



Perinatal
Outreach
Program of
Southwestern
Ontario

Partner

Volume 24

Summer 2003

Chickenpox Infection in Pregnancy

Andrea White, B.Sc., MD, PGY-4 UWO Ob/Gyn

Edited by: Renato Natale, MD FRCS(C), and Jill Boulton, MD FRCCP
St. Joseph's Health Care, London

CASE: A 27 year-old healthy woman, gravida 4 para 2, presented at 39 weeks 4 days in a previously uncomplicated gestation with a history of chickenpox exposure and lesions that appeared to be varicella infection. The rash had been preceded by 2 days of flu-like symptoms, including general malaise and fever. She was not experiencing cough, shortness of breath, chest pain or hemoptysis. On examination, she had an extensive rash consisting of typical varicella vesicles. How should a patient such as this be managed?

EPIDEMIOLOGY, NATURAL HISTORY AND DIAGNOSIS OF INFECTION

Infection with varicella zoster virus, or chickenpox, is uncommon in pregnancy due to the high rate of infection in childhood and the subsequent natural immunity that is conferred. Infection occurs in 0.4 to 0.7 per 1000 pregnancies¹. If exposed to the virus in pregnancy, the patient should have serology for immunity. If the varicella IgG is negative, the patient is susceptible to infection and should receive zoster immune globulin. In cases where the patient does not recall having had chickenpox in the past, 70-90% of serology will indicate immunity². Second infections are very rare.

Varicella zoster virus is highly contagious 48 hours prior to the development of rash until the

lesions are crusted over. The attack rate is 60-90% following exposure³. The incubation time is 10-21 days, with a mean of 15 days. Varicella is usually easily diagnosed by history of exposure with a negative prior history of infection. Viral symptoms of fever, general malaise, headache and anorexia precede the rash by 1 or 2 days. The typical rash is pruritic and appears vesicular on an erythematous background.

Lesions crust over in approximately 1 week. There may be crops of lesions in various stages of healing. Varicella zoster virus antigen can be detected from vesicles by immunofluorescence.

(Cont'd)

What's Inside...

Chickenpox Infection in Pregnancy	1
You Asked Us	4
Early Pregnancy Loss	5
For Your Information	8
Upcoming Events	9

Complications of varicella infection can be severe, particularly in adults, and especially in pregnancy. A severe rash is considered more than 500 pox. Serious complications include encephalitis, hepatitis, pneumonia and death. Pneumonia can complicate nearly 20% of adult infections. The mortality rate of varicella pneumonia in untreated pregnant women reaches close to 40% in pregnancy compared with 17% in non-pregnant adults⁴. A retrospective review of 21 cases of varicella pneumonia in pregnant women treated with acyclovir reported a mortality rate of 14%⁵. In a case-control study of 18 pregnant women with varicella pneumonia and 72 pregnant controls with varicella, but no pneumonia, all 18 patients were treated with acyclovir and all survived⁶.

Severity of transplacental infection does not correlate with severity of maternal symptoms. Prior to 20 weeks gestation, 2% of maternal infections will result in a congenital varicella syndrome, consisting of skin scarring, chorioretinitis and limb hypoplasia¹. Central nervous system abnormalities, including microcephaly, calcifications and mental retardation, occur in 50% of fetuses affected by the syndrome.

If maternal infection occurs within 3 weeks prior to delivery, the neonatal infection rate is 25-50% within 10 days of life⁷. If the maternal rash occurs 5 days prior to delivery or 2 days following delivery, there is increased neonatal mortality. Within this critical window of 7 days, the neonatal death rate is 30% due to the relative immaturity of the immune system and the lack of maternal antibody protection⁸.

Definitive diagnosis of fetal infection can be made by amniocentesis with viral DNA PCR, viral culture or varicella antibody detection. Negative results may be reassuring, but positive results do not predict severity of infection. Ultrasound findings suggestive of the congenital syndrome include hydrops, limb and cardiac malformations, intrauterine growth restriction, microcephaly and cerebral calcifications⁹. Infection acquired after 20 weeks gestation may not show any effects on ultrasound.

PREVENTION AND MANAGEMENT OF INFECTION

Infection can be prevented in susceptible immunocompetent individuals over 1 year of age using a live attenuated vaccine. However, the vaccine is contraindicated in pregnancy and conception should be delayed for 1 month following vaccination. Susceptible women should avoid exposure to varicella, if possible. If exposure occurs, maternal symptoms may be prevented or attenuated by administration of varicella zoster immune globulin (VZIG) within 96 hours of exposure¹⁰. Maternal treatment with VZIG does not prevent or reduce the severity of fetal infection.

Maternal treatment with oral acyclovir within 24 hours of rash onset may reduce duration and severity of maternal infection¹¹. In complicated infections, such as varicella pneumonia, maternal morbidity and mortality may be reduced by intravenous administration of acyclovir¹². Maternal treatment with acyclovir, by either route of administration, has not been shown to prevent or reduce effects of fetal infection¹².

Ideally, delivery is timed outside of the 3-week window that results in the highest attack rate in the neonatal period. There is a high rate of neonatal mortality if delivery occurs within 5 days of the maternal rash. However, delivery should not be delayed if indicated for obstetrical reasons. Isolation precautions for airborne pathogens should be observed and contact with susceptible patients and staff should be avoided.

inserted through a Styrofoam cup, acting as a funnel is useful when a hood box is not available.

Neonatal VZIG therapy is recommended in cases where maternal rash occurs within the 7-day critical period of 5 days prior to or 2 days following delivery. About 50% of infants will subsequently develop infection¹³. Intravenous acyclovir treatment of the neonate is indicated if symptomatic after delivery within the 7-day window. Treatment should also be considered for preterm infants. Some specialists recommend prophylactic IV acyclovir therapy for all infants born within the 7-day window¹⁴.

Prophylactic acyclovir or VZIG administration is not indicated for term infants born to mothers who developed varicella more than 5 days prior to delivery¹². Treatment of symptomatic infection is controversial, as this population is usually protected from severe infection by maternal antibodies.

Although varicella zoster infection occurring during pregnancy is uncommon, history of timing of exposure and susceptibility are important to elucidate. Most maternal and fetal outcomes are optimistic. However, serious maternal and fetal complications may occur. Appropriate and timely management of both maternal and neonatal infections is important in order to reduce the risk of complications.

REFERENCES

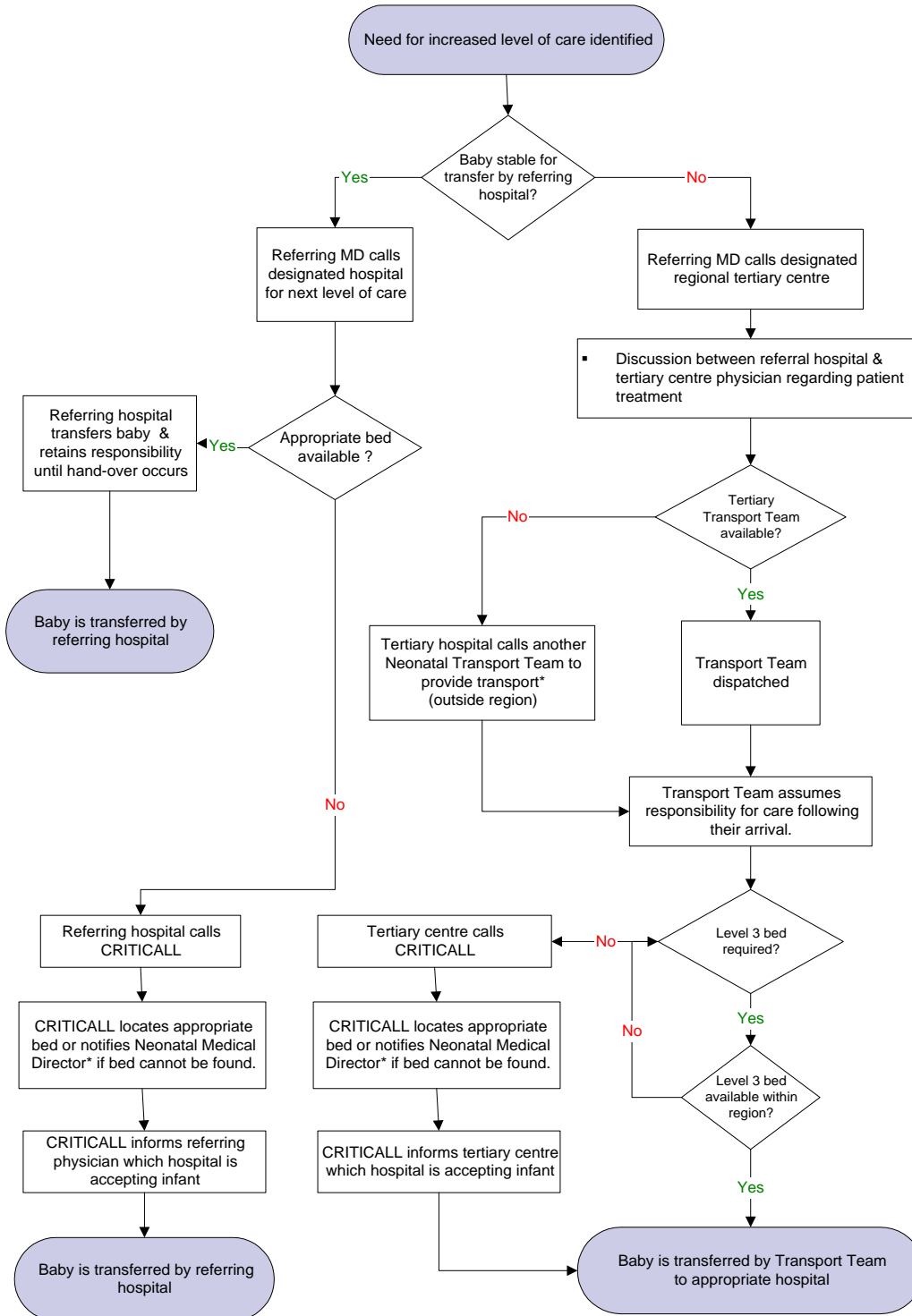
1. Pastuszak AL, Levy M, Schick B *et al*. Outcome after maternal varicella infection in the first 20 weeks of pregnancy. *N Engl J Med* 1994. 300: 901.
2. McGregor JA, Mark S, Crawford GP *et al*. Varicella zoster antibody testing in the care of pregnant women exposed to varicella. *Am J Obstet Gynecol* 1987. 157: 281.
3. British Royal College of Obstetricians and Gynaecologists. Chickenpox in pregnancy. Guideline No. 13. July 1977.
4. Harris RE, Rhoades ER. Varicella pneumonia complicating pregnancy: Report of a case and review of the literature. *Obstet Gynecol* 1965. 25: 734.
5. Smego RA, Asperilla MO. Use of acyclovir for varicella pneumonia during pregnancy. *Obstet Gynecol* 1991. 78: 1112.
6. Harger JH, Ernest JM, Thurnau GR *et al*. Risk factors and outcome of varicella-zoster virus pneumonia in pregnant women. *J Infect Dis* 2002. 185: 422.
7. Meyers JD. Congenital varicella in term infants: Risks considered. *J Infect Dis* 1974. 129: 215.
8. Miller E, Cradock-Watson JE, Ridehalgh MK. Outcome in newborn babies given anti-varicella-zoster immunoglobulin after perinatal maternal infection with varicella-zoster virus. *Lancet* 1989. 8659: 371.
9. Pretorius DH, Hayward I, Jones KI, *et al*. Sonographic evaluation of pregnancies with maternal varicella infection. *J Ultrasound Med* 1992. 11: 459.
10. Rouse DJ, Gardner, Allen SJ *et al*. Management of the presumed susceptibility varicella (chickenpox)-exposed gravida: A cost-effectiveness/cost-benefit analysis. *Obstet Gynecol* 1996. 87: 932.
11. Wallace MR, Bowler WA, Murray NB, *et al*. Treatment of adult varicella with oral acyclovir: A randomized, placebo-controlled trial. *Ann Intern Med* 1992. 117: 358.
12. Smego RA, Asperilla MO. Use of acyclovir for varicella pneumonia during pregnancy. *Obstet Gynecol* 1991. 78: 1112.
13. Hanngren K, Grandien M, Granstrom G. Effect of zoster immunoglobulin for varicella prophylaxis in the newborn. *Scand J infect Dis* 1985. 17: 343.
14. Canadian Pediatric Society. Chickenpox: Prevention and Treatment. *Canadian J Ped* 1994. 1: 88.

YOU ASKED US:

The diagram below outlines the process for neonatal transport as has been proposed by the Maternal/Neonatal Transport working group of the Ontario Provincial Perinatal Partnership.

Proposed Neonatal Transport Process

For all Regions in the Province of Ontario



*Recommendation to create CritCall Neonatal Director position

Early Pregnancy Loss: Patients Have Choices

Elaine Walker, M.Th.S.
Specialist in Pastoral Care
Chaplain, Pastoral Services Department
Lambton Hospitals Group, Sarnia

Portions of this article originally appeared in *Chaplaincy Today*, the Journal of the Association of Professional Chaplains, 19.1

When a baby unexpectedly dies and the pregnancy is **over 20 weeks gestation**, by law, parents must involve a funeral home and arrange for a proper burial. These past few years, our hospital has done a fine job in acknowledging the grief that parents experience in situations of stillbirth, or neonatal death. Lovely memory boxes are crafted and each of the grieving couples is given a box as they leave the hospital. Each memory box contains mementos of their baby, booklets on grief such as "When a Baby Dies," Certificate of Life or Baptismal Certificate, photos, baby clothes. Couples in this situation are encouraged to name and hold their baby and to think about the type of service they would like to have, honouring the life of their baby.

When the pregnancy is less than 20 weeks gestation, and a miscarriage occurs in hospital, or a D & C is performed to remove any remaining products of conception, there is no legal requirement for burial of these remains. In most instances, hospitals cremate these early pregnancy remains along with other surgical tissue. Consequently, contrary to any other type of death that occurs in a hospital setting, in this instance, there is very little acknowledgment of the grief that couples often experience, with the unexpected death of their "baby" less than 20 weeks gestation.

In response to families who expressed dissatisfaction with a lack of emotional support received in hospital, in situations of an unexpected early pregnancy loss,¹ it was decided that our hospital needed to make some changes. The purpose of a new policy would be two-fold: to acknowledge the grief that parents often experience in situations of

miscarriage, and to provide choices for respectful burial of the remains of these little ones.

Working as a Chaplain in a hospital for the past several years and through the stories shared by women of **all** ages, I have come to a deeper understanding of the often devastating experience of miscarriage. I remember one compassionate and insightful nurse stating, *"these situations are much more traumatic for women than we have realized"*. At whatever stage a miscarriage occurs, people have the right to deal with the end of a pregnancy in a way that is right for them. Not long after an article on the grief that can occur with an unexpected early pregnancy loss appeared in our local newspaper, a woman in her late 60's spoke to me of her experience 40 years ago. Her first pregnancy suddenly ended with a miscarriage. At that time, away from the support of family and friends, she was very upset but was bluntly told, *"she had nothing to cry about."* Then to me she said, *"that was a loss, and thank you for saying so."*

A study of women's responses to the loss of their pregnancy through miscarriage published in 1986 outlined these facts:

- **75% see the miscarriage as a loss of a baby**
- **25% see it as a part of life**²

Another study carried out in 1993 entitled, "Miscarriage: Women sharing from the heart," published these results:

- **71% experienced it as death of their baby**

¹ The term "early pregnancy loss" is being used interchangeably with the term "miscarriage" and refers to the unexpected end of a pregnancy less than 20 weeks gestation.

² Limbo, R. & Wheeler, S. (1986) Women's responses to the loss of their pregnancy through Miscarriage: A Longitudinal Study. *Forum Newsletter* 10(4).

- **81% felt that a part of them had died**
- **63% felt devastated after miscarriage**
- **73% thought they had caused the death of their baby**
- **42% had nightmares**
- **74% felt out of control emotionally and/or physically.**³

In February 2000, I received a phone call from a young mother two weeks after she had experienced a miscarriage in the hospital's Ambulatory Care Department. The day of her unexpected early pregnancy loss, I worked with this couple as they had asked that their little one receive a Blessing. After spending time with their baby of 18 weeks, I carefully explained to them that because the pregnancy was less than 20 weeks gestation, the hospital would take care of the cremation of their little one. The parents seemed quietly accepting and shortly thereafter were sent home. Two weeks to the day after that event, this young mother contacted me at the hospital. In the time following her miscarriage, she found herself struggling with feelings of loss and was afraid people would think she was "weird or strange." She was distraught and feeling guilty that she had not insisted on making her own burial arrangements for her baby and felt badly that she did not get a picture. She wanted specific information as to what exactly happened to her baby and where the ashes were buried. I had all too quickly promoted the standard hospital practice of cremation of fetuses. Further, I was unaware of a parent's right to make his or her own burial arrangements. I believe that the hospital arrangement had left this young woman with a lack of closure and glossed over her experience of grief and loss. The woman spoke of feeling uncertain about the decision even as she left the hospital that day, but in her state of shock was not able to say so. She had been rushed through a process that was intended to limit the patient's distress. Indeed, both the medical profession and society in general have tended to minimize a parent's sense of loss and devastation after a miscarriage with comments such as,

- **"You'll be fine "**

- **"You'll have other children"**
- **"Be glad it happened now and not 6 months from now"**
- **"It was God's Will"**
- **"This saved you from having a handicapped child"**

Feelings of grief that can accompany an early pregnancy loss are often unacknowledged and ignored. As one woman said recently, *"Miscarriage is a death that has to be worked through."* Jan Pearce, one of the co-founders of Perinatal Bereavement Services of Ontario, speaks of the importance of **choice** when a miscarriage occurs. Unless given specific information and encouragement, most people are not aware that they can choose to make their own burial arrangements with a funeral director for a modest fee. A service can be a comforting ritual and it acknowledges the loss that the family is often experiencing. One mother writes, *"I never knew that I had choices. Sometimes that still makes me angry."* Another states, *"When I lost my baby so unexpectedly, it was comforting to me to bury her with my grandmother. I'm so glad I know where she is."*⁴

Shortly after my significant contact with the young mother in February 2000 I attended a workshop on Perinatal Bereavement. It became clear that acknowledgment of the grief when a baby dies and the need for choice of burial/cremation services is important at any time of a pregnancy loss, whether the loss occurs over or under 20 weeks gestation. Mementos given to parents experiencing an early pregnancy loss provide a special keepsake as well, and the offer of service may provide some added comfort and closure.

Several months ago, I worked with a couple who experienced a miscarriage at eight weeks. Their little one was perfectly formed, and after some encouragement they did agree to see their "baby." Because of the fragile nature and size, I laid their little one out on a seashell for viewing. They were fascinated with all of the development they could see-- the shape of the head, eyes, feet and hands. The seashell became a treasured keepsake for

³ Allen, Marie & Marks, Shelly. (1993) Miscarriage: Women sharing from the heart. New York: John Wiley & Son, Inc.

⁴ Miscarriage Booklet, Perinatal Bereavement Services Ontario p. 8 1993

this couple as well. Seeing and holding their little one was of great comfort too. After this, we agreed to a private graveside service, which provided an additional feeling of completion.

In February 2000, I began an ongoing consultation process with Wendy Walker, the Program Director of the Maternal-Infant-Child Program. Because of our individual work experience, and a passion for holistic care, we agreed that our hospital needed to do a better job of acknowledging this type of loss and informing parents of the choices they have for burial. To assist us in the development of a new policy, we discovered two hospitals with policies on the respectful handling of early pregnancy remains: St. Joseph's Health Centre in London and the Scarborough Hospital, Grace Division, both located in South Western Ontario. These hospitals were contacted and copies of their policies were obtained for information.

EARLY PREGNANCY LOSS POLICY

In March 2000, the Lambton Hospitals set up an interdisciplinary team that began work on a policy entitled, "**Respectful Handling of Early Pregnancy Loss Less than 20 weeks Gestation or Less than 500 grams.**" This policy was approved and came into effect February 1, 2001. This program is intended to acknowledge the feelings of grief and loss that families often experience when their baby unexpectedly dies in early pregnancy and provides **patients** with a **choice** for respectful burial of these remains.

Option A	Hospital arranges Burial at Resurrection
Option B	Cemetery Burial arrangements made by parents
Option C⁵	Disposal by Pathology Department

Unless a patient indicates on the consent form, the choice to make other burial arrangements, these early pregnancy remains are labeled and transported once a month from the Pathology Department to

⁵ Option C with its specific wording was more recently added at request of Obstetrician Group

Resurrection Cemetery and individually buried in the designated common ground. A lovely monument marks the area. Twice a year, spring and fall, the Pastoral Services Department holds a Graveside Memorial Service at Resurrection Cemetery. All are welcome to attend this service, whether the loss is recent or many years ago. It is our hope that this sacred space and this bi-annual service will always be a place of welcome and recognition for families who have experienced this type of loss.

I have had consultations with the religious leaders of the Muslim, Sikh, Hindu, and Jehovah Witness communities in Sarnia and these faith groups have been most impressed and supportive of this hospital policy. There is **no cost** to the families or to the Hospital for burial in the designated common ground at Resurrection Cemetery. Parents who choose to make their own burial arrangements will contact a funeral home of their choice. In situations of the death of a baby, most funeral homes charge a minimal amount, perhaps \$300-\$800, generally the cost of opening a grave. Feedback has been that people experiencing this type of loss benefit from being offered **choices** which acknowledge their grief. As one father said, "*This really helps. Thank you so much for all you have done.*"

BRIGHT YELLOW MISCARRIAGE KITS

These kits for staff and physician use are located in the Emergency, Surgical, and Maternity Departments on all 3 sites of the Lambton Hospitals. Each kit contains **Miscarriage Booklets, consent forms and addressed, stamped envelopes** (to allow couples time to consider their options), a copy of the policy and guidelines, and a picture of the monument marking the common ground.

SUMMARY

Ongoing public and staff education is an important key to the success of this policy. Immediately before the implementation of this new hospital policy, the Pastoral Services Department held several staff education sessions and continue to offer ongoing

sessions as new staff are hired.

Our department, in cooperation with community partners, sponsored a workshop on Perinatal Bereavement for the community. Informative newspaper articles on this new hospital policy on miscarriage have been published in the local newspaper with pictures and personal stories. To date our department has held three graveside memorial services and these have been very well received and greatly appreciated by those in attendance. Occasionally, a parent will attend whose loss occurred many years ago because until now there had never been an opportunity to formally acknowledge their loss and obtain closure. One woman who attended a service had experienced three miscarriages 17 years ago. At the end of the service she expressed surprise stating, *"I did not expect to cry."*

There continues to be some resistance from a few Medical staff who challenge the appropriateness of offering this miscarriage protocol to patients whose early pregnancy remains are unrecognizable or the pregnancy ended at less than 12 weeks. I continue to emphasize that this is a **bereavement** policy that honours the **attachment** that parents often feel toward their "baby", even in the early stages of their pregnancy. Choices need to be offered to these parents who have the right to decide how the remains of their little one will be handled. As one Family Physician so aptly said, *"It is not the doctor's decision."* However, in the interest of collaboration with the Medical staff and their concern that the policy was too limiting for some of their patients, Option C has been recently added to the consent form. Over the next year we shall monitor how often this option is chosen and then decide whether it is necessary to continue to offer it.

In closing, I wish to say that I am grateful to Wendy Walker, our very patient-focused Program Director, for her tremendous support, and to the many women and men of **all ages** who have shared their stories. You teach us, as a society and as a hospital community that the death of a baby at any time during a pregnancy needs to be acknowledged and grieved.

FOR YOUR INFORMATION:

Regional Perinatal Services Project Update

SARS delays project progress

The last Bulletin (February 14th, 2003) outlined an updated version of the project workplan and progress-to-date. Since that time, the Regional Perinatal Services Project experienced a brief hiatus due to the SARS restrictions, but steps are now being taken to 'reactivate' the project. Based on the last meeting of the Project's Coordinating Committee (January 29, 2003), the Project Coordinating Committee released an Interim Report on March 20th and sent copies to each of the CEOs of the hospitals in the region.

Interim Report

The Interim Report details demographic projections for Southwestern Ontario, the implications for perinatal services and pattern of perinatal service use in the region, key factors impacting on access to perinatal services, and the level of perinatal care currently being provided in the Southwest region. The interim report also provides recommendations for further collaborative action between hospitals around the southwest region

For copies of the Regional Perinatal Services Project Coordinating Committee Interim Report, please contact Michael Barrett at the Regional Office of the Ministry of Health and Long-Term Care:

michael.barrett@moh.gov.on.ca

Nancy Dodman and Gwen Peterek of the Perinatal Outreach Program will be circulating copies of the report at upcoming meetings with nurse managers.

Meeting with secondary perinatal care hospitals rescheduled

As suggested by the Interim Report, the secondary (or Level II) perinatal hospital sites have the potential to play a key role in the further development and implementation of collaborative action plans for the provision of perinatal service in Southwestern Ontario. The initial meeting of the secondary level hospitals was to have taken place on April 9th, 2003, following the Southwestern Ontario Perinatal Partnership Meeting. Due to SARS, both meetings have been rescheduled to June 25th, 2003 at the Best Western Lamplighter Inn in London.

Representatives from the secondary level hospitals are being asked to attend a meeting immediately following the Partnership meeting. At this time, participants will discuss what would be required to provide collaborative leadership to the on-going provision of high quality perinatal services within their own facilities and across the region.

The two secondary level (Level II) perinatal sites in the region **include Windsor Regional Hospital** and the **London Health Sciences Centre**. Other hospital sites that are seen as providing the equivalent of secondary or Level II services in the region are:

St. Thomas-Elgin General Hospital
Stratford General Hospital
Grey Bruce Health Services (Owen Sound)
Lambton Hospitals Group (Sarnia)

FOR YOUR INFORMATION:

Regional Documentation Forms

The Southwestern Ontario Perinatal Partnership (SWOPP) committee continues to forge ahead in the development of regional documentation forms. In addition to the Regional Maternal Transfer Record, which has now been in use for several years, the committee has

developed a Summary of Birth, and a Neonatal Resuscitation Record. The Regional Summary of Birth Record has recently been revised after reviewing feedback from hospitals throughout southwestern Ontario. An evaluation of the Neonatal Resuscitation Record is planned for the fall of 2003. It is anticipated that a Record of Labour, an Ill Newborn Record, and a Newborn Assessment Record will also be available in the near future. All of these chart forms may be reprinted on-site by individual hospitals, or may be ordered through Hospital Materials Managements Services (HMMS) London. For more information, contact the Regional Perinatal Outreach Program of Southwestern Ontario at (519) 646-6100.

For Maternal Records:

Contact: Gwen Peterek ext 65901

For Neonatal Records:

Contact: Nancy Dodman ext 65900



UPCOMING EVENTS:

Mark Your Calendar!**17th Annual Regional Perinatal Outreach Conference**

Wednesday, September 17, 2003

Location: Lamplighter Inn, London

Topics: Southwestern Ontario-Raising the Bar

Contact: Perinatal Outreach Office
(519) 646-6100, ext. 65859

Maternal Newborn Nurse Education Course**London:**

Mondays: Sep 8 – Oct 20, 2003*
St. Joseph's Health Care, London
(*Oct 13 replaced by Thurs. Oct 9)

Contact:

Gwen Peterek
Perinatal Outreach Program
Phone: (519) 646-6100 ext 65901
Fax: (519) 646-6172
Gwen.peterek@sjhc.london.on.ca

Breastfeeding Workshop

A one-day workshop sponsored by the Oxford County Bd of Health and Woodstock General Hospital

September 19, 2003

Location: Quality Inn, Woodstock

Speaker: Dr. Jack Newman

Contact: June Spruce, Woodstock General Hospital

Phone: (519) 421-4211 x 2355

Breastfeeding Conference:

Breastfeeding Challenges: Complex Clinical Issues
October 15, 2003

Location: Bestwestern Lamplighter Inn,
591 Wellington Rd. S, London

Speaker: Dr. Thomas Hale, author of
Medication and Mother's Milk

Contact: Ginette Black (519) 663-5317 x 221

This newsletter is a publication of the Perinatal Outreach Program of Southwestern Ontario.

Letters, queries and comments may be addressed to:

Gwen Peterek, RN, BscN, PNC(C)
Regional Perinatal Outreach Program of Southwestern Ontario
St. Joseph's Health Care, 268 Grosvenor St, London, ON, N6A 4V2
Tel: (519) 646-6100, ext. 65901

To have your name included on our mailing list, please contact the above, or
E-mail: gwen.peterek@sjhc.london.on.ca
www.sjhc.london.on.ca/sjh/profess/periout/periout.htm