers’ compensation, automobile no-fault schemes, criminal injury compensation schemes, federal income replacement schemes including unemployment insurance and Canada Pension Plan, health care, social assistance, private insurance and charitable institutions. In addition, there are currently three “compassionate assistance programmes” funded by the federal government. These programmes have been instituted to support (with lump-sum payments) very specific groups: patients who became infected with HIV through contaminated blood or blood products between 1978 and 1989; thalidomide victims; and certain patients who received psychiatric treatment at the Allan Memorial Institute in Montreal in the 1940s and 1950s. (There may also be some complementary provincial assistance available to persons in the first two groups.) Most medical accident victims, however, must place heavy reliance upon the tort system.

The fault-based system has both positive and negative aspects. There has also been a continuing effort to come up with alternative approaches. The key premise of those who favour the fault-based system is that it serves a variety of functions in the delivery of health care, and that it is not useful to isolate one of the functions in order to attack the system generally.

Some of the functions of the fault system, emphasized by those who favour the approach are:

1. The tort system offers complete compensation to those patients injured by the fault of physicians. It is the only compensatory scheme of accident compensation which purports to make a full indemnity for all the patient’s losses.

2. The fault system imposes a penalty on the physician who causes injury by breaching legal rules of professional conduct.

3. The imposition of liability on negligent physicians deters others from similar conduct.

4. Tort law provides a civilized process enabling an injured person to force physicians to account for their actions.

5. Tort law instructs physicians on the professional standards to which they are held accountable. It dictates the need for consent and care, both in treatment and in providing information to patients.
This system, however, has become the subject of much criticism over the past twenty-five years. The criticism centres around the deterrent influence of fault liability and its inadequacy as a compensatory mechanism. Many critics question the power of tort actions to deter negligent conduct and thereby maintain professional standards of care, knowledge and skill. But it is in the area of compensation that tort law has received most criticism. The arguments against fault-based liability as a compensatory vehicle include:

1. The emotional satisfaction of shifting loss to the defendant is based on a myth that the individual actually pays. In fact, in a socialized health care system, liability becomes another health care cost paid by the federal and provincial governments.

2. The range of injured patients who are covered is limited because of the necessity to prove fault.

3. Lump sum awards, including those made as settlements before trial and all damage awards in negligence cases, are not reviewable in the future and are very difficult to calculate fairly.

4. Delay is pervasive in the tort system and is not amenable to easy solutions because the system is largely institutional.

Reform of the tort system has been advocated by those who favour it as a system which represents the important social values of individual responsibility for one’s actions and which still achieves its objectives to some degree. Reform proposals include:

1. A no-fault option to the fault-based tort system, one that would be elected by the injured person at the point a claim is to be initiated.

2. First-party life and disability insurance on a private basis, much like the property insurance that many people carry.

3. The abolition of the tort action as it applies to physicians, substituting a public no-fault compensation scheme providing benefits to all victims of medical accidents.

i) Structured Settlements

Mr. Evans then went on to explain the implications of Structured Settlements and recommended that this was probably the preferable system to use. The Committee discussed this in some detail and came to the consensus that a wider use of Structured Settlements be indicated because it guarantees fair return to the Plaintiff and is less costly to society. Savings of up to a million dollars could be obtained with Structured Settlements as the settlement was not required to include taxes to the Government. It also covered the area of where a settlement was made to a Plaintiff who subsequently died and the settlement then stopped its payment obligations.
ii) Alternate Dispute Resolution

The other recommended Fault-Based System was an Alternate Dispute Resolution. This approach has the ability to negotiate and come to a settlement without having to go through a costly Court process. The Committee recommended that the Alternate Dispute Resolutions be used in a limited fashion due to its current set-up.

With continuing changes occurring, it was recommended that there be ongoing review of Medico-Legal information as it pertains to Cerebral Palsy and Fetal Asphyxia.

2. INFORMATION BROCHURE ON CEREBRAL PALSY

The Committee looked at developing an information brochure with a title such as “Cerebral Palsy & Asphyxia”. The Ontario Federation for Cerebral Palsy, an interest group which for over forty years has been the advocate for Cerebral Palsy people and their families, does not have a direct or indirect relationship with any medical organizations and their responsibilities. They consider their first responsibility to people with Cerebral Palsy. For this reason, the development of another brochure based on their brochure would not be advisable.

It was recommended by the Subcommittee that an information sheet be distributed through the SOGC network to health care professionals and that this would be updated periodically through the SOGC process. It was also recommended that the Ontario Federation for Cerebral Palsy be encouraged to update the existing pamphlet on Cerebral Palsy and make it available for distribution in health care professionals’ offices.

3. EXPERT WITNESS

The Subcommittee concluded that physicians called upon as expert witnesses often misunderstood this role. They should represent what an average physician could do and not the optimal care. The SOGC has produced a document on Expert Witness. This is to be circulated to all its members and will be used for discussion with Law Societies.

4. PRACTICE GUIDELINES

It was recognized by the Subcommittee that practice guidelines are increasingly being developed by societies to help professionals in clinical decision-making processes. With advancement in technology, these guidelines will be available across the country in whatever practice situation the professionals find themselves through such communication modes as the Internet. The Canadian Medical Association already is on the Internet and the Society of Obstetricians and Gynaecologists of Canada is planning to have the Internet available to their membership in 1996. It seems logical then that practice guidelines be developed, updated and distributed through such communication means. There was concern regarding guidelines setting idealized standards or even if standards are reasonable, that these would not be
reasonable, that these would not be followed because of local disagreement by physicians. This may be because of the possibility that practitioners do not have the skills to carry out the recommended procedures or that they may not have the necessary experience. It was also noted that the guidelines may not be applicable to every situation and every setting and that each setting would need to revise the guidelines for its own use. It was felt that the desire to try to be precise in an area where that is not possible is legally risky.

However, it was suggested that the guidelines be developed with a decision tree format to give suggested trails to follow in certain situations and that they offer suggestions rather than recommendations. It was noted that the SOGC publishes clinical practice guidelines that are reviewed every three years, include a disclaimer, and allow for local adjustments as follows. “The Clinical Practice Guidelines issued by the SOGC do not define the standard of care nor is it intended to dictate an exclusive course of treatment of procedure to be followed. It presents methods and techniques of clinical practice that are acceptable and used by recognized authorities for consideration by Obstetricians and Gynaecologists and incorporating them into their practice. Variations of practice taking into account the need of individuals, patient resources and the limitations unique to the institutions or type of practice may be appropriate. A guideline can and will be modified according to local conditions. If so, it should be documented in individual departments and/or hospitals.”

The challenge will be to word the guidelines in a way that will be as helpful as possible without creating conflicts.
REPORT OF THE SUBCOMMITTEE ON DEFINITIONS AND INTERNATIONAL CLASSIFICATION OF DISEASE (ICD)

INTRODUCTION

Fetal and/or neonatal asphyxia issues need to be addressed because:

1. The incidence of cerebral palsy has not decreased despite better health conditions and improved fetal surveillance

2. Cerebral palsy is associated with fetal and newborn asphyxia but also with various other conditions, some of which are probably still unknown

3. Thirty to forty percent of cases of asphyxia with significant metabolic acidosis are occurring in the low-risk population

4. Approximately seven percent of all neonates will need some form of resuscitation (oxygenation, assisted ventilation, cardiac reanimation) due to asphyxia, prematurity, or other conditions at birth

5. The ICD 9/10 - Canadian Interpretation for ICD 10 categories:

Within the next few years, it is expected that the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10) will be implemented across Canada. Prior to such implementation, training and education will be carried out under the leadership of the Canadian Institute for Health Information (CIHI). The category and the subcategory titles and other notes (such as inclusions and exclusions) developed/adopted by the World Health Organization for ICD-10 cannot be changed. Clarification for national implementation purposes is possible, however.

In order to assist in consistent Canadian application of relevant categories and subcategories in the ICD-10, a subcommittee of the SOGC Task Force on Cerebral Palsy and Asphyxia with representatives from the CFPC, CHA, CMPA, CPS and the CHRA was struck. The Subcommittee developed some statements of clarification and some notes to be incorporated into training and education programmes. These notes are shown in the right hand column in relation to the relevant ICD-10 categories and subcategories shown in the left hand column. These should ensure that the language recorded by clinicians and other caregivers will be appropriately and consistently captured for subsequent analysis and research.

The Subcommittee looked specifically at two categories, identified in ICD-10 as: "P20 Intrauterine hypoxia” and "P21 Birth asphyxia”. (Each of these categories has subcategories provided for the identification and capture of increased detail.) The alphabetical index entries leading to assignment to these two categories were also examined. The notes for Canadian use were based on the Subcommittee’s deliberations and work of other subcommittees involved in the Task Force on Cerebral Palsy and Asphyxia.
<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>P20</td>
<td><strong>Intrauterine hypoxia</strong></td>
<td>Due to the inability to assess “intrauterine hypoxia”, use of the term “fetal asphyxia” is preferred by the Joint Task Force. Use of the terminology “fetal distress” or “intrauterine distress” is discouraged by the Joint Task Force due to its lack of objective measurement. The Joint Task Force recommends that “abnormal fetal heart rate” and/or “meconium in liquor” (“passage of meconium”) not be considered as indicators of fetal asphyxia.</td>
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<td>Includes:</td>
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<td>abnormal fetal heart rate</td>
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<td></td>
<td>fetal or intrauterine:</td>
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<td></td>
<td>• acidosis</td>
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<td>• hypoxia</td>
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<td></td>
<td>meconium in liquor</td>
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<td></td>
<td>passage of meconium</td>
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<td></td>
<td>Excludes:</td>
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<tr>
<td></td>
<td>intracranial haemorrhage due to anoxia or hypoxia (P52- )</td>
<td></td>
</tr>
<tr>
<td>P20.0</td>
<td><strong>Intrauterine hypoxia first identified before onset of labour</strong></td>
<td>The Joint Task Force recommends the use of the term “antepartum fetal asphyxia” only when diagnosed by cordocentesis.</td>
</tr>
<tr>
<td>P20.1</td>
<td><strong>Intrauterine hypoxia first identified during labour and delivery</strong></td>
<td>The Joint Task Force recommends use of the term “intrapartum fetal asphyxia” diagnosed by fetal scalp pH or cord blood pH values.</td>
</tr>
<tr>
<td>P20.9</td>
<td><strong>Intrauterine hypoxia, unspecified</strong></td>
<td></td>
</tr>
<tr>
<td>Present ICD-10</td>
<td>Joint Task Force Recommendations</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
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<td></td>
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<tr>
<td>P21 Birth asphyxia</td>
<td>Use of the term “newborn asphyxia” (rather than “birth asphyxia”) is preferred by the Joint Task Force.</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong></td>
<td>The level (or severity) of “newborn asphyxia” is not determined by Apgar score alone. It may be based on a variety of clinical indicators not diagnosed or evident at the time of birth. The Joint Task Force therefore recommends that the subcategories P21.0 and P21.1 not be used in Canada.</td>
<td></td>
</tr>
<tr>
<td>Excludes: intrauterine hypoxia or asphyxia (P20.-)</td>
<td>The diagnosis of fetal asphyxia will be substantiated by documented abnormal acid based status on the basis of cord blood sampling which reflects exposure to asphyxia. Without this measure, the diagnosis should be stated as “suspected newborn asphyxia”.</td>
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</table>

**P21.0 Severe birth asphyxia**

Pulse less than 100 per minute at birth and falling or steady, respiration absent or gasping, colour poor, tone absent.

Asphyxia with one minute Apgar score 0 to 3 White asphyxia

The Joint Task Force recommends that this subcategory not be used in Canada.

**P21.1 Mild and moderate birth asphyxia**

Normal breathing not established within one minute, but heart rate 100 or above, some muscle tone present, some response to stimulation.

Asphyxia with one minute Apgar score 4 to 7 Blue asphyxia

The Joint Task Force recommends that this subcategory not be used in Canada.

**P21.9 Birth asphyxia, unspecified**

Anoxia

Asphyxia NOS

Hypoxia

The Joint Task Force recommends that all diagnoses of newborn asphyxia (regardless of severity) be assigned to this subcategory.
PRACTICAL RECOMMENDATIONS

a. **Terminology to be discarded and replaced**
   
   - **perinatal asphyxia:** it has already been discarded by ICD 10 and should be replaced by: fetal asphyxia either *antepartum* or *intrapartum*, or newborn asphyxia
   
   - **clinical fetal distress:**

   not equivalent to fetal asphyxia and should be replaced by specific finding (i.e. meconium, abnormal fetal heart rate, etc.)
   
   - meaning yet to be evaluated both through experimental and clinical research
   
   - to be replaced by non-reassuring fetal pattern or state

   It is recommended that **all** professionals involved in obstetrical care use this terminology (see ICD 10).

b. **Specific definitions in relation to the perinatal field**
   
   - **perinatal:** from 20 to 28 weeks of gestational age until seven to 28 days after birth
   
   - **anoxia:** absence of oxygen
   
   - **hypoxia:** decreased oxygen content
   
   - **hypoxemia:** decreased oxygen concentration in blood
   
   - **hypercarbia:** high carbon dioxide concentration in blood
   
   - **acidosis:** low blood $pH$ and high $pCO_2$ levels: respiratory acidosis
     
     - low buffer base level: metabolic acidosis
   
   - **asphyxia:** blood and tissue oxygen debt leading to metabolic acidosis

c. **Classification of asphyxia in the perinatal period**

1. **Fetal asphyxia:** asphyxia occurring before birth
   
   i) **Antepartum fetal asphyxia** - diagnosis before labour

   definitive diagnosis - blood gas analysis or cord blood obtained by cordocentesis or during section prior to labour

   - provisional diagnosis - evidence of cerebral lesions on imaging examinations in the fetus or the newborn immediately after birth

   ii) **Intrapartum fetal asphyxia** - diagnosis during labour

   at the exception of congenital anomalies, intrauterine infections and stillbirths;

   definitive diagnosis - blood gas analysis of capillary or cord blood cannot exclude the possibility that asphyxia has occurred before labour
c. **Classification of asphyxia in the perinatal period (cont.)**

2. **Newborn asphyxia**: asphyxia occurring in the neonatal period
   - definitive diagnosis - blood gas analysis or arterial or capillary blood
   - newborn asphyxia - evidence of absence of asphyxia at birth
   - unspecified newborn asphyxia - no confirmation of absence of asphyxia at birth


d. **Quantifying intrapartum fetal asphyxia in the perinatal period**

1. **Clinical assessment**:

   All the clinical markers (at least 20) that have been tested to ascertain the diagnosis’ lack of sensitivity, specificity and predictive value. Among the most frequent markers are:

   - Apgar Score
   - “abnormal” fetal heart rate (decreased variability, sinusoidal pattern, bradycardia, tachycardia, late and/or variable decelerations)
   - antepartum oligohydramnios
   - thick meconium at the time of birth
   - even disturbances of doppler velocity waveforms (uterine arteries and/or umbilical arteries).

2. **Laboratory assessment**:

   For a definitive diagnosis of asphyxia, there must be laboratory evidence of metabolic acidosis in cord blood or on an arterial blood gas sample drawn within the first few hours after birth.

3. **Acid base values on blood gas analysis**

   Abnormal values are:
   - pH: $< 7.00 - 7.05$\textsuperscript{1-5}
   - pO$_2$: not reliable on cord blood
   - pCO$_2$: $> 75$ torr if base excess $> 38$: then respiratory acidosis only
   - buffer base: $< 30 - 34$ mmol/L (base deficit equivalent: $> 12 - 16$ mmol/L$^4$
   or $13.5$ mmol/L$^5$

   N.B. There are probably **three levels of thresholds**:
   1. concern during management of labour
   2. threshold for newborn complications
   3. threshold for brain damage
d. **Quantifying intrapartum fetal asphyxia in the perinatal period (cont.)**

4. **Prediction of significance of asphyxia**
   - **severity** of metabolic acidosis,
   - duration of asphyxia
   - multiorgan newborn complications, particularly newborn encephalopathy
   - *electroencephalography* (EEG) and evoked potentials
   - imaging studies including ultrasound, CT scan, magnetic resonance imaging, with evidence of cerebral pathology

e. **High risk population**

Factors describing this population are yet to be ascertained in a prospective manner with validity. Risks can be multifactorial. Factors that may be relevant are:
- prematurity
- intrauterine growth restriction
- breech presentation
- maternal conditions (acute or long standing morbidity)
- fetal environmental exposure (drugs, infection, teratogens)
  abnormal labour, etc.

f. **Diagnosis of intrapartum fetal asphyxia**

The diagnosis of intrapartum fetal asphyxia cannot be ascertained with certainty at the present time unless capillary or cord blood analysis is performed. It must include metabolic acidosis with a particular threshold yet to be determined (base deficit 12 to 16, \( \text{pH} \) 7.00 or less).

Unless blood gas analysis is performed, the diagnosis of intrapartum fetal asphyxia can only be provisional or suspected without any specification as to whether it occurred antenatally, intrapartum or during the neonatal period.

g. **Provisional or suspected diagnosis of intrauterine fetal asphyxia**

A provisional diagnosis of intrauterine fetal asphyxia for cases where blood gas values are not available can be suggested. Fetal asphyxia (including provisional/suspected) may be followed by complications. These complications may be newborn complications and/or brain damage. Finally, it should be noted that fetal asphyxia may be followed by no complication at all.

h. **Screening for intrapartum fetal asphyxia**

The screening for intrapartum fetal asphyxia can only be assessed by one available test at the present time, either blood gas on cord blood values including \( \text{pH}, \text{pCO}_2 \) or base excess (alternatively base deficit or bicarbonate).

*This laboratory assessment should be carried out systematically at the time of delivery.*
i. **Labour and delivery management**

Continuing medical education should be provided to health professionals where risks can be established with validity.

j. **Health promotion in pregnancy**

Health promotion programmes for the pregnant population have to be developed in order to address the issue of fetal asphyxia prevention where causal pathways are determined. These programmes need to promote healthy habits for pregnant women including abstinence from smoking, drugs and alcohol during pregnancy.

k. **Neonatal resuscitation, labour and delivery management**

Considering the risks involved in labour, delivery and neonatal resuscitation, periodic recertification in neonatal resuscitation, as well as in labour and delivery management should be implemented for all health professionals involved in labour and birth surveillance. Neonatal resuscitation programmes are co-sponsored by the Canadian Heart and Stroke Foundation, the Canadian Paediatrics Society and the College of Family Physicians of Canada. The Advanced Labour and Risk Management course (the ALARM course) is held under the auspices of the Society of Obstetricians and Gynaecologists of Canada. This is a combined course with obstetrical and family practice faculty (See Appendix A).

l. **Communication with parents**

Language used when health professionals describe the conditions of fetal or neonatal asphyxia to the parents should be standardized to avoid medical jargon, ambiguous and/or frightening explanation. It should clearly describe the actual condition.

**REFERENCES**

1. **Gilstrap** LC, **Yeomans** ER, **Leveno** KJ, **Burris** JS. Meconium in the amniotic fluid and fetal acid-base status, *Obstet Gynecol* 1989; 73(2):175-8.
REPORT OF THE SUBCOMMITTEE ON RISK MANAGEMENT

INTRODUCTION

Risk Management has been defined as the development and direction of strategies for preventing patient injury, minimizing financial loss and preserving hospital assets.

Risk Management is a process involving:

- Identification of risk
- Risk assessment
- Taking action to manage risks
- Evaluation of risk management activities

Elements of a risk management programme include:

- Structure, i.e.: policies, procedures, personnel and committees.
- Process elements, i.e.: procedures and/or activities
- Outcome elements, i.e.: some means of measuring benefits of the programme

RISK MANAGEMENT IN THE DELIVERY ROOM:
A MULTIDEPARTMENTAL MODEL

Risk Management Committee for Adverse Perinatal Outcome

The committee structure should be multi-disciplinary in nature and variously involve general practitioners, obstetricians, anaesthetists, paediatricians/neonatologists, midwives, nursing personnel and hospital administration.

Functions and/or responsibilities of the committee should include the monitoring/auditing of perinatal outcome, contingency plans for adverse perinatal outcome, and a mechanism for monitoring the operations of such a contingency plan.

SUBCOMMITTEE ON RISK MANAGEMENT:
SOGC    Carl Nimrod, MD, FRCPC (Co-Chair)
         Bryan Richardson, MD, FRCSC (Co-Chair)
         Andre B. Lalonde, MD, FRCSC
CFPC    Michael Klein, MD, CCFP, FAAP, FCPS, ABFP
CNA     Patricia Niday, RN, EdD
CPS     Victor Marchessault, MD, FRCPC
PERINATAL ASPHYXIA

Perinatal asphyxia can give rise to adverse perinatal outcome as a result of antenatal, intrapartum and neonatal events.

**ADVERSE PERINATAL OUTCOME:**

- Stillbirth
- Neonatal Death
- Newborn Encephalopathy
- Other Organ System Failure

<table>
<thead>
<tr>
<th>Neonatal Events</th>
<th>Intrapartum Events</th>
<th>Antenatal Events</th>
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</thead>
<tbody>
<tr>
<td>Relevant Issues</td>
<td>Relevant Issues</td>
<td>Relevant Issues</td>
</tr>
<tr>
<td>Neonatal resuscitation</td>
<td>VBAC</td>
<td>Premature labour</td>
</tr>
<tr>
<td>Persistent fetal circulation</td>
<td>Malpresentations</td>
<td>PIH</td>
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<tr>
<td>UNKNOWN</td>
<td>Breech</td>
<td>IUGR</td>
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<td></td>
<td>Mid forceps delivery</td>
<td>Multiple gestation</td>
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<td>Dystocia</td>
<td>Post date pregnancy</td>
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<td></td>
<td>Labour management</td>
<td>Fetal surveillance</td>
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<td>Fetal surveillance</td>
<td>Ultrasound</td>
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<td>FHR monitoring</td>
<td>FHR monitoring</td>
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<td></td>
<td>Scalp sampling</td>
<td>Biophysical profile</td>
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<td></td>
<td>Cord gas analysis</td>
<td>Doppler ultrasound</td>
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<td>UNKNOWN</td>
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</tbody>
</table>
RISK MANAGEMENT FOR ADVERSE PERINATAL OUTCOME

The distribution of clinical problems in the field of obstetrics leading to legal actions in Canada is as follows:

- Compromised baby: 36 percent
- Perinatal death: 13 percent
- Maternal trauma: 11 percent
- Fetal trauma: 10 percent
- Major serious injury: 10 percent
- Foreign body: 6 percent
- Anaesthesia related problem: 4 percent
- Minor serious injury: 4 percent
- Misdiagnosis: 3 percent
- Iatrogenic: 3 percent

* Information based on a ten year review of closed legal actions drawn from the Canadian Medical Protective Association files relating to obstetrical work.

IT IS NOTED THAT APPROXIMATELY SIXTY PERCENT OF SUCH LEGAL ACTIONS RELATE TO ADVERSE PERINATAL OUTCOME, INCLUDING COMPROMISED BABY, PERINATAL DEATH AND FETAL TRAUMA (SEE APPENDIX B AT THE CONCLUSION OF THIS SERIES OF ARTICLES.).

There is limited information available about underlying antenatal, intrapartum and neonatal events (IUGR, multiple gestation, fetal surveillance, forceps delivery, neonatal resuscitation) leading to a compromised baby or perinatal death and the general issues common to these specific events (failure to undertake indicated investigations, lack of informed consent).

However, information from the Canadian Medical Protective Association would indicate that the "conduct of labour" is the aspect of pregnancy management from which the greatest medico-legal costs arise.

A Policy Statement on Attendance at Labour and Delivery has been developed by the SOGC with input from the CMPA which provides guidelines for physicians attending at labour and delivery (see Appendix C).

SUGGESTED READINGS


Gluck M. Perinatal asphyxia: perspective, Journal SOGC. 1992;14(10):8-10
RISK MANAGEMENT PROGRAMME MODEL

There is no specific risk management programme in Canada for obstetrics. It is recommended that a risk management programme model be developed specifically for obstetrics and gynaecology, in particular for labour and delivery. A model is to be developed in collaboration with the CMA, the CMPA and other related health organizations.

An example is given of a current hospital risk management programme based on information from The Canadian Health Care Association (CHA). (See also Appendix D)

EXAMPLE
RISK MANAGEMENT PROGRAMME IN CANADIAN HOSPITALS

PART 1: RISK MANAGEMENT DEFINITIONS:

1. RISK:
   For the purpose of risk management, risk may be defined as:

   the exposure to any event which may jeopardize the reputation, net income, property and patients.

   None of these four elements is more important than any other except when they are jeopardized.

   FIGURE 1: THE RISK PENTAGON

   Reputation

   Income

   Patients

   The Risk Pentagon

   Liability

   Reputation is extremely important to physicians and often a lawsuit, even if settled many years later in favour of the physician, takes a tremendous toll on the psychological well-being of the physician. Physicians are not used to having their reputations questioned.

   Legal Liability: This can represent costs ranging from a few thousand dollars to a few million dollars with multi-million dollar patient injury suit against the physicians and the facility. Often the risks are interrelated.

   Risk management must concern itself with all aspects which may threaten and/or jeopardize both the physician and the health care facility.
2. MANAGING RISK:

Risk in general cannot be completely or constantly avoided. It is as much a part of corporate life as it is of our personal life. But neither can be ignored except to the detriment of the individual or the facility. The intention in risk management is to anticipate and limit the risk so as to lessen both the chance of suffering loss and the size of the loss when it does occur. Risk management proposes that risk can be managed in two ways: risk control and risk financing. Risk financing is being taken care for our members by the CMPA.

a) Risk Control:

A physician’s risk can be controlled by means of some or all of the five common strategies. Risks can be avoided, transferred, prevented, reduced and segregated. (See Appendix D)

<table>
<thead>
<tr>
<th>Figure 2</th>
<th>Five Risk Control Strategies</th>
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<tbody>
<tr>
<td><strong>No Loss:</strong></td>
<td>AVOIDANCE of risk</td>
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<td>TRANSFER of risk</td>
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<td>PREVENTION of risk</td>
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<tr>
<td><strong>Some Loss:</strong></td>
<td>REDUCTION of loss</td>
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<tr>
<td></td>
<td>SEGREGATION of risk</td>
</tr>
</tbody>
</table>

Avoidance: A person can stop carrying out a function which is associated with a high degree or incidence of risk, e.g. high or mid-forceps.

Transfer: When a high-risk case is transferred to a next level hospital for appropriate care.

Prevention: Hospitals and physicians can take steps to prevent completely or significantly lower the possibility of mishaps or perform risk prevention. Clinical practice guidelines may not reduce the number of lawsuits but may make them easier to defend.

Reduction: Prevention and reduction can be confused, so it is important to note that reduction is the strategy that is called into play after the damaging event has occurred. This would fall under the responsibility of the CMPA.
After the event, losses can be reduced in a number of ways, for example, through early investigation and documentation (legal liability) and the provision of full and honest disclosure (reputation). One of the most important loss reduction strategies is the immediate care and attention to persons threatened or injured. Losses attended to immediately can often be mitigated. On the other hand, prevention is putting into place programmes that will prevent events from occurring which could lead to legal liability.

**Segregation:** Segregation of risk takes place when physicians take care not to put all their eggs in one basket. In a difficult case, consultation could be obtained when different steps have to be undertaken in a complicated case. Segregation is usually more applicable to facilities than to physicians.

b) **Risk Financing:**

This is a responsibility that is undertaken by our insurance agency, the CMPA.

3. **THE PROCESS OF RISK MANAGEMENT**

Risk management consists, as the term suggests, of a management system or process. It has four basic steps:
- identification of risk;
- risk assessment;
- taking actions to manage risks; and
- evaluation of risk management activities.

Implicit in the last step is a feedback loop demanding the continuous improvement or correction of action, assessment and/or identification.

a) **The Identification of Risk:**

Risk identification is the essential first step in the management of risk, because risk management is a proactive strategy in which physicians are defended by informed anticipation of problems. Risk is identified with reference to the obstetrical and **gynaecological** group loss history; that is, has it or something like it happened before? Risk can also be identified because doctors are informed about particular risks of their group. Doctors want to learn from the mistakes and misfortunes of others. We must, therefore, identify what are the risks in obstetrics from our past legal history. We must be careful often to distinguish between risk management and legal liability.
b) **Risk Assessment:**

Risk assessment is an evaluation exercise. Anticipating risk means finding answers to the questions of how many or how often (frequency of risk), how much (cost of risk) and under what circumstances (likelihood of risk). Without answers to these questions it would be difficult to provide an appropriate programme. It may, for example, see us preparing a preventive effort on a frequent but inexpensive risk and neglect entirely a million dollar hazard.

Risk assessment presupposes the consolidation of all risk information and intelligence in one office or committee.

c) **Action to Manage Risk:**

All risks cannot be eradicated but risks can be managed. Risk management depends on two activities: controlling the risks and financing the losses. In the third step in the risk management process a committee should have the opportunity to review the most serious exposures to risk and consider which method of control will be most appropriate for each exposure. It may choose single strategies to confront single or major risks. More often, it will attack generic causes with broad-based strategies, as being less expensive and promising better chances of success.

In making a choice among risk management strategies, a committee or society will need to be aware of how physicians in hospitals are currently coping with the risk and will want to choose an alternative which is both practical and in sympathy with the objectives of the practice. While it might be attractive from a risk management perspective to stop some high risk procedures, i.e. risk avoidance, the nature of the practice may make such an alternative totally unacceptable, i.e. forceps deliveries.

In order to implement these strategies the committees and SOGC must work with its members. Can we gain support from our members to support a project? How will we educate our members in this area?

A risk management committee will expect reports on the success of initial attempts at implementation.
d) Evaluation of Experience:

Evaluation refers to the need for a risk management programme to include periodic reviews of its experience. Such reviews should be no less frequent than every two to three years and cover the entire risk experience. A committee would have to be appointed to carry out such monitoring of activities.

This final step is a reminder that risk management is a continuous process, that it starts with identification and analysis of risk, proceeds to the establishment of actions to manage risk and ends with the evaluation of risk management activities and their results for physicians and hospitals, only to have the process begin yet again.

4. MEDICAL STAFF IN A HOSPITAL

Joint committees need to be established between hospitals and medical staff to manage risk. A facility cannot pretend that it has a risk management system if it does not have the full participation of its medical staff. It is not enough for an executive to handle liability questions that arise in the course of medical practice nor for nursing or health records to provide the incident recognition and reporting that physicians will not initiate. Medical staff will only “buy into” risk management activities if they are aware of the positive benefits of these activities, both for them and their patients. Physicians need to take responsibility for risk management by:

a) providing fail-safe mechanisms at selected points in practice;

b) recognizing errors before they become suits;

c) identifying procedures of high risk before they register problems;

d) warning physicians when practices exceed their limits;

e) providing guidelines for most aspects of practice.

The future of this project will rest on forming a national committee, as well as provincial subcommittees and committees at each hospital level that would look into risk management.
RISK MANAGEMENT STRATEGIES

ASPHYXIA AND NEONATAL RESUSCITATION

A. Identification of Risk

1. “Newborn infants are much more likely to suffer asphyxia and require resuscitation than any other age group”.
2. Of the 402,528 babies born each year in Canada, six percent require life support in either the delivery room or nursery.
3. The need for intervention is dramatically higher for infants weighing less than 1,500 grams at birth.3-6
4. Different skill requirements are needed, depending on the physician’s level of training and level of labour risk/problems.

B. Risk Assessment Strategies

1. History/Antepartum Events
   - Preterm birth
   - Multiple births
   - Intrauterine growth restriction (IUGR)

2. History/Intrapartum Events
   - Particulate thick meconium
   - Breech delivery
   - Forceps delivery
   - Fetal distress

3. Assessment
   - Apgar scores
   - Gestational age
   - Cord blood gases

C. Activities to Manage Risks Associated with Neonatal Resuscitation

1. Preventive Measures for Patients at High Risk
   - Completion of a Neonatal Resuscitation Provider Course
   - To facilitate the acquisition of the knowledge and skills necessary for newborn resuscitation, the Canadian Heart Foundation, the American Heart Foundation, the Canadian Paediatric Society and the American Academy of Pediatrics are sponsoring the Neonatal Resuscitation Programme. This educational programme is available across Canada (Appendix A).
Implementation of a skill maintenance programme (ALARM Course). Ideally, since it is impossible to predict which infants will require intervention, staff skilled in neonatal resuscitation must be available at all births.\textsuperscript{3,7,8} Since resuscitation skills are not required every day, maintaining these skills becomes a great challenge.

2. Treatment

- Thermal management, positioning, suctioning, and tactile stimulation.
- Assess the need for positive-pressure ventilation and intubation.
- Assess the need for chest compressions.
- Assess the need for drugs and volume expanders.
- Post resuscitation management.

d. Evaluation of Risk Management Activities

The prevention of long-term disabilities in even one newborn can greatly effect the costs of tertiary care, with the average cost of care for one infant in a neonatal intensive care unit being approximately $150,000. In addition, the families of these babies experience emotional distress, and may be faced with the challenge of coping with a severely disabled child and adult.

Therefore, it will be important in addition to conducting an annual review of neonatal resuscitation to look at such other outcomes as low apgar scores, admission to a neonatal intensive care unit, length of stay and follow-up. These should be indications for Quality Assurance Committees.

Re-certification for neonatal resuscitation should be mandatory every two years.

REFERENCES

RISK MANAGEMENT STRATEGIES
BREECH DELIVERY

It is recognized that the management of breech presentation at term is controversial with arguments for and against a policy of elective Caesarean section versus a policy of selective vaginal delivery. The following guidelines pertain to the management policy of selective vaginal delivery.

A. Identification of Risk
Maternal
- Increased morbidity associated with a policy of elective Caesarean section versus selective vaginal delivery

Fetal
- Increased morbidity/mortality associated with umbilical cord complications (prolapse – overt/occult, compression)
- Increased morbidity/mortality associated with entrapment of after-coming head
- Increased morbidity/mortality associated with hyperextension of head
- Increased morbidity/mortality associated with traumatic delivery
- Increased morbidity/mortality associated with underlying congenital anomalies (approximately six percent compared with approximately two percent in total population)
- Increased perinatal morbidity/mortality in footling breech, due to increased incidence of cord prolapse and entrapment of after-coming head
- Increased perinatal morbidity/mortality with hyperextension of the fetal head when vaginal delivery is undertaken
- Increased perinatal morbidity/mortality with estimated fetal weight greater than 4,000 grams when vaginal delivery is undertaken
- Increased perinatal morbidity/mortality with total breech extraction in the term singleton breech fetus
- Controversial whether outcome can be improved by altering the birth route for preterm breech fetus

B. Risk Assessment Strategies
- Incidence of breech presentation at term, approximately three to four percent
- Ultrasound assessment prior to and/or in early labour
  - rule out footling breech
  - rule out hyperextended head
  - estimate fetal weight
- Documentation of progress of labour with partogram
- Vaginal examination should be performed as soon as possible after spontaneous rupture of membranes to exclude cord prolapse
- Intrapartum fetal monitoring with either intermittent auscultation or continuous electronic fetal monitoring
- Adequate analgesia/anaesthesia to provide for a controlled vaginal delivery
C. Actions to Manage Risks with Breech Delivery

- **Only** those women whose breech is either frank or complete should undergo a trial of labour for vaginal delivery.
- It is reasonable to allow a trial of labour in breech presentation at term in both nulliparas and multiparas.
- In the absence of any other risk factors, maternal age alone should not preclude planned vaginal birth.
- X-ray pelvimetry should not be a prerequisite for planned vaginal birth.
- Trial of labour is reasonable if estimated fetal weight, by clinical or ultrasound assessment, is judged to be less than 4,000 grams, and if there is no hyperextension of the fetal head.
- The presence of medical or obstetrical complications should not preclude a trial of labour unless the complication is likely to lead to mechanical difficulties during delivery.
- Breech presentation alone is not a contraindication to medically indicated induction of labour.
- Careful oxytocin augmentation of labour to correct inadequate uterine activity is reasonable practice, provided that caution is exercised to exclude feto-pelvic disproportion.
- There should be no limit to the duration of the first stage of labour as long as cervical dilatation is proceeding at a rate of at least 0.5 cm per hour after three cm dilatation. Caesarean section is recommended if the breech has not descended to the perineum in the second stage of labour after two hours, in the absence of active pushing, or if vaginal delivery is not imminent after one hour of active pushing.
- Breech presentation, by itself, is not an indication for continuous electronic fetal monitoring, which may be used for the same indications as for cephalic presentations.
- Breech presentation, by itself, is not an indication for, or grounds for withholding epidural anaesthesia.
- Amniotomy may be performed for the same indications as in cephalic presentation.
- Assisted breech delivery is strongly recommended as the delivery method of choice, in association with the use of forceps or Mauriceau-Smellie-Viet manoeuvre for the after-coming head.
- Recognizing that the training experience of many **practising** obstetricians in vaginal breech delivery may be variable, intrapartum consultation with a colleague is encouraged.
- Medical personnel to provide anaesthesia and immediate neonatal care should be available at the time of vaginal breech delivery. Operating room facilities and medical personnel should additionally be readily available should an emergency Caesarean delivery be required.
Because breech presentation situations may require emergency Caesarean delivery or neonatal intensive care, the choice of hospital and delivery mode warrant prospective planning. At lower fetal birth weights or in the presence of known fetal anomalies requiring surgery, the mother should be transferred, if possible, to a suitably equipped and staffed perinatal care centre.

External cephalic version is encouraged for those breech presentations in which no contraindication exists (classical CS scar, placenta praevia, etc.). This should be done at or after 37 weeks, and in the labour/delivery suite or clinical area. Training of obstetric personnel in this procedure should be encouraged. If the mother is Rh negative, Rh prophylaxis should be administered following an external cephalic version.

Whether breech presentation is confirmed prior to or during labour, the exchange of information between obstetrician and family is an integral part of the patient care. During these discussions, obstetricians should inform patients as to which method of delivery is considered to be best on the basis of the clinical situation and the circumstances of support facilities and personnel.

It is generally necessary for the obstetrician to be assisted by at least one other person. To avoid trauma to the neck during delivery, the fetal body should not be elevated above the horizontal plane.

Caesarean extraction in breech presentation requires similar skills to those used in vaginal birth, including avoidance of hyperextension of the fetal head. In the case of a low birth weight fetus, a well developed lower uterine segment is often not present, and a vertical incision may be necessary.

D. Evaluation of Risk Management Activities
- Maternal/perinatal mortality/morbidity committees
- Hospital audits
- Randomized trial comparing a policy of elective caesarean section with a policy of selective vaginal delivery

SUGGESTED READINGS


Identification of Risk

Instrumental delivery carries risk to both mother and infant. There are risks to the use of both forceps and vacuum, and special risks associated with rotational forceps. Because of these recognized risks, the following consequences may ensue:

1. Avoidance of appropriate use of forceps and vacuum due to lack of skill in the operator, or
2. Over-reliance on Caesarean section, which can both decrease and increase risk.

In the first instance, delay in the use of forceps or vacuum, in the face of a birth that requires expediting and where the fetus is in a position for appropriate assisted birth, can increase risk. In the second case, Caesarean morbidity is enhanced and the delay caused by the time necessary to set up a Caesarean section for a birth that might have been expedited by forceps or vacuum may compromise the fetus and increase risk.

Risk Assessment

With forceps and vacuum, risk assessment follows directly from a clear understanding of the indications for assisted vaginal birth. These include:

- Prolonged second stages, although arbitrary definitions should not be used,
- Chronic cardiac or pulmonary maternal states,
- Premature separation of the placenta late in the second stage,
- Fetal distress,
- Maternal exhaustion,
- Weak expulsive uterine contractions, and
- Persistent occiput posterior.

For both forceps and vacuum, safe use requires certain conditions:

- Vertex presentation
- Deeply engaged head
- Complete cervical dilatation
- Membranes ruptured
- Generally, a near-term infant
For forceps to be used, the operator must know position.

A vacuum extraction is possible in the presence of some uncertainty.

Additional fetal indications include failure to rotate (persistent occiput posterior or transverse), and mild degrees of deflexion. It is recommended that physicians should not attempt forceps rotation unless highly skilled in the technique. Vacuum extraction, however, can be used for an unrotated head without actually rotating the infant. Rotation follows with axis traction.

Since the services of a skilled obstetrician can never be guaranteed for forceps or vacuum assisted births or Caesarean section, it is recommended that all family physicians have basic skills in the use of vacuum extraction and outlet forceps. In more isolated areas, family physicians should acquire additional skills in the use of rotational forceps at the mid-pelvis and the necessary backup surgical skills to effect a Caesarean section. This document addresses only basic skills in vacuum and forceps. For more sophisticated and experienced operators, particularly for mid-pelvis manipulation, we recommend that additional training be obtained.

**Actions to Manage Risks**

The principal method of managing the risks of vacuum and forceps is to understand the indications for their use and to appreciate the definitions that will allow for optimal, safe application.

For the use of forceps, it is recommended that physicians not experienced with the use of forceps should limit their use to the outlet. The new definition of outlet forceps requires that the fetal skull has reached the perineum and that the scalp is visible between contractions, and the sagittal suture is in the AP diameter or no more than 45 degrees off the midline. In the absence of this condition, it is safer to use vacuum to bring the fetal skull to the pelvic floor from a low-mid position. If the birth cannot be completed at this point, then outlet forceps delivery using Simpson’s forceps (or its equivalent) can be effected.

Actions to manage risks further include:

- the establishment of appropriate stopping rules;
- a willingness to abandon the procedure;
- the more frequent use of a “double set-up” so that Caesarean section can be easily employed if the assisted birth becomes too difficult; and
- always being prepared for shoulder dystocia, which will be more likely if the operator “tries too hard” to deliver the head, only to get into difficulty with the shoulders.

Specific mnemonics have been developed by the ALSO Course (Advanced Life Support in Obstetrics) to assist in the safe use of vacuum and forceps. The letters A to J signify the elements in the mnemonic.
Vacuum / Forceps Mnemonic

A  Anaesthesia (may not be indicated with vacuum)
B  Bladder empty
C  Cervix dilated?
D  Determine the position and think Dystocia
E  Equipment ready
F  Fontanelle, establish position for the vacuum and apply over the posterior fontanelle; for forceps, the operator is encouraged to carry out a “dry run”
G  Gentle traction along the pelvic axis for vacuum
G  Gentle traction with Pajot’s Manoeuvre for forceps
H  Halt after three disengagements, no progress within three pulls, or over 20 to 30 minutes, or in the presence of scalp trauma (for vacuum)
H  Handle elevated (for forceps)
I  Incision for episiotomy • this may or may not be needed in vacuum or forceps deliveries.
J  Removal of vacuum or forceps on the appearance of the jaw, or ideally well before

For a vacuum procedure, limiting the pressure to 600 mm Hg for the hand vacuum of the Mitivac type will reduce the likelihood of scalp trauma and cephalohaematoma formation.

Position for Safety (PFS)

A final check for forceps application is known in the ALSO course as Position for Safety (PFS).

P • be sure that the posterior fontanelle is no more than one cm anterior to the plane of the shanks • this ensures proper head flexion to position the head at its narrowest diameter. If higher, traction will cause extension of the head.

F • Fenestration • the fenestration in an open fenestrated forceps should be just palpable. The operator should be able to insert barely one finger. If more can be inserted, then the blades are not inserted far enough to be below the malar eminence.

S • Sagittal suture should be in the middle between the shanks.
Evaluation of Risk Management Activity

Childbirth facilities should review the credentials of the medical staff every two to three years to assure that those attending births have maintained their skills in the use of forceps and vacuum. This is most easily accomplished by either taking the ALARM Course, or offering an ALARM course module or equivalent on forceps and vacuum as a regular part of the credentialing process (See Appendix A at the conclusion of this series). Regular retrospective reviews of the use of forceps and vacuum should be undertaken by the hospital Quality Assurance Committee. Documentation of indications/reasons for instrumental delivery is always recommended. The actual technique employed and referenced to station, position, rotation, force used, duration, and relation to contractions should all be meticulously recorded.²

REFERENCES
1. Milne K. The safe and appropriate use of forceps in modern obstetrics. Monograph. Accompanying the monograph is a teaching videotape. Both are endorsed by the SOGC and sponsored by an educational grant from Ortho Pharmaceutical. Part 1 of the monograph and tape is suitable as a basic orientation to forceps. Part 2 is only suitable for those who are more advanced in their level of skill.

SUPPORTING LITERATURE
RISK MANAGEMENT STRATEGIES

INTRAUTERINE GROWTH RESTRICTION (IUGR)

Intrauterine growth restriction complicates about five percent of pregnancies and poses a serious risk for death or damage to the fetus or neonate as a consequence of the placental dysfunction which caused the IUGR. However, with recognition of the disorder, and appropriate and timely management, except for the minority of cases resulting from an intrinsic fetal defect, the outcome will usually be normal.

Maternal
- Risk of hypertension
- Risk of abruption

Fetal
- Risk of stillbirth
- Risk of hypothermia
- Risk of hypoglycaemia
- Risk of fetal anomalies

a) Identification of Risk

- Previous IUGR
- Pregnancy events which could impair placental function including:
  - pre-existing or pregnancy induced hypertension
  - antepartum bleeding, suggestive of abruption
- Uterine size less than dates during antenatal care
- Certain fetal chromosomal anomalies, which are usually of sporadic occurrence.
- Certain viral infections during gestation, which are usually asymptomatic or minimally symptomatic in the mother

b) Risk Assessment

- Past obstetrical history with attention to birth weight for gestational age.
- Maternal history for vascular, cardiac or other disease which could impair placental function.
- Precise and accurate dating in the present pregnancy by:
  - reliable menstrual history and uterine size which agree in early pregnancy, for all women
  - a single ultrasound scan at 18 weeks to confirm the dates for women with increased risk of IUGR
  - or
  - two ultrasound scans at least three weeks apart and preferably each ≤24 weeks if dates are unreliable, or there is dates and uterine size incompatibility.
- Careful serial assessments of uterine size at antenatal visits in all pregnancies.
Ultrasound scan at 32 to 34 weeks for fetal growth in pregnancies with increased risk of IUGR but no signs or symptoms.

Serial ultrasound scans for fetal growth at three to four week intervals beyond 25 weeks gestation with signs or symptoms suggesting increased risk of IUGR.

For IUGR recognised at an early gestational age, and with symmetrical body proportions, get a karyotype by amniocentesis (or by umbilical cord sample if IUGR is diagnosed at a late gestational age and urgent karyotype is needed) and antibody titres for such infectious agents as cytomegalovirus and toxoplasmosis.

Anticipate an increased likelihood of intrapartum fetal distress and of meconium passage and aspiration.

Do a detailed ultrasound scan for anomalies if IUGR is diagnosed.

The neonates are more likely than appropriate weight babies to become hypothermic and hypoglycaemic.

c) Action to Manage Risks with IUGR

When recognized at a gestational age beyond that when there would be a sufficient chance of extrauterine survival to justify intervention for fetal indications, do close serial surveillance of fetal well-being by biophysical profile, or non-stress tests and amniotic fluid volume assessments.

Establish fetal maturity by:
- amniocentesis for L/S ratio if IUGR is suspected late in gestation with uncertain dates, or
- amniocentesis for L/S ratio after 34 weeks if dates are certain and if IUGR was diagnosed early enough
- sure dates \( \geq 37 \) weeks if IUGR was diagnosed late in gestation.

Induce labour after the attainment of fetal pulmonary maturity in severe cases.

Effect delivery promptly if fetal distress occurs after extrauterine viability even if before establishment of maturity.

If an intrinsic fetal defect with severe disability or which is lethal is diagnosed, by karyotype or viral studies or ultrasound scanning, consider, in discussion with the parents, withholding operative intervention for fetal indications.

During labour assess fetal well-being continuously by electronic monitoring.

Artificially rupture the membranes if they have not ruptured spontaneously already, by the latter part of the first stage of labour to determine if there is meconium in the amniotic fluid and be ready for management of the airway of the neonate.

Provide neonatal care with attention to temperature regulation and possible hypoglycaemia.
d) Evaluation

Record for all the low birth weight for gestational age infants born in your institution:
- whether there was antenatal diagnosis or not;
- whether, if diagnosed, appropriate tests for growth, well-being and maturity were done;
- prenatal mortality and morbidity; and
- rate of operative deliveries.
RISK MANAGEMENT STRATEGIES

MULTIPLE GESTATION

A. Identification of Risk

All of the problems of any singleton pregnancy may occur with an increase in the likelihood of severity of many of these. There are some risks unique to multiple gestation.

<table>
<thead>
<tr>
<th>Maternal</th>
<th>Fetal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-eclampsia</td>
<td>Various malpresentations</td>
</tr>
<tr>
<td>Preterm labour</td>
<td>“Locked” twins</td>
</tr>
<tr>
<td>Dystocia or uterine atony</td>
<td>Second twin problems</td>
</tr>
<tr>
<td>Preterm or term prelabour rupture of membranes</td>
<td>Interval between twins</td>
</tr>
<tr>
<td>Polyhydramnios</td>
<td>- malpresentations</td>
</tr>
<tr>
<td>Increased risk of perinatal mortality and morbidity</td>
<td>- cord prolapse</td>
</tr>
<tr>
<td>Uterine atony/postpartum haemorrhage</td>
<td>- abruption</td>
</tr>
<tr>
<td>Postpartum distress and depression</td>
<td>- uterine atony</td>
</tr>
<tr>
<td>IUGR of one or more of the fetuses</td>
<td>Possible twin-to-twin transfusion</td>
</tr>
<tr>
<td>Placental abruption or praevia</td>
<td></td>
</tr>
</tbody>
</table>

Risk Assessment Strategies

Diagnosis Suspected:

- Ovulation induction or assisted reproduction
- Family history
- Uterine size greater than dates
- Hyperemesis gravidarum or early gestation pre-eclampsia
- On “routine” ultrasound scan, if performed

Diagnosis Confirmed: Ultrasound

- Detailed ultrasound scan regarding possible fetal anomalies, and placentation and fetal sex for possible determination of zygosity.
- Serial ultrasound scans at three to four week intervals after 25 weeks for fetal growth assessment and fetal weight estimation.
- Weekly assessment of fetal well-being if IUGR or discordant growth is found, or if there is pre-eclampsia or antepartum bleeding or other significant indication.
- Teach the patient warning signs of preterm labour.
Intrapartum Assessment

- Assessment of lie and presentation of each fetus shortly before term or early in preterm labour, if feasible. Use ultrasound if available. Otherwise, use x-ray, if necessary.
- Continuous assessment of intrapartum well-being of each fetus.

Delivery:

- If first twin cephalic, vaginal, then version if second twin not longitudinal lie, and vaginal delivery.
- If first twin breech, and second cephalic, Caesarean section (to avoid “locked” twins)
- If first twin breech, vaginal delivery if appropriate as if singleton and second as breech or version if not longitudinal lie.
- If first twin transverse, Caesarean section.

C. Actions to Manage Risks Associated with Multiple Gestation

Antepartum Management:

- Inform mother of multiple pregnancy support groups
- More frequent visits - check blood pressure after 24 weeks
- Iron and folic acid supplementation
- With discordant growth (≥ 25 percent difference in estimated weights) do frequent assessments of fetal well-being (eg weekly biophysical profile)
- Routine bed rest, prophylactic cerclage and prophylactic D-mimetic drugs do not prolong gestation
- Test fetal maturity (particularly of larger twin) by amniocentesis if there is growth discordancy or hypertension and delivery is an option of treatment
- Effect delivery if growth discordancy is severe, if fetal maturity or if fetal distress at ≥ 26 weeks.
- Use glucocorticoids at ≤ 34 weeks for preterm labour or preterm prelabour ruptured membranes.
- Use β-mimetic tocolysis’ to achieve 24 to 48 hour delay for steroids and/or for maternal transport before threatened preterm delivery, if feasible.
- Select a hospital with appropriate facilities and staff for immediate care of the mother and fetuses at the time of delivery, and on-going care of the neonates. Transport mother, if feasible and indicated, to deliver in appropriate hospital
**Intrapartum Management:**

- Select for route of delivery by lie and presentation of fetuses with twin gestation
- Usually deliver triplets and above at ≥ 26 weeks by Caesarean section
- Have I.V. in place in labour
- Have blood held for cross-matching
- Monitor both twins continuously
- Epidural analgesia is advantageous
- Use oxytocin infusion before first delivery and/or between twins for hypotonic contractions.
- Deliver with facility ready for a Caesarean Section

**Postpartum Management:**

- Actively manage if the third stage of labour by oxytocin infusion
- Extra support with babies
- Renew contact with multiple pregnancy support group

**D. Evaluation of Risk Management Activities**

Regularly review all multiple gestations for:
- the gestational age and method of delivery
- occurrence and recognition or not of discordant growth
- route and appropriateness of route of delivery
- perinatal mortality and significant morbidity

**REFERENCES**

RISK MANAGEMENT STRATEGIES

POST-TERM PREGNANCY

A. Identification of Risk

For low-risk women, the risk of adverse perinatal events beyond 41 weeks gestation is one to 1.5 percent. True postdatism has become a rare occurrence due to the common practice of pregnancy dating by routine early ultrasound.

There are several maternal and fetal conditions that worsen the outcome:

**Maternal**
- Pregnancy induced hypertension
- Antepartum haemorrhage
- Diabetes

**Fetal**
- Large and small for gestational age
- Decreased amniotic fluid volume
- Variable decelerations on non-stress test (NST)
- Meconium stained amniotic fluid

The maternal factors act by producing placental insufficiency and result in an increased risk of stillbirths and **intrapartum** morbidity.

B. Risk Assessment Strategies

Accurate gestational age dating is the hallmark of making the diagnosis of post-term pregnancy. Ultrasound prior to 24 weeks gestation using a composite of three biometric parameters (e.g. Biparietal diameter, femur length and abdominal circumference) is the most widely used standard. Once accurate dates have been established, patients with the maternal or fetal problems noted above should be prioritized for **urgent induction** because of their increased risk. For the low risk woman with an unfavourable cervix, two equally acceptable therapeutic options are available. The conservative approach which involves **twice** weekly fetal surveillance for amniotic fluid and heart rate evaluation has the theoretical potential for deterioration of fetal health. The outcome is not clinically significantly different from the option of cervical ripening and **labour** induction. When the cervix is favourable in low risk women, **labour** induction is the logical recommended approach. (Figure I)
C. Actions to Manage Risks Associated with Post-Term Pregnancies

The approach outlined is anticipatory and assumes that whenever necessary the appropriate consultation will be obtained. The following issues should be considered:

(i) Fetal monitoring in order to identify evidence of significant cord compression early in labour.

(ii) Management of the increased risk of meconium stained amniotic fluid associated with post-term gestation.

Amnio infusion may be appropriate for both thick meconium passage and severe cord compression in early labour. A protocol to reduce the risk of meconium aspiration at the time of delivery should be in place.

(iii) The increased possibility of fetal macrosomia in the post-term gestation may lead to an increased risk for dystocia in labour and shoulder dystocia in the second stage of labour.

The appropriate protocols should be available for either of these problems.

D. Evaluation of Risk Management Strategies

The statistical information necessary to monitor these risk management strategies will include the following as they relate to post-term pregnancies:

Induction rates, stillbirth rates, fetal distress rates, Caesarean Section rates, morbidity rates, (e.g. low cord pH, low 5 min Apgar, fetal trauma associated with shoulder dystocia) meconium presence and meconium aspiration rates.

This data will allow a unit to assess the effects of various approaches on fetal outcome.

SUPPORTING LITERATURE


Postterm Risk Assessment

Forty-one weeks gestation

Risk assessment for prioritization

Size: LGA or SGA
P.I.H.
A.P.H.
Diabetes
Amniotic fluid volume
Variable decelerations

Low risk

Increased

Cervical evaluation

Urgent induction

Favorable

Induce

Unfavorable

Induce

Counsel (sweeping membranes)

Delayed induction +

Ripening/induction
RISK MANAGEMENT STRATEGIES

PREGNANCY INDUCED HYPERTENSION

A. Identification of Risk

Maternal
- Increased morbidity associated with elevation in blood pressure, coagulation abnormalities, abruptio placentae, convulsions, cerebral haemorrhage, and renal failure.

Fetal
- Increased morbidity/mortality associated with stillbirth, intrauterine growth restriction, and prematurity.

B. Risk Assessment Strategies

- Incidence of pregnancy induced hypertension (PIH) is estimated at approximately ten percent; increased incidence in primigravida, patients with large hydatidiform mole, fetal hydrops, multiple gestation, diabetes, collagen vascular disorder, chronic hypertension and a family history of hypertension;
- Transient hypertension may be a manifestation of latent essential hypertension brought to light by pregnancy and has a high rate of recurrence in later pregnancies;
- High risk patients with normal blood pressure should have baseline data obtained in early pregnancy, including CBC, BUN and creatinine levels, ± 24 hour urine for protein measurement, and a 16 week obstetrical ultrasound for pregnancy dating; and
- Pregnant women with pre-existing or early gestational hypertension are more apt to have underlying disease processes with further evaluation warranted if suspected.

C. Actions to Manage Risks with Pregnancy Induced Hypertension

Mild PIH and Immature Fetus: (BP >140/90 or systolic BP increases of 30 mmHg or greater or diastolic BP increases of 15 mmHg or greater from early pregnancy values, 24 hour urine protein <1 g, liver enzymes and platelets values normal)

Expectant Therapy

a) Outpatient management with frequent clinic visits and/or home care assessments OR Hospitalization to monitor blood pressure (BP) and urine protein levels
b) Fetal surveillance (fetal movement counts, nonstress tests, biophysical profile, ultrasound assessment of growth)
c) Limited physical activity
d) Antihypertensive medications if BP >145-150/95-100 (α-methyldopa, P-blocking agents, calcium channel antagonists)
• Mild PIH and Mature Fetus:
  A patient is considered a candidate for induction of labour if 37 weeks of gestation is reached and the condition of the cervix is favourable. Patients may be followed beyond 37 weeks of gestation if fetal evaluation is normal and the condition of the cervix remains unfavourable. Individualized treatment is necessary.

• Severe PIH and Immature Fetus: (BP > 160/110, and/or 24 hour urine protein > 3 g, and/or liver enzymes and platelets abnormal and/or oliguria and/or cerebral or visual disturbances)
  Expectant Therapy versus Definitive Therapy is controversial. Patients with severe PIH may be candidates for conservative management with close maternal and fetal surveillance until 34 weeks of gestation. Indications for expedited delivery include uncontrolled severe hypertension (BP > 160/110 despite maximum recommended doses of two antihypertensive medications), eclampsia, platelet count < 100,000/μl, liver enzymes > 2 times upper limit of normal, pulmonary edema, compromised renal function, persistent cerebral or visual disturbances, fetal distress, ultrasound-estimated fetal weight < fifth percentile, reverse umbilical artery diastolic flow.
  **These patients should only be managed in a tertiary care perinatal centre**

• Epidural analgesia does carry the risk of sympatholysis with decreased cardiac output, hypotension and impairment of already compromised uteroplacental function. This problem can be avoided by meticulous attention to anaesthetic technique and volume expansion.

• In gestation remote from term in which delivery is indicated, but fetal and maternal conditions are stable enough to permit pregnancy to be prolonged 36 hours, glucocorticoids can be administered safely to accelerate fetal pulmonary maturity.

• Severe PIH and Mature Fetus: (BP > 160/110, and/or 24 hour urine protein > 3 g, and/or liver enzymes and platelets levels abnormal and/or oliguria and/or cerebral or visual disturbances)
  Definitive Therapy
  a)  CNS reflex monitoring
  b)  BP monitoring ± pulmonary artery catheterization and/or peripheral artery catheterization
  c)  Urine output monitoring
  d)  Blood work for CBC, liver function tests, BUN and creatinine values
  e)  Fetal surveillance (intrapartum fetal heart rate monitoring)

  Invasive arterial monitoring may be indicated in patients with pulmonary edema or persistent oliguria. The decision to use such monitoring should include an assessment of the expertise and availability of properly trained medical personnel and nursing support staff.
• Significant proteinuria, abnormal liver enzymes and platelets levels, oliguria and cerebral or visual disturbances may occur when the blood pressure is only mildly increased

f) Anticonvulsive medications (Mg SO₄, phenytoin)

g) Antihypertensive medications if BP >160/110 (hydralazine, calcium channel antagonists)

h) Deliver by vaginal or Caesarean birth, depending upon fetal and maternal conditions

• Hypertension may be exacerbated and the risk of pulmonary edema increased as the result of vigorous fluid therapy administered in an attempt to expand the contracted blood volume

• Maternal thrombocytopenia is not an indication for Caesarean delivery

D. Evaluation of Risk Management Activities

- Maternal/perinatal mortality/morbidity committees
- Hospital audits

SUGGESTED READINGS


RISK MANAGEMENT STRATEGIES,

PRETERM LABOUR AND PRETERM RUPTURE OF MEMBRANES

A. Identification of Risk

Preterm birth accounts for 75 to 85 percent of perinatal morbidity and mortality not due to congenital anomalies. Nearly one-half of all preterm births are preceded by preterm rupture of the membranes (PROM).

Maternal

- Increased risk of infection
- Increased risk of morbidity associated with increased risk of Caesarean section

Fetal

- Respiratory Distress Syndrome
- Necrotizing enterocolitis
- Intraventricular haemorrhage
- Sepsis
- Hypoglycaemia
- Hypocalcemia
- Patent Ductus Arteriosus

B. Risk Assessment Strategies

1. Past History
   - Previous preterm delivery (30 percent chance of recurrence)
   - Second trimester losses
   - Habitual abortions
   - Uterine anomalies
   - Conization of cervix
   - Smoking

2. Antepartum
   - Twins, triplets (30 percent chance of premature delivery)
   - Preterm rupture of membranes
   - Polyhydramnios
   - Antepartum haemorrhage
   - Intra-abdominal surgery
   - Urinary tract infection
   - Cocaine use
   - Tobacco use
Serious maternal infection
- Physical/emotional trauma
- Stress
- Employment
- Social support

3. Suggestive Early Symptoms and Signs
- Low abdominal pain and/or cramps
- Low backache
- Pelvic pressure
- Increased vaginal discharge
- Bleeding/spotting/show

4. Definitive Signs
- Detectable uterine contractions, six+/hour
- Cervical changes - shortening
t- dilatation
- Ruptured membranes

5. Assessment
- Accuracy of gestational age
- Contractions: intensity, frequency; duration
- Maternal vital signs, fetal assessment
  - Sterile speculum examination
    - for cervical-vaginal culture
    - to determine if membranes are ruptured
  - Consider vaginal-rectal culture if suspect beta-haemolytic streptococci
  - Perform ultrasound to determine gestational age and size
    - amount of amniotic fluid
    - any congenital anomalies
    - placental site/abnormalities
    - length and dilatation of cervix
  - Consider amniocentesis for fetal age
  - CBC/urinalysis

C. Actions to Manage Risks Associated with Preterm Labour/PROM

1. Preventive Measures For Patients At High Risk
   - Education of patient to recognize early signs (see below)
   - In high risk patients consider cervical examination every two weeks from 20 weeks onward
   - Identify risk for drug and/or tobacco use
- Education/support of patients with a view to cessation of drug or tobacco use
- Increase the number of prenatal visits
- Increase bed rest (e.g. several hours during the day at 24 weeks of gestation)
- If indicated, cervical cerclage at 12 to 16 weeks
- Obtain cervical culture for streptococcus, gonococcus, etc.
- Perform an early ultrasound to confirm dates at approximately 16 to 18 weeks
- Consider home uterine monitoring

2. Treatment
   - Bed rest in lateral or semi-Fowler position
   - IV hydration: 500 mls normal saline over 30 minutes, then 2/3/3 solution at 100 mls/hour
   - Using electronic monitor, assess fetal heart rate and contraction frequency with tocodynamometer for at least 60 minutes

a) If no contractions clinically or with monitoring and cervix not dilating and/or shortening:
   - Assess fetal heart and contraction frequency once per shift and if uterine irritability felt by patient
   - Patient education regarding signs of preterm labour

b) If contractions detected clinically or with monitoring and/or evidence of cervical change:
   - Monitor fetal heart and uterine contractions as indicated to assess for preterm labour
   - Consider maternal/fetal transport - discussion with and/or transport to referral centre
   - Consider tocolysis: Fluid load, Magnesium Sulphate, Ritodrine
   - Consider the use of steroids to enhance fetal lung maturation if < 34 weeks gestation. (Betamethasone or dexamethasone 12 mgms, two doses at 12 or 24 hour intervals)

D. Evaluation of Risk Management Activities

An annual review of the preterm deliveries/PROM should be presented to the Labour and Delivery Management Committee.

Adapted from the British Columbia Reproductive Care Program - Guideline 2.
SUGGESTED READINGS


RISK MANAGEMENT STRATEGIES

SHOULDER DYSTOCIA

Identification of Risk

Shoulder dystocia occurs in a vaginal delivery in which the shoulders require a specific manoeuvre, because downward head traction is not sufficient to complete the delivery. The principal risks are to the fetus and include brachial plexus injuries, spinal cord injuries, hypoxic events, and fetal death. Maternal risks include the development of uterine atony and rupture, haemorrhage, and lacerations. The major concern, however, relates to brain damage in the infant and neuro-developmental compromise.

Risk Assessment

Shoulder Dystocia represents an obstetric emergency that is uncommon and not predictable, but which requires urgent action to correct when it occurs. The principal risk factor is fetal size with the incidence rising from 0.2 percent for babies less than 3500 g to 10.8 percent for babies larger than 4500 g, but the majority of fetal dystocia occurs in average to normal size babies and 50 percent is associated with no identifiable risk factors. It is necessary for anyone delivering babies to be ready to manage this emergency.

Actions to Manage Risks

The principal method of managing risk is to anticipate an increased likelihood of shoulder dystocia (in those cases where anticipation is possible) and to assemble help in advance. Whether help is assembled in advance or not, the main risk reduction comes from the development of an institutional protocol based on learned and repeatedly practised skills. These skills follow an orderly sequence which can be learned and practised by those normally present at any birth, i.e., nurses, family physicians, midwives, obstetricians. There are at least two mnemonic tools that have been designed for this purpose, the most commonly used one is known as the HELPER mnemonic. This was developed by the American Academy of Family Physicians and is part of the ALSO course (Advance Life Support in Obstetrics).

<table>
<thead>
<tr>
<th>H - Call for help</th>
</tr>
</thead>
<tbody>
<tr>
<td>E - Episiotomy</td>
</tr>
<tr>
<td>L - Legs hyperflexed (McRobert's manoeuvre)</td>
</tr>
<tr>
<td>P - Pressure supra-pubically</td>
</tr>
<tr>
<td>E - Enter the vagina posteriorly to apply various rotational manoeuvres</td>
</tr>
<tr>
<td>R - Remove the posterior arm</td>
</tr>
</tbody>
</table>

59
Although it is impossible to anticipate many shoulder dystocias, obvious high risk situations require that help be assembled for very large babies, previous shoulder dystocia, and moderate to severe gestational diabetes.

Other more intrusive manoeuvres include fracturing the baby’s clavicles, pushing the head back up and performing a Caesarean section (Zavanelli manoeuvre), and symphysiotomy. These manoeuvres are rarely applied and almost never indicated. A much-neglected manoeuvre is to move the patient from a dorsal position to the all-fours position, which often mobilizes the S.I. joints and resolves the problem.

**An effective McRobert's manoeuvre will resolve 80 percent of shoulder dystocias.**

A more recent approach is described by the SLEEP mnemonic:

<table>
<thead>
<tr>
<th>S - Shout for help</th>
</tr>
</thead>
<tbody>
<tr>
<td>L - Legs <strong>hyperflexed</strong></td>
</tr>
<tr>
<td>E - External suprapubic pressure</td>
</tr>
<tr>
<td>E - Enter vagina to perform the rotational manoeuvres</td>
</tr>
<tr>
<td>P - Posterior arm removal</td>
</tr>
</tbody>
</table>

Absent from this mnemonic is the E for Episiotomy, since episiotomy is a posterior procedure and shoulder dystocia is an anterior phenomenon. Episiotomy is indicated to facilitate entry for posterior manoeuvres.

The principal risk management exercise is to adopt one of these protocols and have an institutional approach to staff development and shoulder dystocia management. Ideally, every facility responsible for childbirth will **practise** these rescue manoeuvres and “certify” those attending births in a manner analogous to ACLS. Making periodic “certification” in shoulder dystocia a condition for continued membership in the medical/nursing staff might be an advisable strategy.

**Pseudo or Iatrogenic Shoulder Dystocia**

**Many cases** of shoulder dystocia result, not from true impaction of the anterior shoulder, but because of such faulty basic technique as poor position and not allowing time for restitution and external rotation before trying to effect delivery. Only after this has occurred should downward traction (if necessary) be applied to enable the anterior shoulder to emerge under the symphysis pubis. Some advocate rotation of the anterior shoulder to the oblique position (by pressure from behind the anterior shoulder) on virtually every delivery, as a means of both avoiding shoulder dystocia and treating it. Ability to perform this manoeuvre through regular use will enhance skill acquisition so that the operator will be more accomplished in the treatment of true shoulder dystocia.
Evaluation of Risk Management Activity

Childbirth facilities should review the credentials of the medical nursing staff at least every two to three years to assure that those attending births have indeed completed the necessary shoulder dystocia module and updated their skills every two to three years. The accomplishment of this task should be monitored by the hospital Quality Assurance Committee. Periodic reviews of actual shoulder dystocia and its management should be a part of quality assurance and retrospective reviews.

SUPPORTING LITERATURE

RISK MANAGEMENT STRATEGIES

VAGINAL BIRTH AFTER CAESAREAN SECTION (VBAC)

A. Identification of Risk

Significant compromise is associated with uterine rupture

<table>
<thead>
<tr>
<th>Maternal</th>
<th>Fetal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical emergency</td>
<td>Morbidity</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>Mortality</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td></td>
</tr>
<tr>
<td>Intensive care unit</td>
<td></td>
</tr>
<tr>
<td>Death</td>
<td></td>
</tr>
</tbody>
</table>

- Usually an intrapartum problem

B. Risk Assessment Strategies

- History: rule out classical or inverted T incision
- Hysterotomy, unknown incision
  Previous uterine rupture, placenta praevia
  Transverse lie
- Spontaneous labour is different from induced labour
- Oxytocin induction confers a slightly higher dehiscence and rupture rate (1.8% dehiscence and < 0.5% rupture) - McKenzie
- Oxytocin augmentation, especially in the active phase or second stage, is of significant risk as its requirements signifies an arrest
- Prostaglandin gel for induction - intravaginally only as it is potentially removable
- More than one previous Caesarean section confers a slightly higher scar dehiscence rate (2%) but is still acceptable.
- Monitoring the progress of labour carefully
- Sudden bradycardia indicates uterine rupture

C. Actions to Manage Risks Associated with VBAC

1. It is the responsibility of the attending physician to record on the prenatal record the nature of the previous scar as reviewed from previous surgical records.
2. Oxytocin protocol for use in VBAC should differ from regular oxytocin usage, which requires cautious and judicious use.
3. Evaluation of scar tenderness and a high index of suspicion are necessary when oxytocin is being used.
4. Patient should be informed that oxytocin confers a higher risk and consent should be obtained in this situation.
5. Intracervical prostin should not be used.
6. Repeat doses of prostaglandin or oxytocin use following prostaglandin require judicious care.
7. The dosage of prostaglandin used vaginally will be one mg.
8. Electronic fetal monitoring is the preferred method of surveillance of these patients.

D. Evaluation of Risk Management Activities

An annual review of complications associated with VBAC should be presented to the Labour & Delivery Management Committee.
APPENDIX A

ALARM - ADVANCED LABOUR AND RISK MANAGEMENT COURSE

The Risk Management Subcommittee recommended that a practicum course such as the ALSO Course (Advanced Life Support in Obstetrics) be attended by those involved in labour and delivery. The SOGC formed a national expert group of obstetricians and family physicians to develop a two-day Canadian course (entitled the ALARM Course) along the lines of the ALSO course which is held under the auspices of the American Academy of Family Practice and was developed by the Department of Family Medicine and Practice and the Department of Obstetrics and Gynaecology, University of Wisconsin, Madison, Wisconsin.

The ALARM course (Advanced Labour and Risk Management) is offered throughout Canada under the direction of qualified course instructors with assistance from a local obstetrical and family practice faculty. Half the faculty is composed of obstetricians while the other half is composed of family physicians.

- This practicum course is designed to help health professionals develop and maintain the knowledge and skills they will need to manage effectively the emergencies that may arise in obstetrics.

- The course includes required syllabus reading, lectures and hands-on workshops. Evaluation consists of a written objective examination on content and of skill assessment stations. A certificate is issued upon successful completion of the course.

- Issues relevant to a risk management programme for perinatal asphyxia include:

  - Who should deliver and where?
  - Preterm labour and rupture of membranes
  - The management of dystocia and the use of oxytocin in labour
  - Malpresentations, malpositions and multiple gestation
  - Shoulder dystocia
  - Neonatal resuscitation
  - Forceps and vacuum extraction
  - Intrapartum electronic fetal heart rate monitoring
  - Hypertension in pregnancy/pre-eclampsia/eclampsia
  - Obstetrical risk management
  - Cerebral palsy and asphyxia

- While the content and teaching in this course are directed primarily at physicians and other clinicians practising in settings lacking immediate high risk perinatal services, it is probable that learners in many different settings can profit from the cognitive and procedural review provided by this course.
# ALARM COURSE

## DAILY AGENDA - DAY ONE

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION TITLE</th>
<th>SESSION CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>7h30-8h55</td>
<td>Registration &amp; Continental Breakfast</td>
<td></td>
</tr>
<tr>
<td>8h00-8h15</td>
<td>Welcome and Course Description</td>
<td>-course development&lt;br&gt;-course organization&lt;br&gt;-data sources&lt;br&gt;-generic odds ratio</td>
</tr>
<tr>
<td>8h15-8h30</td>
<td>Communication and Consultation in Obstetrics</td>
<td>-what do referring doctors expect of consultants?&lt;br&gt;-what do consultants expect?&lt;br&gt;-how do we say it - ICD - 10 revisions</td>
</tr>
<tr>
<td>8h30-9h05</td>
<td>Management of Labour</td>
<td>Reducing Dystocia&lt;br&gt;-ambulation&lt;br&gt;-a companion&lt;br&gt;-active management&lt;br&gt;-analgesia</td>
</tr>
<tr>
<td>9h05-9h50</td>
<td>Fetal Well-Being in Labour</td>
<td>-Risk Factors&lt;br&gt;-Mechanism of fetal injury&lt;br&gt;-EFM or auscultation (IA)?&lt;br&gt;-Abnormalities with EFM or IA&lt;br&gt;-Management</td>
</tr>
<tr>
<td>9h50-10h10</td>
<td>Nutrition Break</td>
<td></td>
</tr>
<tr>
<td>10h10-10h40</td>
<td>Induction of Labour</td>
<td>-Indications:&lt;br&gt;-including post term&lt;br&gt;-methods&lt;br&gt;-best choice</td>
</tr>
<tr>
<td>10h40-11h25</td>
<td>Assisted Vaginal Birth</td>
<td>-Forceps&lt;br&gt;-Vacuum</td>
</tr>
<tr>
<td>11h30-12h30</td>
<td>Workshops: a) Fetal Well-Being in Labour and Scalp Sampling Amnio-infusion</td>
<td>Case studies and auscultation tapes, scalp sampling&lt;br&gt;Case studies/cord prolapse</td>
</tr>
<tr>
<td></td>
<td>b) Progress in Labour</td>
<td>Hands-on use of models&lt;br&gt;Hands-on use of models</td>
</tr>
<tr>
<td>12h30-13h30</td>
<td>Lunch (Breech Video)</td>
<td></td>
</tr>
<tr>
<td>TIME</td>
<td>SESSION TITLE</td>
<td>SESSION CONTENT</td>
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</tr>
<tr>
<td>13h30-14h30</td>
<td>Workshops:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Fetal Well-Being in Labour and Scalp Sampling Amnio-infusion</td>
<td>Case studies and auscultation tapes, scalp sampling</td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>b) Progress in Labour</td>
<td></td>
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<tr>
<td></td>
<td>C1) Assisted Vaginal Birth-Low Forceps/Vacuum</td>
<td>Case studies/cord prolapse</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>C2) Assisted Vaginal Birth-Mid Forceps</td>
<td>Hands-on use of models</td>
</tr>
<tr>
<td>14h40-1540</td>
<td>Workshops:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>a) Fetal Well-Being in Labour and Scalp Sampling Amnio-infusion</td>
<td>Case studies and auscultation tapes, scalp sampling</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>b) Progress in Labour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>C1) Assisted Vaginal Birth-Low Forceps/Vacuum</td>
<td>Case studies/cord prolapse</td>
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<tr>
<td></td>
<td>C2) Assisted Vaginal Birth-Mid Forceps</td>
<td>Hands-on use of models</td>
</tr>
<tr>
<td>15h40-16h00</td>
<td>Nutrition Break</td>
<td></td>
</tr>
<tr>
<td>16h00-16h30</td>
<td>Quick Topics:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-VBAC</td>
<td></td>
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<tr>
<td></td>
<td>-Group B Strep</td>
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<tr>
<td></td>
<td>-PROM, Term &amp; Pre-term</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Thromboembolism</td>
<td></td>
</tr>
<tr>
<td>16h130-17h00</td>
<td>Cerebral Palsy and Asphyxia</td>
<td>-Biology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Proportion with intrapartum</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Definitions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Legal issues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-Attendance at Labour</td>
</tr>
<tr>
<td>17h00-17h15</td>
<td>Questions and Answers</td>
<td>-All First Day Topics</td>
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</table>
## DAILY AGENDA - DAY TWO

<table>
<thead>
<tr>
<th>TIME</th>
<th>SESSION TITLE</th>
<th>SESSION CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>7h30-7h50</td>
<td>Continental Breakfast</td>
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</tr>
<tr>
<td>7h55-8h00</td>
<td>Welcome and Housekeeping</td>
<td></td>
</tr>
<tr>
<td>8h00-8h20</td>
<td>Severe Preeclampsia / Eclampsia</td>
<td>- Diagnosis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Antepartum Diagnosis &amp; Criteria for severity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Maternal Stabilization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Management</td>
</tr>
<tr>
<td>8h20-8h40</td>
<td>Preterm Labour</td>
<td>- Diagnosis</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Transport</td>
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<tr>
<td></td>
<td></td>
<td>- Tocolytics- what type, for what reason</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Steroids</td>
</tr>
<tr>
<td>8h40-9h00</td>
<td>Third Trimester Bleeding</td>
<td>- Abruptio, previa</td>
</tr>
<tr>
<td>9h00-9h20</td>
<td>Postpartum Haemorrhage</td>
<td>- Uterine atony</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Inversion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Repair of episiotomies / lacerations</td>
</tr>
<tr>
<td>9h20-9h40</td>
<td>Bad News in the Birthing Room</td>
<td>- Perinatal death and anomalies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Communications with mother and family</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Care of ourselves</td>
</tr>
<tr>
<td>9h40-9h55</td>
<td>Nutrition Break</td>
<td></td>
</tr>
<tr>
<td>9h55-10h35</td>
<td>Quick Topics</td>
<td>- Delivery of breech</td>
</tr>
<tr>
<td></td>
<td>- Risk Reduction</td>
<td>- External version</td>
</tr>
<tr>
<td></td>
<td>- Breech</td>
<td>- Delivery of twins</td>
</tr>
<tr>
<td></td>
<td>- External Twins</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Twins</td>
<td></td>
</tr>
<tr>
<td>10h35-10h55</td>
<td>Analgesia for Labour</td>
<td>- Non-pharmacologic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Pharmacologic</td>
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<tr>
<td></td>
<td></td>
<td>- Including pudendal blocks</td>
</tr>
<tr>
<td>10h55-11h10</td>
<td>Shoulder Dystocia</td>
<td></td>
</tr>
<tr>
<td>11h10-12h30</td>
<td>Workshops:</td>
<td>4 simultaneous workshops of the topics listed to the left.</td>
</tr>
<tr>
<td></td>
<td>a) Shoulder Dystocia</td>
<td>Allow for Review of any topic from the entire course. Obsetricians with Obstetricians and Family Physicians are with Family Physicians</td>
</tr>
<tr>
<td></td>
<td>b) Breech</td>
<td></td>
</tr>
<tr>
<td></td>
<td>c) Pudendal Block</td>
<td></td>
</tr>
<tr>
<td>12h30-13h30</td>
<td>Lunch</td>
<td></td>
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<tr>
<td>TIME</td>
<td>SESSION TITLE</td>
<td>SESSION CONTENT</td>
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</tbody>
</table>
| 13h30-17h00 | Evaluation of Registrants | - Written Examination  
- Skills Assessment Stations  
(Four OSCE stations set up with emergency cases and two examiners per station and have set time frame. The participants inform the examiner how they would manage the emergency verbally and through their physical actions, including diagnosis, tests they would order etc.) |
APPENDIX B

CRITERIA FOR OBSTETRIC ADVERSE OUTCOMES REGISTER
(example provided by the Ottawa General Hospital)

From Labour & Delivery Committee

Fetal

Stillbirth
Neonatal death
Meconium aspiration syndrome
Cord pH < 7.15
5 min. Apgar of 5 or less
Significant neonatal trauma
Neonatal seizures

Maternal

Eclampsia
Postpartum haemorrhage requiring blood transfusion
Postpartum hysterectomy
Maternal death
Unplanned removal, injury or repair of organ during operative procedure, or incorrect swab or instrument count
Admission or readmission to adult intensive care unit (for any reason)
Maternal length of stay more than four days after vaginal delivery or more than 5 days after a Caesarean section
Level 3 medication error

Any other adverse incident relating to mother or neonate reported by a nurse or a physician.
APPENDIX C

ATTENDANCE AT LABOUR AND DELIVERY

GUIDELINES FOR PHYSICIANS’

This Policy Statement has been prepared by the Executive Committee of the Society of Obstetricians and Gynaecologists of Canada and approved by its Council in March 1995.

This document has been amended in March 1996 and therefore supersedes the version published in the August 1995 issue of the SOGC Journal (J SOGC 1995; 17(80): 787-8).

PREAMBLE

Recognizing that different hospitals deal with labouring women with problems of varying complexity, and that the availability of physicians in a given hospital is related to overall manpower, these guidelines may be adopted or modified to the given circumstances of an institution.

Personal attendance by a physician for the delivery and for prompt review of any problem during labour is the ideal. In Level III institutions, the presence of in-house physicians who are capable of dealing with problems, including the performance of Caesarean Sections, is the most advisable arrangement. It should be recognized that it is not possible to predict all emergencies and even when a physician is physically present the outcome will not always be guaranteed.

In Level I and Level II hospitals or birthing units, the attending physician must take into account the risk of each individual patient, the course of her labour and the number of patients in labour. Physicians should use this information to make a judgement as to whether or not they need to be immediately available in the hospital. Physicians covering obstetrics when summoned should be available to the labour and delivery suite within approximately 30 minutes. Physicians should communicate, to their patients, their availability and discuss their coverage by other physicians. The importance of both personalized care as well as readily available care in the case of an emergency is stressed.

The SOGC recognizes that in many rural or remote areas “low risk” deliveries are performed with Caesarean Section capabilities available only by emergency transfer to another institution. In these remote areas, the standard of physician availability has to be decided locally. Prompt attendance to problems as well as immediate transfer protocols for high risk cases should be adopted. A clear policy should be established and known to physicians, professional care givers, and the general public.

The following points highlight the factors most crucial to the successful care of a patient during labour or delivery.

1. Timely attendance by a physician.
2. The presence of antenatal risk factors be reviewed at the onset of labour. Intrapartum risk factors should be assessed on an ongoing basis and changes attended to appropriately.
3. When participating in a call system the replacing physician should be of similar training and informed of all facts pertaining to a case when care is transferred.
5. The indication/s for any intervention is/are convincing, compelling, and documented at the time of the event/s. In the event of a forceps or vacuum delivery, the SOGC recommends adherence to acceptable definitions of low or mid-forceps, as outlined in the SOGC guidelines on forceps.

6. Documentation of all aspects of labour is clear, contemporaneous and consistent amongst all involved health care providers.

7. Progress of the labour emerges clearly from the documentation.

8. Monitoring of fetal heart, by auscultation or electronically, should be performed according to approved standards and interpreted consistently (SOGC Guidelines on Fetal Health Surveillance • June 1995).

9. For delivery by mid-forceps, breech vaginal delivery, and multiple pregnancies, Caesarean section should be immediately available. Immediate availability means the presence in the hospital of an anaesthetist and nursing staff trained in Caesarean sections. A note should be dictated describing all operative delivery and complicated labour and delivery events.

10. Cord blood sample for blood gas analysis, at time of delivery, should be routinely obtained.

TIME AVAILABILITY

Level I hospitals - A physician must be available for the labour and delivery room on short notice (approximately 30 to 45 minutes) and must be prepared to respond promptly to requests from hospital staff.

Level II hospitals- A physician should be available for the labour and delivery room on short notice (approximately 30 minutes) and must be prepared to respond promptly to requests from hospital staff.

Level III hospitals* Continuous presence of an obstetrician on site for women in active labour.

* Tertiary units, particularly those in some smaller centres, may find it necessary to amend this provision because of physician resource concerns. This is appropriate provided obstetricians are continuously available in a timely fashion and able to respond promptly to all requests from hospital staff. (Addendum - March 1996)

CONCLUSION

In general, Governments must provide adequate physician and financial resources to ensure these standards of care while at the same time preserving acceptable individual hours on call duty per week.

DEFINITIONS

Level I Community or rural hospital that handles normal “low-risk” deliveries.

Level II Community or regional hospital that handles normal and high risk deliveries. Obstetrics-gynaecology and pediatrics specialists available.

Level III Tertiary hospital for normal and high-risk deliveries, with perinatal and neonatal specialists available. This hospital generally is the referral centre for Level I and II hospitals.

REFERENCES

APPENDIX D

STRATEGY TO MANAGE

Standard risk management strategies, the avoidance, transfer, prevention of risk and the reduction and segregation of losses, are as applicable to health care facilities as they are to industrial, commercial, recreational and human service organizations. Similarly, it is important that actions to manage always include a strategy from both pockets, that is from risk or loss control as well as from risk financing.

When a department, programme or a risk management committee is concerned with a particular risk it should use a standard set of questions.

With respect to this identified risk

i. Which strategy (or strategies), if any, is (are) being employed to manage this type of risk?

ii. What effects, if any, has it achieved?

iii. Can it be applied better or differently to achieve an improved result?

iv. What other strategies are there that could possibly address this risk?

v. Is the severity (cost x frequency) of the risk such that it warrants the application of a more expensive or radical strategy?

Another set of questions could also be used:

i. Is it essential that the facility/department carries out the function in which the losses are occurring? (Avoidance)

ii. Is there any other agency which could ‘carry out the function on our behalf? (Referral)

iii. Can the method be, changed, so as to lessen the risk or increase the protection?

iv. What procedures/supports can be put in place in case an incident occurs in the course of this function? (Loss Reduction)

v. Are there ways of isolating or backing up elements of the function or system, so that one malfunction does not put the entire system out of commission? (Segregation of Loss)

* based on information provided by the CHA.
111. SUMMARY OF FINAL RECOMMENDATIONS

RECOMMENDATIONS OF THE MEDICO-LEGAL SUBCOMMITTEE

1. That there be a wider use of structured settlements because they guarantee fair returns to the plaintiff and are less costly to society.

2. That the document produced by the SOGC entitled “The Expert Witness” be made available to all interested organizations dealing with the issue of offering expert advice in medico-legal areas.

3. That clinical practice guidelines be developed and updated periodically; a decision tree format that offers suggestions rather than recommendations would be most useful.

4. That there be ongoing review and updating of medico-legal information as it pertains to cerebral palsy and neonatal asphyxia.

5. That an information sheet specifically designed for physicians be distributed through the SOGC network, to health care professionals, and be updated on an annual basis.

RECOMMENDATIONS OF THE SUBCOMMITTEE ON DEFINITIONS AND ICD CLASSIFICATIONS

Fetal and/or neonatal asphyxia issues have to be addressed because:

1. The incidence of cerebral palsy has not decreased despite better health conditions and improved fetal surveillance.

2. Cerebral palsy is associated with fetal and newborn asphyxia but also with various other conditions, some of which are probably still unknown.

3. Thirty to forty percent of cases of asphyxia with significant metabolic acidosis are occurring in the low-risk population.

4. About seven percent of all neonates will need some form of resuscitation (oxygenation, assisted ventilation, cardiac reanimation) at birth because of asphyxia, prematurity, or other conditions.

5. Canadian Interpretation for ICD 10 categories: see section IX, pages 20 and 21.

RECOMMENDATIONS OF THE RISK MANAGEMENT SUBCOMMITTEE

1. All hospitals make available routine blood gas analysis on umbilical cord samples at the time of delivery for all pregnancies.

2. To develop with our medical and hospital partners a risk management initiative (committee, model) in every hospital in Canada with an obstetrical unit.

3. The SOGC to implement with CFPC and APOG a two day labour and delivery risk management course.

4. To recommend that every gynaecologist and family physician practicing obstetrics undergo and complete the labour and delivery risk management course.

5. To monitor with CMPA, the long term benefits of those physicians completing the labour and delivery risk management course.

6. To update and make available in each obstetrical suite the risk management strategies using hard copy and on SOGC net.

7. That CMPA conduct with SOGC a third national symposium on cerebral palsy and asphyxia using the report as a basis document.

8. Lobby CMPA and CMA to establish a generic risk management programme.