Points to Bear in Mind in Regard to the Implementation of “Early Mother-Infant Skin-to-Skin Contact”

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Japan Society of Perinatal and Neonatal Medicine
The Japan Society of Obstetrics and Gynecology
Japan Association of Obstetricians and Gynecologists
Japan Pediatric Society
Japan Society for Premature and Newborn Medicine
The Japanese Society of Pediatric Surgeons
Japanese Nursing Association
Japanese Midwives Association
[Points to Bear in Mind in Regard to the Implementation of “Early Mother-Infant Skin-to-Skin Contact”]

1. “Kangaroo care” usually refers to the skin contact between mother and infant that has traditionally been performed in NICUs (neonatal intensive care units) for premature infants whose general condition has stabilized. However, the term “kangaroo care” is being used both in Japan and abroad for the mother-infant skin contact that is performed in the delivery room immediately after the birth of term newborns, even though other care may be required, and use of the term is confusing. In this paper we will therefore refer to the mother-infant skin contact that is performed immediately after the birth of term newborns as “early mother-infant skin-to-skin contact.”

2. Immediately after birth is a time when newborns adapt to the abrupt changes between intrauterine life and extrauterine life. It is a time when respiratory and circulatory functions easily break down, and respiratory and circulatory failure may develop. Thus, because the general condition of newborns may suddenly change during this period irrespective of whether “early mother-infant skin contact” is implemented, very careful monitoring and adequate management are necessary (it has been reported that irrespective of whether early mother-infant skin contact is performed in this period, serious events, such as respiratory arrest, occur approximately 1 time in 50,000 live births, and some sort of change in function occurs approximately 1.5 times in 10,000 live births).

3. Irrespective of whether “early mother-infant skin-to-skin contact” is performed, maternity facilities should ensure that at least one staff member trained in neonatal cardiopulmonary resuscitation (NCPR) is always present and be prepared for sudden changes in infants. Also, a “newborn cardiopulmonary resuscitation algorithm” should be posted in the delivery room, and an effort should be made to familiarize the staff with it.

4. At facilities that perform “early mother-infant skin-to-skin contact,” “indications,” “discontinuation criteria,” and “implementation methods” should be prepared according to the circumstances at each facility.

5. During pregnancy (for example, when preparing the birth plan) efforts should be made so that dangerous conditions that may arise during the neonatal period can be understood, a sufficient explanation of “early mother-infant skin-to-skin contact” should be provided to pregnant women, and understanding by the husband and the family as well should be encouraged. When so doing, sufficient explanations in regard to dangers to the infant, not just about benefits and effectiveness, should be provided.

6. After checking once again to see whether the mother wants “early mother-infant skin-to-skin contact,” it should be implemented only for those who want it, and a note in that regard should be entered in the chart.
[Commentary]

1) Terminology

The care referred to as “kangaroo care” refers to two different types of early contact: care provided to premature infants in the NICU and care provided to term newborns in the delivery room immediately after birth, the former generally being called “kangaroo care” and the latter “skin-to-skin”.

However, these two terms are often confused, and even in the Western literature the terms “kangaroo care,” “kangaroo mother care,” “skin contact,” “skin to skin contact,” “early skin to skin contact,” “skin-to-skin (kangaroo),” “skin-to-skin contact on preterm infants,” etc., are used for both care in the NICU and for care immediately after birth.

In order to avoid confusion, in this paper we will use the term “early mother-infant skin-to-skin contact” for the early skin-to-skin contact between mother and infant that is implemented in the delivery room immediately after birth, and we would like to propose “early skin-to-skin contact” or “early mother-infant skin-to-skin contact” as the English-language term.

2) Background

Even from the standpoint of an expression of human nature the direct touching between mother and infant and the interaction with each other through their five senses that starts soon after birth can even be described as a natural right of parents and children to nurture each other. Moreover, not only has the effectiveness of early mother-infant skin-to-skin contact been demonstrated scientifically, but if it is implemented safely under certain conditions, there is no danger at all.

However, many reports of serious events such as respiratory arrest during early mother-infant skin-to-skin contact and lawsuits related to them have been seen in the news recently. Some of the news reports are conspicuous for the way they present cases as though early mother-infant skin-to-skin contact might have been the cause and early mother-infant skin-to-skin contact itself might be dangerous when the cause was clearly not the early mother-infant skin-to-skin contact. However, emergency situations can arise even when early mother-infant skin-to-skin contact is not performed.

According to Moore ER, et al., results were seen showing that early mother-infant skin-to-skin contact is effective in increasing the breast-feeding rate from 1-4 months after birth and in prolonging the breast-feeding period. Effectiveness has also been seen in establishing attachment behavior by the mother toward the infant, the relationship between mother and infant, etc. These are not only effects during breast-feeding, such as touching, but are also expressed in the large amount of attachment behavior, such as kissing, after discharge from the hospital. Moreover, in a study of term newborns stabilization of heart rate, respiratory rate, blood glucose level, and body temperature was observed in an early mother-infant skin-to-skin contact group in comparison with a control group. Conversely, early separation of mother and infant after birth intensifies crying by infants, and because crying increases right-to-left shunting through the foramen ovale and decreases pulmonary blood flow, it interferes with arterial blood oxygenation. Consequently, since early mother-infant skin-to-skin contact is effective in shortening infant crying time, it may contribute to arterial blood oxygenation of the infant.
Although the advantages of early mother-infant skin-to-skin contact have been demonstrated as described above, the early postnatal period, which is when early mother-infant skin-to-skin contact is implemented, is also an unstable time when respiratory and circulatory adaptation from fetus to newborn is achieved. Particularly because shunts through the foramen ovale and ductus arteriosus, etc., persist, and right-to-left shunting can be easily induced by cold stimuli, acidosis, hypothermia, etc., dangerous situations in regard to circulatory dynamics may develop at this time. Consequently, it is necessary to be aware that the early postnatal period is an unstable time irrespective of whether or not early mother-infant skin-to-skin contact is implemented.

3) Reports on the incidence of sudden change cases
A nationwide fact-finding survey of “baby friendly hospitals” in regard to the incidence of sudden change cases during early mother-infant skin-to-skin contact was conducted in 2010. The results showed that replies were received from 42 hospitals (reply rate 87.5%), and at 23 of the hospitals (54.8%) a total of 57 cases of cyanosis of unknown etiology, cardiopulmonary arrest, and infants who seemed about to fall (accidental falls by infants during early mother-infant skin-to-skin contact were also reported) had been encountered in newborns. A study of the 30 of those facilities where the number of deliveries was stated showed that there had been one instance of sudden infant death-apparent life-threatening event (SID-ALTE), and its incidence was 1.1/100,000 live births. There had been five cases in the same facilities before the introduction of early mother-infant skin-to-skin contact immediately after delivery, and the incidence was 5.5/100,000 births. Thus, the incidence of cases of SID-ALTE, etc., that required cardiopulmonary resuscitation did not increase as a result of the introduction of early mother-infant skin-to-skin contact. 4)

According to the results of a questionnaire survey of pediatricians in Germany in 2009, the onset of SID-ALTE occurred within 24 hours after birth in 17 cases out of 665,126 cases, and the incidence was 2.6/100,000. In 7 of the 17 cases the infant died, and 6 of the 10 survivors had neurological sequelae when they were discharged. In addition, in 12 of the 17 cases there had been a sudden change during early mother-infant skin-to-skin contact (1.8/100,000). Moreover, 9 cases developed during the first 2 hours, but in 7 of them the mother did not notice the sudden change even though she was not sleeping, and it was discovered by a staff member. 5)

In a surveillance in the United Kingdom in 2012, 6) among 858,466 term newborns whose gestational age was 37 weeks or more and who had an Apgar score at 5 minutes of 8 or more, 45 required resuscitation by positive-pressure ventilation, or died, or required intensive care because of a sudden change within 12 hours after birth, and 12 of them died (5.2/100,000). Based on their clinical course or pathological examination, airway obstruction during breast-feeding or while in the prone position was diagnosed in 24 of the 45 cases. Congenital diseases were later discovered in 15 other cases, but no underlying disease that might have caused the sudden change was found in the remaining 6 cases. There had been a sudden change during breast-feeding or during early mother-infant skin-to-skin contact in the 24 cases diagnosed with airway obstruction. Almost all of the mothers were primipara, and they had not been carefully watched over by the staff.

In addition, according to a 2012 report that summarized the situations in Germany, France, and the United
Kingdom, the numbers of term newborns in whom no problems were observed at birth but in whom a sudden change occurred within 24 hours after birth and who required resuscitative maneuvers ranged from 2.6 per 100,000 to 5.0 per 100,000 live births.  

4) Results of a nationwide survey in Japan  
A nationwide survey of early mother-infant skin-to-skin contact in Japan was conducted in the “Nationwide survey of mother-infant safety in delivery rooms and newborn nurseries” by the Kodomo Mirai Zaidan (Foundation for Children’s Future) in 2010. Replies were received from 585 facilities, which corresponded to approximately a quarter of the maternity facilities in Japan, and they consisted of midwifery homes (144 facilities), hospitals and clinics (308 facilities), and perinatal centers (133 facilities). However, what we refer to here as changes in infants were not defined as life-threatening situations (sudden changes in an infant) as stated above, but were self reports by the facilities, and mild cases were included.

Early mother-infant skin-to-skin contact  
◆ Early mother-infant skin-to-skin contact was implemented in 65.4% of the facilities.  
◆ Implementation standards had been prepared at 30.7% of the facilities.  
◆ Informed consent by pregnant women was obtained before implementation at 48.2% of the facilities.  
◆ Delivery table angle standards had been established at 13.0% of the facilities.  
◆ Withdrawal and discontinuation criteria had been established at 39.9% of the facilities.  
◆ Starting time was immediately after birth at 35.5% of the facilities, 1-5 min at 41.8%, 6-10 min at 7.8%, and 15 min or more at 14.9%, and at approximately 8 out of 10 of the facilities mother-infant skin-to-skin contact was started within 5 min after birth.  
◆ The duration of implementation was no more than 10 min at 28.5% of the facilities, 15-30 min at 27.7%, 40-60 min at 19.7%, and 90 min or more at 19.9%.  
◆ The proportion of the facilities where medical personnel were in continuous attendance was 74.8%, but the proportion where the infants’ general condition was recorded was 28.3%.  
◆ The proportion that performed various kinds of monitoring was 49.9%, and a pulse oximeter had been attached at 42.4%.  
◆ The proportion of facilities that had experienced a change in an infant (as stated above, this was not limited to serious conditions) was 4.2%.  
◆ The incidence of change in an infant was 21 cases out of 138,534 (15.2/100,000 live births), and it was confirmed that a change in an infant had occurred in approximately 1.5 infants during 10,000 early mother-infant skin-to-skin contacts.  

The results of the above nationwide survey revealed that early mother-infant skin-to-skin contact had already been introduced at approximately 6 in 10 facilities without informed consent or preparation of an implementation method, thereby demonstrating the need for urgent action.  

5) Identifying the pathology in sudden change cases  
There have been previous instances in which several causative diseases (persistent pulmonary hypertension,
neonatal respiratory disorders, congenital heart disease, etc., and other congenital abnormalities, bacterial infections, metabolic disorders), etc., have been diagnosed as the etiology in emergency situations. In reality, however, in many cases the etiology is unknown, and research related to identification of the pathology would be desirable in the future.

6) Indications for early mother-infant skin-to-skin contact, discontinuation criteria, and implementation methods

There are situations in which partially modifying the basic implementation method recommended here is unavoidable because of the physical or personnel conditions, etc., at the facility. Even in such situations, the effectiveness and safety of early mother-infant skin-to-skin contact should be thoroughly assessed, and the method of implementation that will be of the greatest benefit to the mother and infant should be determined. Alternatives to implementing early mother-infant skin-to-skin contact should also be taken into consideration.

The following are the various criteria for implementing early mother-infant skin-to-skin contact after vaginal deliveries.

<Indications>

Maternal indications

• The mother herself is willing to engage in “early mother-infant skin-to-skin contact.”
• Vital signs are stable.
• The mother is not exhausted.
• The physician or midwife does not observe any contraindications.

Infant indications

• Absence of non-reassuring fetal status
• No asphyxia neonatorum (1-min and 5-min Apgar score ≥8)
• Term newborn
• Not a low-birth-weight infant
• The physician, midwife, or nurse does not observe any contraindications.

Criteria for discontinuation>

Maternal criteria

• Drowsiness
• Physician or midwife judges that it is contraindicated.

Infant criteria

• Presence of a breathing problem (including apnea and gasping respiration)
• SpO₂: <90%
• Limp, little vitality
• Enters a sleeping state
• The physician, midwife, or nurse judges that it is contraindicated.
<Implementation methods>

Early mother-infant skin-to-skin contact has various advantages for mother and infant. Consequently, when no special medical reason to not implement early mother-infant skin-to-skin contact exists, as perinatal care personnel we must consider creating opportunities to implement it. Because early mother-infant skin-to-skin contact is care and not a medical service, smooth communication between the mother and the staff is needed, and consideration so as not to isolate mother and child after delivery is important. When implementing early mother-infant skin-to-skin contact, it is particularly necessary for the staff also to be vigilant in observing the infant and not to just leave the infant’s care to the mother alone.

◆ Explain “early mother-infant skin-to-skin contact” when drafting the birth plan.
◆ Start as soon as possible after birth. It is preferable to continue for 30 min or more or until breast-feeding.
◆ Set the upper limit to continue at within 2 hours, and conclude at the point when the infant falls asleep or the mother becomes drowsy.
◆ To overcome the disadvantages to the mother and infant when maternity facilities have not implemented early mother-infant skin-to-skin contact, some sort of support needs to be devised for child-rearing during the puerperium and thereafter.

Mother
- Confirm that the mother wants “early mother-infant skin-to-skin contact”.
- Elevate the upper body (around 30° is preferable).
- Wipe away sweat on the chest and abdomen.
- Hold the nude baby.
- With the mother and infant chest-to-chest, firmly support the child with both hands.

Infant
- Dry the infant off.
- Position the infant’s head turned to one side so the infant can breathe easily without the nasal cavity becoming obstructed.
- Cover the infant with a warmed bath towel.
- Attach the probe of a pulse oximeter to a lower limb, or the staff member in charge remains in attendance during implementation and does not leave the mother and child alone.
- The parameters below are monitored, checked, and recorded.
  - Respiratory status: Watch for labored breathing, retractive breathing, tachypnea, groaning, and apnea.
  - Feeling cold, cyanosis
  - Vital signs (heart rate, respiratory rate, body temperature, etc.)
  - Behavior of mother and infant during implementation
- At the conclusion record vital signs and the infant’s condition.
[References]


[Reference material]  
1) Material for writing a birth plan (example)  
A birth plan means that we ask about your wishes in regard to how you imagine your own delivery in advance and then prepare a plan by helping to make it close to your ideal. Please let us know your wishes in regard to the following:

1 Childbirth  
Delivery:  
  □ I want to have a natural delivery.  
  □ I want to have a planned delivery.  
  □ I want to have a painless delivery.  
Presence of family members, etc.  
  □ I want to have someone present at the delivery  
    ⇒(husband  biological mother  other person)  
  □ I do not want anyone to be present at the delivery.

2 How I want to spend the time in the delivery room and labor room  
   ( )

3 Do you want to have skin-to-skin contact with your baby immediately after birth (early mother-infant skin-to-skin contact) *  
  □ I want to have skin-to-skin contact with my baby immediately after birth.  
  □ I do not want to have skin-to-skin contact with my baby immediately after birth.

4 What are your wishes regarding feeding your baby  
   ( )

5 How do you want to spend time with your baby?  
   ( )

6 Please freely write in any other wishes  
   ( )

*Skin-to-skin contact with your baby immediately after birth(early mother-infant skin-to-skin contact)  
Mother and baby spending time together after birth is natural, and it has a positive effect on the relationship between mother and child. Early mother-infant skin-to-skin contact after birth is particularly effective in regard to breast-feeding and the mental and physical stability of the baby and the mother. As a rule, skin-to-skin contact is performed for 30 min or more, but it is implemented according to the baby’s condition and the mother’s condition after delivery, including how tired the mother is. Immediately after birth is a time when your baby will be adapting to life outside the womb, and it is an unstable time when changes easily occur. Since it has been reported that a sudden change occurs in about 1 out of 10,000 babies and that about 1 in 50,000 cases is serious, a midwife (or a member of the nursing staff) will be carefully watching over you and your baby during the time that you are in skin-to-skin contact, or will attach a monitor, and will instruct you in how to hold your baby, etc.  
If you want to have skin-to-skin contact, please write that you do in the birth plan.
2) Participant observation table for skin contact immediately after delivery (Example)

<table>
<thead>
<tr>
<th>Time after birth</th>
<th>10 min</th>
<th>30 min</th>
<th>60 min</th>
<th>90 min</th>
<th>120 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time             : : : : : : :</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infant’s vital signs</td>
<td>pink</td>
<td>pink</td>
<td>pink</td>
<td>pink</td>
<td>pink</td>
</tr>
<tr>
<td>Skin color</td>
<td>flushed</td>
<td>flushed</td>
<td>flushed</td>
<td>flushed</td>
<td>flushed</td>
</tr>
<tr>
<td>Time             : : : : : : :</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skin color</td>
<td>deep purple</td>
<td>pale</td>
<td>deep purple</td>
<td>pale</td>
<td>deep purple</td>
</tr>
<tr>
<td>Drowsiness</td>
<td>: : : : : : :</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyanosis</td>
<td>lips</td>
<td>lips</td>
<td>lips</td>
<td>lips</td>
<td>lips</td>
</tr>
<tr>
<td>Face</td>
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<td>face</td>
<td>face</td>
<td>face</td>
<td>face</td>
</tr>
<tr>
<td>Face</td>
<td>limbs</td>
<td>limbs</td>
<td>limbs</td>
<td>limbs</td>
<td>limbs</td>
</tr>
<tr>
<td>Face</td>
<td>whole body</td>
<td>whole body</td>
<td>whole body</td>
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<td>whole body</td>
</tr>
<tr>
<td>Tachypnea (60 breaths or more)</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Breathing disorder</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>SpO2</td>
<td>: : : : : : :</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR</td>
<td>: : : : : : :</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wakefulness of the infant</td>
<td>Asleep</td>
<td>: : : : : : :</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wakefulness of the mother</td>
<td>: : : : : : :</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Head position</td>
<td>Facing to the side</td>
<td>: : : : : : :</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast-feeding</td>
<td>None</td>
<td>: : : : : : :</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breast-feeding</td>
<td>None</td>
<td>: : : : : : :</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention (be specific)</td>
<td>: : : : : : :</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signature of the staff member in charge</td>
<td>: : : : : : :</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3) Standards for recording medical care in regard to implementation of early mother-infant skin-to-skin contact (example)

Keep a medical record regarding early mother-infant skin-to-skin contact from the explanation of the birth plan during pregnancy until the conclusion of early mother-infant skin-to-skin contact. The person responsible for implementation is often a midwife, and it is important to record whether there was a sufficient explanation of early mother-infant skin-to-skin contact and the woman wanted it, and observations made before, during, and after its implementation. Also, record any psychological changes that were noted in order to assist with the relationship between the mother and infant following implementation.

If the method of implementing early mother-infant skin-to-skin contact at a facility is different, or if the medical record entry standards, e.g., SOAP (subjective, objective, assessment, and plan) notes, chronological entries, etc., are different, prepare recording standards that conform to the circumstances at the facility.

Content of the records from the time of the explanation of the birth plan to the conclusion of early mother-infant skin-to-skin contact

(1) When the birth plan is explained


[2] Implementation method: If the mother and child are both doing well, the amniotic fluid is wiped off the infant, and skin-to-skin contact is implemented for 30 min or more starting immediately after birth

Implement by placing in skin-to-skin contact while keeping warm with a cover

[3] Precautions: The unstable time accompanying the period of adaptation to extrauterine life

Respiratory depression in the infant because of not being accustomed to holding an infant

[4] Implementation system: Instruct the mother in how to hold her infant, and a staff member remains present during implementation or attaches an instrument (pulse oximeter, etc.) and constantly monitors.

[5] A change is possible any time irrespective of whether or not the mother wants early mother-infant skin-to-skin contact

(2) Before implementing early mother-infant skin-to-skin contact

[1] Mother wants early skin-to-skin contact: Mother does not want early skin-to-skin contact (Check and record, regardless of whether the mother’s wishes are written in the birth plan)

[2] Mother’s condition: Not tired

[3] Infant’s condition: 1-min Apgar score 8 or more

[4] Infant drying off: Confirm how to hold Cover with a warmed bath towel


[6] Time started

(3) Observation during early mother-infant skin-to-skin contact

[1] Mother and family: How to hold Whether tense or anxious Speaks to the infant Facial expression, etc.

[2] Infant: Skin color Feels cold Respiratory status (respiration, circulatory, and body temperature
measurements when necessary)

Body movements  Nipple adsorption behavior

(4) At the conclusion of early mother-infant skin-to-skin contact
   [1] Time concluded
   [2] Observation of the mother, child, family, and degree of satisfaction
Early mother-infant skin-to-skin contact templates (examples)
(Use when there is an electronic chart, etc.)

(1) Template name: early mother-infant skin-to-skin contact (birth plan explanation)
- Effects: Mother-child relationship, breast-feeding, mental and physical stability of mother and infant
- Implementation method: If the mother and infant are both doing well, wipe the amniotic fluid off the infant, and implement by placing in skin-to-skin contact for 30 min or more starting immediately after birth while keeping warm with a cover
- Precautions: The unstable time accompanying the period of adaptation to extrauterine life
  Possibility of respiratory depression in the infant because of the mother not being accustomed to holding an infant
- Implementation system: Instruct the mother how to hold her infant, and a staff member will be present during implementation, or will attach an instrument (pulse oximeter) and be constantly monitoring.
- A change is possible at any time regardless of whether or not the mother wants early mother-infant skin-to-skin contact

(2) Template name: Early mother-infant skin-to-skin contact (before implementation)
- Wants early mother-infant skin-to-skin contact
- Does not want early mother-infant skin-to-skin contact
- Not very tired, and is in condition to be able to perform early mother-infant skin-to-skin contact
- Very tired, and is not in condition to be able to perform early mother-infant skin-to-skin contact

Infant’s 1-min Apgar score (____) points, 5-min Apgar score (____) points
- Infant drying off
- Confirm how to hold
- Keep warm with a bath towel
- Upper body elevation approximately (____) degrees
  (____) hr (____) min started

(3) Template name: Early mother-infant skin-to-skin contact (during implementation)
- Condition of the mother and family (enter free text)
- Condition of the infant: skin color (list of choices: no cyanosis, cyanosis present)
  Respiratory status (list of choices: no abnormal breathing, abnormal breathing present)
  (enter free text)

(4) Template name: Early mother-infant skin-to-skin contact (conclusion)
- Concluded at (____) hr (____) min
- Implemented for (____) hr (____) min
- Condition of the mother and family (enter free text)
- Degree of satisfaction by the mother and family (enter free text)
Points to Bear in Mind in Regard to the Implementation of

“Early Mother-Infant Skin-to-Skin Contact”

<Preparation>
“Early Mother-Infant Skin-to-Skin Contact” Working Group within the Executive Board of the Japan Society of Perinatal and Neonatal Medicine

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