Administration of Incorrect Breast Milk to a Neonate

This protocol is based on the NSW Health Policy Directive, Maternity – Breast Milk: Safe Management PD 2010_019 (March 2010).

While breast milk is the ideal food for babies and risk of infection is minimal, there remains a small yet possible risk for the transmission of infectious pathogens (Dougherty & Giles, 2000).

This policy will describe the action to be taken when a neonate receives human milk, that is expressed breast milk (EBM) from someone other than their own mother or if a mother inadvertently breastfeeds a baby who is not her own. This policy will also provide guidelines so the neonatologist / neonatal fellow may systematically evaluate the risk for possible transmission of disease.

This situation can cause significant emotional distress for the mother and family of the infant who received the incorrect EBM, it is therefore essential that all midwives and nurses accurately confirm each baby is receiving the correct EBM immediately before each feed and on return to the infant if the feeding process was interrupted.

All EBM is to be double checked by two midwives / nurses, one of whom must be a registered nurse or midwife. Viruses can be transmitted via breast milk - therefore administration of the wrong milk to an infant is a serious clinical error and must be immediately reported to the neonatologist on 1st call and the registered nurse/ midwife in charge of shift.

If mother and baby are separated on the postnatal ward, the midwife should ensure the baby’s identification bands agree with his / her mother’s bands on return to her room.
1. Background

Infectivity of Breast Milk

There are numerous benefits to the exclusive use of human milk for the newborn, including partial protection of the infant from infectious pathogens. Breast milk contains specific immune components (antibodies, T cells, B cells) and non specific factors such as oligosaccharides and lactoferrin.

When a neonate receives EBM from a woman other than his /her biological mother, the risk to the infant is low; however the situation does create emotional and potential medico legal issues. The anxiety largely results from a dearth of available information about the level of risk with such an exposure and therefore uncertainty how best to counsel parents.

EBM is a body fluid and although not described in the literature this error can theoretically transmit disease although the true rates of transmission if any are difficult to quantify. The possible transmission of human immunodeficiency virus (HIV), human T-cell leukaemia virus type 1 and type II (HTLV-I, II), hepatitis B (HBV) and hepatitis C (HCV) through another mother’s milk are cause for some concern (Daley, 1998; Jones, 2001).

2. Risk

Consideration of risk should be discussed in terms of

- Exposure is most typically via an intra gastric tube or teat rather than the breast
- The duration of exposure is limited to one, in contrast to the hundreds of feeds that occur over the first months of life on which most risk is documented
- The dose (volume) of exposure is usually small
- There have been no reports of HIV, HTLV 1&11, HBV, HBC transmission with this level of exposure in the literature
- Breast milk stored in the neonatal intensive care situation has most likely been frozen
- Women at RPA have universal screening for HIV, hepatitis B, hepatitis C and syphilis.
- Exposure to HIV positive breast milk is unlikely to occur due to universal screening and counseling against breast feeding in this group of women

2.1 Bacterial contamination of breast milk

Although it has been demonstrated that bacterial counts obtained from pumps or manual expression of breast milk are higher than breast milk that is directly fed to the neonate, bacterial contamination of breast milk rarely presents a problem in clinical practice.

Bacteria, particularly normal skin flora, may be present in expressed breast milk. Bacteria in breast milk are extremely unlikely to cause infections in healthy neonates or infants. The absence of clinical features in the source (mother) such as fever, mastitis, and breast abscess further reduces the risk for transmission of bacteria. Neonates and infants are monitored for signs and symptoms of sepsis as part of general routine care.

Transmission of group B streptococcus (Kotiw et al 2003) and Listeria monocytogenes (Svabic-Vlahovic et al, 1998) in mothers’ infected breast milk have both been reported to have caused neonatal disease. The risk of bacterial transmission when an infant is briefly exposed to another mother’s breast milk is not known.
### 2.2 Viral pathogens

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Description</th>
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</table>
| **HIV infection**   | The prevalence of HIV in Australian women remains low with 94 women (13%) out of 696 notified individuals in 2001. The rate of HIV positive mothers who birth at RPA is low - approximately 0.3 / 1000 women.  
HIV RNA has been identified in infected mothers’ breast milk and HIV can be transmitted by breast milk. The risk of HIV transmission from expressed breast milk consumed by a neonate or baby is considered to be very low because:- women who are HIV positive and aware of that fact are advised not to breastfeed their babies; chemicals present in breast milk act, together with time and cold temperatures, to destroy the HIV present in expressed breast milk and ; transmission of HIV from a single breast milk exposure has never been documented. |
| **HBV**             | The rate of HBsAg positive women who birth at RPA is 12/1000. If either the source mother or biological mother is HBsAg positive, the infant requires HB immunoglobulin and HB vaccination within 12 hours of exposure. Hepatitis B DNA and HBsAg can be detected in breast milk (Lu et al, 2008), making their breast milk infectious. However even in mothers with a high infectivity breastfeeding is not associated with an increase in childhood hepatitis B infection.  
HBV particles have been detected in human milk, but have been identified as extremely low risk in causing transmission of the virus and disease in neonates or infants. |
| **HCV**             | At RPA about 1.0% of screened antenatal clinic women were found to be HCV antibody positive. The majority of these had a history of injecting drug use. The incidence in injecting drugs users was found to be almost 90% antibody positive (Cossart et al 1997) of whom about 70% were RNA positive (HCV PCR positive).  
Hepatitis C RNA and antibodies have been detected in breast milk. The role of infected breast milk in the transmission of HCV remains unclear, but is considered to be extremely low risk. |
| **Human T-cell leukaemia viruses (HTLV-I, II)** | Daley (1998) describes the sero prevalence rate of HTLV-I in Australian blood donors as 0.001 per cent. The virus HTLV-I is readily transmitted in breast milk (Sugiyama et al, 1986) with 25 per cent of breast fed infants of HTLV-I positive mothers becoming infected. This virus is more commonly associated with intra venous drug users in the developed world. HTLV1 can be transmitted by breastfeeding. The virus occurs in general populations in Japan, the West Indies, parts of Africa and South America, and in many Aboriginal populations in central and northern Australia. Transmission of the virus will establish a lifelong infection.  
**HTLVII DNA** has been detected in breast milk however the epidemiology of transmission to the baby and risk of subsequent disease are unclear. HLTIVII has been identified in some indigenous populations and the risk of transmission is considered to be extremely low risk.  
**RISK:**  
Although HTLV-II has not been directly linked with any disease, breast feeding is contraindicated for mothers with either the HTLV-I or HTLV-II virus. NO HTLV virus can be found in human milk after 12 hours frozen storage at -15⁰C (May 2008). |
| **Herpes simplex virus types 1 & 2 (HSV 1&2)** | HSV 1 & 2 can be found in breast milk. Active lesions and viral shedding have been implicated in transmission of the disease. |
| **Cytomegalovirus (CMV)** | Transmission of CMV has been well recognised after primary or recurrent maternal CMV infection. Babies at particular risk from CMV infection include premature infants; those with very low birth weight (less than 2000 grams); and babies with T cell immune deficiency.  
Majority but not complete deactivation of CMV virus 3 days in freezer at -15-20⁰C (Friis & Anderson 1982; May 2008). |
Viral pathogens contd.

<table>
<thead>
<tr>
<th>Rubella</th>
<th>Wild-type and vaccine rubella virus have been isolated from breast milk but other routes of infection are more likely. There are high rates of immunity to Rubella and the mother’s status should be known from antenatal screening.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Syphilis</td>
<td>There is no evidence that syphilis can be transmitted by breast milk alone. The presence of clinical features of syphilitic infection in the source mother (particularly syphilitic lesions on the breast) has been associated with the transmission of syphilis.</td>
</tr>
<tr>
<td>Varicella Zoster Virus (VZV)</td>
<td>Breastfeeding is not considered to be a significant route of transmission for VZV.</td>
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3. Protocol

It is essential that the incident is reported to the staff specialist / neonatal fellow on call so that a management plan may be formalised as soon as possible.

3.1 Key principles

- There is a small but possible risk of transmission of infectious agents, including blood born viruses.
- The administration of the wrong milk to an infant is a serious incident and must be reported immediately to the RN / RM in charge of shift.
- When a baby receives breastmilk from a mother other than their own, the incident is treated as a significant body fluid exposure.
- Both mothers / families need to receive consistent information and guidance from the staff specialist, senior nurse / midwifery clinicians and lactation specialists. Collaboration with the social worker may be needed in cases where there are significant risk factors, either medical or psycho social.
- An IIMS must be completed.

3.2 Immediate Response – treatment of baby

- If feeding was given by an intra gastric tube and the incident is identified within 30 minutes of the feed, aspirate the stomach contents – but only if the intra gastric tube is still in place.
- An intra gastric tube must NOT be re inserted for the purpose of aspirating the incorrect EBM.
- Proceed to risk assessment of the source (non-birth) mother.

Adapted from NSW Health PD 2010_019
3.3 Risk assessment of the source (non-birth mother)

The staff specialist (or delegate) should perform a risk assessment of the source mother at the time of the EBM collection/feeding with regard to:

- General well being, medications, recent blood transfusions and other lifestyle factors – see Human Donor Milk Lifestyle Questionnaire (copies on intranet)
- History of HBV vaccination
- Presence of fever / rashes
- Mastitis / bleeding nipple
- Antenatal serology including HCV, HBV, human immunodeficiency virus (HIV) antibodies, HTLV 1&2

Where recent serological results are unavailable, discuss the risk factors for blood borne viruses (HBV, HCV, HIV, HTLV 1&2) and any risk factors / history of syphilis (including date and treatment) with the source mother.

3.4 Risk assessment of the exposed baby’s birth mother / parents

There must be open disclosure to the birth mother / parents regarding the incident

Ensuring the confidentiality of the source mother is maintained, the staff specialist (or delegate) should:

- Inform the birth mother of the legal right of the source mother to refuse testing
- Clearly explain the reasons for testing the source mother and not the baby
- Provide pre & post test counseling and informed consent obtained to collect serology and breast milk
- Arrange appointments for follow up of results
- Provide appropriate counseling and support for the family

3.5 Serology and Breast Milk Screening

Testing should be expedited to progress treatment for the baby should it be required and to allay parental anxieties and those of the accountable midwife / nurse. Informed consent must be obtained from the source mother and biological mother before collecting serology and breast milk. See flow diagram below.

3.6 Non-consent to testing

If either mother declines testing then the baby’s urine or blood (with parental consent) should be taken for CMV testing.

The risk of the source mother being infected with HIV, HBV or HCV must be assessed using history and risk factors and the baby screened and / or treated appropriate to the level of risk. This decision should be made in consultation with an infectious disease physician, HIV specialist or virologist.
3.7 Management and treatment for the source and birth mothers
If the source mother or birth mother is positive for HIV, HTLV 1&2, HBV or HCV during the screening process, they must be referred to an adult physician with the relevant experience for counseling and future management.

3.8 Management and treatment for the exposed babies
Treatment for the baby administered breast milk from another mother is as follows:

If the serological and breast milk screen from the source mother are negative then no further action is required.

*If the source mother is HIV positive*
- Sydney Children’s Hospital offers a state wide expertise in the management of paediatric HIV disease.

*If the source mother is HTLV positive:*
- Both babies should be referred to a physician with expertise in the management of paediatric infectious disease.

*If the source mother is HBsAg or hepatitis DNA positive:*
- Give hepatitis B immunoglobulin preferably within 24 hours of exposure and give HBV vaccine if birth dose has not already been administered – See vaccination protocol for dosage.
  - If the mother is known to have engaged in at risk behaviours which may have exposed them to HBV then advice should be sought from a paediatric infectious disease specialist.

*If the source mother is HCV positive:*
- The babies should be referred to a physician with expertise in the management of paediatric HCV.

If either mother is CMV positive
- The babies should be referred to a physician with expertise in the management of paediatric CMV.
3.8 Documentation
The source mother must NOT be identified to the birth mother/family during any counseling sessions.

All information (including results & IIMS record number) should be documented in both the source mother’s clinical records and the exposed baby’s clinical records. Date / time of the EBM collection (source mother) and exposure (baby) should be recorded and an IIMS completed for action by the Clinical Governance Unit.

References

Blood transfusion Information Sheet RPA Procedure and Guidelines


Michie C A & Gilmour J. Breastfeeding and viral transmission. *Archives Disease in Childhood*, 2001 84: 381-382


### Table 1 Summary of Serological and Breast Milk Screening

<table>
<thead>
<tr>
<th>Source mother</th>
<th>Initial testing</th>
<th>3 month follow up (if required)</th>
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<tbody>
<tr>
<td>HIV, RNA NAT</td>
<td></td>
<td></td>
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<tr>
<td>HIV, proviral DNA (if available)</td>
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<td></td>
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<tr>
<td>HIV antibody / antigen test</td>
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<td></td>
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<tr>
<td>HTLV 1&amp;2</td>
<td></td>
<td>nil</td>
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<tr>
<td>HCV antibody test (anti HCV IgG)</td>
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<tr>
<td>HCV RNA test</td>
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<tr>
<td>HBV surface antigen (HBsAb), HBV surface antigen (HBsAg)</td>
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<tr>
<td>HBV core antibody</td>
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<tr>
<td>Breast milk cytomegalovirus (CMV) NAT if baby less than 1 month or has an underlying immune deficiency disease</td>
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<thead>
<tr>
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<tr>
<td>HCV RNA test</td>
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<td>HBV core antibody</td>
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<table>
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<tr>
<th>Exposed babies</th>
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<td>HIV, RNA NAT</td>
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<tr>
<td>HIV antibody / antigen test</td>
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<tr>
<td>HTLV 1&amp;2 &amp; p24 Ag screen</td>
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<tr>
<td>HCV antibody test</td>
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**No routine investigations required if consent for serological testing is obtained from source mother**