



Chapter 40

MATERNAL/FETAL TRANSPORT: GUIDELINES TO PHYSICIANS AND NURSES

The outcome for the high-risk neonate is improved if transport in utero occurs antenatally to a referral centre that can provide immediate intensive pediatric evaluation and support of the newborn at birth.

These guidelines are intended to assist nurses and physicians involved in emergency transfer of the pregnant woman.

Indications for Transfer

Transport should be considered when resources immediately available to the mother, fetus or neonate in the local community are not adequate to provide care.

The most frequent indications include:

1. Preterm Labour
2. Preterm premature rupture of membranes
3. Severe gestational hypertension or other hypertensive complications
4. Antepartum hemorrhage
5. Trauma

In the case of preterm labour, if there is any indication that the birth is likely to occur during transport, the woman should be kept at the primary hospital and managed until a transport team can come for the baby.

Contraindications for Transport Include:

1. Unstable maternal condition
2. Unstable fetal condition
3. Imminent birth
4. Experienced attendants not available to accompany mother in transfer
5. Hazardous weather conditions for travel

Transport Plan

1. Discuss the situation with the woman and her family.
2. Order for transfer written by the physician
3. The physician recommends the mode and urgency of transport.
4. Know the local system in your area for locating an accepting facility for the mother and have the phone number easily accessible on the maternity unit. In Southwest Ontario, Critical is accessed to determine the most appropriate location and availability of a transport team.
5. Physician to physician discussion is to occur between the sending and receiving facilities with detailed discussion of stabilization of mother's condition(s) and the transport plan.
6. Arrange for a physician, Registered Nurse, and/or other appropriate personnel to accompany the woman as needed.
7. Complete the Regional Maternal Transfer Form. Obtain patient consent to disclose information. Photocopies of prenatal and pertinent hospital records, EFM strips and ultrasound scans are to accompany the woman whenever possible.
8. Check that the mother has an identification bracelet.
9. If indicated, the mother should have an intravenous infusion established using a # 16 or #18 intracath.
10. Initiate drug therapy, if indicated, after discussion with receiving physician. Always piggyback infusions containing medications. Use a battery-operated infusion pump to regulate flow. For air transport, use solution bags that expand and contract with pressure changes.
11. Emergency equipment should be checked. Sufficient oxygen should be available. For air transport, consider administering oxygen during high altitude flights.

12. Assess prior to transfer:

TPR	Uterine contractions
BP	Presentation
FHR	Dilatation of cervix
State of membranes	Lie

Care During Transport

1. The pregnant woman should be positioned on her side in a recumbent, comfortable position.
2. Frequency of monitoring vital signs during transit will depend on the maternal/fetal condition and the judgment of the attendant. Due to noise levels, it is recommended that a battery-operated ultrasonic Doppler fetal heart detector and digital readout sphygmomanometer be used if available. It might be necessary to stop the ambulance for a check of blood pressure and fetal heart rate.
3. Administer supplemental inspired oxygen PRN, particularly during transport by air.
4. Document assessments on the Maternal Transfer Record.
5. Check vital signs on arrival and discuss present clinical status with the receiving staff.

SUGGESTED MANAGEMENT PLANS

Preterm Labour

Use of fetal Fibronectin Test, where available, will significantly reduce the risk of unnecessary transport for preterm labour.

If tocolytic agents are necessary, it is extremely important to stabilize the patient on a maintenance dose **before** transfer.

Before Transfer

1. Determine fetal presentation and heart rate.
2. Assess contractions.
3. Assess cervical dilatation and state of membranes.

4. If membranes are ruptured, determine the presence or absence of a possible prolapsed umbilical cord.
5. Treatment considerations in discussion with receiving physician:
 - tocolytic therapy – indomethacin 100 mg., rectally.
 - Glucocorticoids for the acceleration of fetal lung maturation and other organ systems. Give the first dose (e.g. betamethasone 12 mg IM).
 - Antibiotic therapy for GBS prophylaxis.

During Transfer

1. Record vital signs every 15 minutes.
2. Evaluate contractions.
3. Be prepared for the birth of a high-risk infant.

Vaginal Bleeding

Before Transfer

1. An IV infusion should be started using a large size intracath.
2. Ringer's lactate is the IV solution of choice. Rapid infusion (as much as 2 – 3 litres in 2 hours) might be necessary.
3. Insert Foley catheter attached to closed drainage bag.
4. Record vital signs before leaving hospital.

During Transfer

1. Monitor vital signs frequently as indicated by the woman's condition.
2. In postpartum bleeding, assess the firmness of the fundus.
3. Record intake and output.
4. Keep woman NPO.
5. If Oxytocin is used in the transfer of a postpartum patient, it should be administered through a second intravenous infusion site.
6. If blood has been cross-matched, send it in the ambulance along with the patient.

Hypertension

If intravenous magnesium sulphate or hydralazine is used during transport, a physician or other qualified personnel should accompany the patient.

Before Transfer

1. Initiate IV 0.9% NaCl infusion with #18 intracath.
2. Infuse MgSO₄, 4 gms dissolved in 100 cc of intravenous fluid, via a drip chamber (eg. Soluset) over 30 minutes, with the physician assessing the woman.
3. After the loading dose, use a solution of 20 gms MgSO₄ in one litre of Normal saline or Ringer's lactate and run at 1 – 2 gm/hr, which is 50 – 100 mls/hr. Use an infusion pump. Only start transport after the loading dose is complete and this maintenance dose is started. (Consider changing to 40 gms in 1000 cc for a concentration of 4 gms/100 cc. Run according to physician's orders ie) 1 gm at 25 cc/hr; 2 grams at 50 cc/hr.; etc.)
4. **Note** Calcium gluconate is the antidote for magnesium sulphate and **must** be available. (Ten milliliters of 10 percent solution IV over 3 minutes).
5. Monitor the woman's vital signs, including respiratory rate and depth and patellar reflexes, every 15 minutes.
6. Insert a Foley catheter attached to a closed drainage bag to monitor urine output.
7. If respirations are 10 or less, if the knee-jerk reflex is absent, or if urine output is less than 20 cc/hr, discontinue the MgSO₄ and consult a physician.
8. Assess for changes in level of consciousness that indicate increase somnolence.
9. Record intake and output. Urinary output should be greater than 30 cc/hr.

During Transfer

1. Continue infusing magnesium sulphate at the rate of 1 – 2 gm/hr ie. 20 gm/1000 cc Normal saline or Ringer's lactate run at 50 – 100 ml/hr. Use an infusion pump.
2. Monitor the vital signs every 15 minutes.
3. Record intake and output.
4. Observe for any signs of worsening condition. If any of these signs occur and a physician is not present, use ambulance radio to consult with the receiving obstetrician at the referral centre.
5. If respirations are 10 or less, if the knee-jerk reflex is absent, or if urine output is less than 20 cc/hr, discontinue the MgSO₄ and consult a physician.
6. If there is severe hypertension (diastolic pressure > 110 mmHg), the administration of an antihypertensive should be considered.
 - hydralazine 5 mg IV, followed by 5-10mg IV q20min

- or
 - labetalol 10-20mg IV q10min
 - a. Check BP every 5 minutes for 30 minutes, then every 15 minutes. Aim for diastolics of 90 – 100 mmHg
 - b. If hypotension develops, stop the antihypertensive immediately and place the patient in the Trendelenburg position
6. If a seizure occurs during transfer:
- protect the woman from injuring herself
 - suction nasopharynx prn
 - administer oxygen
 - position the woman on her left side
 - record length of time of seizure
 - following seizure, assess uterine contractions, vaginal bleeding, uterine tenderness, abdominal pain, and FHR
 - give a STAT dose of 4gm of MgSO over 10-15 minutes followed by a maintenance dose of 2gm/hour₄
7. Abruptio placentae and fetal compromise are possible complications.

Appendix

Basic Equipment

The equipment and kits should be ready at all times and all staff should know where they are located. Check with local ambulance to determine what equipment is available in the ambulance.

General Equipment

1. Clipboard and pen
2. Maternal Transfer Form
3. Stethoscope
4. Thermometer
5. Reflex hammer
6. Flashlight
7. Sphygmomanometer
8. Doppler
9. Infusion pump
10. Sterile gloves
11. Peripads
12. Sterile lubricant

IV Fluids and Maternal Medications

- ❖ 1000 cc 0.9% NaCl
- ❖ 1000 cc Ringer's lactate
- ❖ Tape
- ❖ Tourniquet
- ❖ Intracaths (2 each) of #16, #18, #20
- ❖ Butterfly (2) - #21
- ❖ Assorted needles and syringes
- ❖ Alcohol swabs
- ❖ 5 amps magnesium sulphate 1 gm/amp
- ❖ 4 amps Syntocinon 10 units/ml
- ❖ 4 amps calcium gluconate 10% in 10 mls
- ❖ 2 amps hydralazine 20 mg/amp
- ❖ 2 amps Valium 10 mg/amp

Emergency Delivery Sterile Kit

- ❖ (1) pair scissors
- ❖ (2) Kelly's forceps
- ❖ (6) 4x4 gauze squares

- Add
- ❖ (1) small drape
 - ❖ Newborn suction equipment - #10 French catheters
 - ❖ (2) cord clamps
 - ❖ (2) plastic bags
 - ❖ Peripads
 - ❖ Blanket for baby

Infant Resuscitation

- ❖ Neonatal laryngoscope and small straight blade, size 0, 1
- ❖ Neonatal self-inflating bag and masks, size 0, 1, 2
- ❖ Endotracheal tubes with stylets and connectors, size 2.5, 3, 3.5
- ❖ Epinephrine 1:10,000 (3) 1 ml amps, or preloaded syringes
- ❖ 1 ml syringes
- ❖ 2 ml syringes
- ❖ #20 needles
- ❖ # 25 needles
- ❖ Orogastic feeding tubes
- ❖ Elastoplast tape and scissors

Adult Resuscitation

- ❖ Oxygen – check availability and amount in ambulance
- ❖ Ambu bag and mask
- ❖ Airway - #3

References

1. Society of Obstetricians and Gynecologists of Canada (SOGC), **Advances in Labour and Risk Management (ALARM) Course Syllabus**, 14th ed., Ottawa, 2007.
2. Regional Perinatal Program of Southwestern Ontario, **Maternal Transfer Record**, #64215, St. Joseph's Health Care, London, revised June 28, 2000.