BACKGROUND/RATIONALE
Breastfeeding has a range of established benefits for both mothers and infants. A mothers informed decision to breast or bottle feed should be fully respected and supported as some mothers are unable to or do not wish to fully breastfeed.

DESIRED OUTCOME/OBJECTIVE
The aim is to ensure the safe preparation, storage, handling and administration of infant formula in both the hospital and home settings.

ISSUES TO CONSIDER
This guideline is for the healthy term newborn in the postnatal ward only and infants admitted to the Special Care Nursery or who require medically indicated supplementary feeds should be managed according to the appropriate guidelines.

Types of artificial infant formula
A baby who is not receiving breast milk should be fed infant formula as cow’s milk is not suitable for children less than 12 months of age. All infant formulas sold in Australia conform to strict guidelines and there is little difference in nutritional value or quality between differently priced brands. There are a variety of formulas available and include;

- **Standard infant formula** – is labelled ‘from birth’ and is suitable for infants up to 12 months of age. Standard formula is cow’s milk based however other options include soy or goat’s milk based. Soy may be preferred by vegan mothers or if the infant can not tolerate cow’s milk protein.

- **Follow-on infant formula** – is labelled suitable ‘for babies over 6 months’ and is recommended for babies 6-12 months of age. There is no research to show these formulas are any better than standard formula and they are not considered nutritionally necessary however their use is based on parental choice.

- **Thickened infant formula** – may be recommended for babies who frequently ‘posset’ or regurgitate large amounts after feeding. Thickened formula should only be used in consultation with an appropriate health professional.

- **Specialty formulas** – There are a variety of specialised formulas for infants with special needs and should only be prescribed under supervision of a paediatrician. These include preterm infant formula and specific formulas for infants with allergies and sensitivities.
Bottles and equipment

- **In the hospital setting** all equipment is provided for preparation, storage and administration of formula. All equipment including bottles, storage containers and teats are single use and disposable. In the postnatal ward mothers must supply their own infant formula. Please note that hospital supplied formula if for special care nursery use only.

- **In the home setting** mothers/caregivers are encouraged to have at least 2-3 large plastic bottles with measurement guides, leak proof caps, discs and teats. The equipment should be easy to clean and the mother is given information on how to clean and sterilise the equipment.

- **Teats** are selected according to flow rate and shape. The flow rate is according to the infant’s age and teat shape is according to the mother’s/caregiver’s personal preference and what works best for each baby.

PROCEDURE

Preparation of infant formula

**In the hospital setting:**
1. Ensure a clean dedicated area for preparation and storage of infant formula.
2. Wash hands.
3. Gather equipment including container with lid, disposable bottle and teat.
4. Boil some fresh tap water and pour out the measured amount into the container the formula will be prepared in. Let it cool for a few minutes (it should still be more than 70°C so DO NOT leave it for more than half an hour). DO NOT use bottled water unless in an emergency when boiled water is not available. DO NOT use artificially softened water as it has a higher sodium level.
5. Add the powder container containing the boiled water according to instructions on infant formula can. Use the scoop provided with the can, do not pack down the powder and level off with a clean knife or spatula.
6. Seal the container and shake gently until mixed.
7. Label the container with the mother’s name, type of formula, date and time of preparation.
8. Store in the milk room fridge on the shelf towards the centre.
9. If the feed is to be used straight away be aware that it may be too hot. It may be cooled in a cup of cold water to speed up the cooling process.
10. Test the temperature of the formula on the inside of the wrist prior to giving to the infant.
11. Discard after 24 hours.
12. Pour the required amount into the bottle when required and attach the teat.
13. Gently warm the bottle in a cup of warm tap water.
14. After the feed throw any unused milk away and discard the bottle. Storing made up milk increases the risk of the baby becoming ill.

**In the home setting (included in discharge education for mothers/care givers):**
1. Ensure a clean dedicated area for preparation and storage of infant formula.
2. Always wash and dry hands before preparing formula and handling equipment.
3. Wash bottles and teats in warm soapy water and rinse.
4. Sterilize equipment using the one of the following methods;
   - **Boiling** - Put the bottles into a large saucepan and cover with water. Bring to boil and boil for 5 minutes. After 2 minutes add the teats and boil them for 3 minutes. When cool enough to handle lift out of water, screw on the caps and store them in the refrigerator.
   - **Chemical Sterilization (liquid/tablet form)** – Follow the manufacturer’s instructions when making up the solution. Use a container that holds enough solution to cover all the equipment. The equipment can stay in the solution until needed. Keep away from direct sunlight and change the solution daily.
Steam sterilization – There are small electric units available from the chemist and microwave sterilizing units also available. The user should follow the manufacturer’s instructions.

5. It is recommended that each bottle is made up individually as this eliminates the risk of multiple feed contamination, reduces the equipment required and reduces the possibility of error when counting scoops of powdered formula.

6. Boil some fresh tap water and pour out the measured amount into the bottle the formula will be prepared in. Let it cool for a few minutes (it should still be more than 70°C so DO NOT leave it for more than half an hour). **DO NOT** use bottled water unless in an emergency when boiled water is not available. **DO NOT** use artificially softened water as it has a higher sodium level

7. A kettle without an automatic cut off should be switched off after 30 seconds.

8. Add the powder according to instructions on infant formula can. Use the scoop provided with the can, do not pack down the powder and level off with a clean knife or spatula. **It is important that the mother/care giver is aware that the infant formula should be made up according to the manufacturers instructions as variation from the recipe can cause harm to the infant including constipation and rapid or poor weight gain.**

9. Put the cap on the feeding bottle and shake gently until mixed.

10. Store the prepared bottle of formula in the main part of the fridge until use.

11. If the feed is to be used straight away be aware that it may be too hot. It may be cooled in a cup of cold water to speed up the cooling process. **DO NOT** use bottled water unless in an emergency when boiled water is not available. **DO NOT** use artificially softened water as it has a higher sodium level

12. Discard after 24 hours.

13. Gently warm the bottle in a cup of warm tap water or in a bottle warmer. Do not heat in the microwave as inconsistent heat distribution can increase the risk of scolding the infant’s mouth.

14. Test the temperature of the formula on the inside of the wrist prior to giving to the infant.

15. Discard the opened tin of formula after 1 month

16. After the feed throw any unused milk away and clean the bottle. Don’t make up more than one feed at a time. Storing made up milk increases the risk of the baby becoming ill.

Storage and handling of infant formula

In the hospital setting:

1. In the postnatal ward infant formula is supplied by the infant’s mother and storage is the responsibility of each individual.

2. All prepared formula is stored in a dedicated fridge in the ‘milk room’ in the postnatal ward. It must be stored in the main part of the fridge NOT in the door.

3. All equipment used for the preparation of infant formula is single use and disposable.

4. All mothers who are using infant formula are given one to one education regarding safe preparation, storage, handling and administration of infant formula.

5. All infant formula is labelled with the mother’s name, date and time of preparation and discarded after 24 hours.

6. All staff and parents are expected to wash their hands prior to any infant formula preparation.

In the home setting (included in discharge education for mothers/caregivers):

1. Always have a clean dedicated area for infant formula preparations.

2. Always wash hands.

3. Store all prepared formula in the main section in the centre of the fridge.

4. Discard the contents of a partially used feed after 1 hour and do not reuse feed.

5. Check the expiry date on all tins of formula and discard if out of date and opened tins are discarded after 1 month.

6. The safest way to transport a feed is to take some boiled water in a thermos and the powder in a separate container and mix prior to use. **If transporting prepared formula it must be carried in an insulated bag with an ice pack. It may be given cold to the infant if unable to be warmed. Alternatively, for convenience, ready to use infant formula in tetra packs and single dose sachets of infant formula are available for purchase.**
7. Bottled water may be used in an emergency however is not recommended for general use as it is the boiling process (>70°C) which kills the bacteria in the milk.
8. The bottle should be warmed for no longer than 10 minutes as bacteria multiply rapidly in warm formula if warming is extended.
9. Infant formula should not be over heated and should not be warmed in a microwave as due to inconsistent heat distribution there is a risk of scolding the infant’s mouth.
10. All mother’s/caregivers are given a pamphlet “A Guide to Infant Formula and Bottle Feeding” prior to discharge.

**Administration of infant formula**

**Fluid requirements**

- The volume of fluid required per feed in a 24 hour period is based on the infant’s weight and age.
- All feed volumes should be introduced gradually and in the first few days of life small volumes should be gradually increased as the infant’s stomach needs to gently adapt to the amount.
- Mothers/caregiver’s should be encouraged to demand feed and be aware of the signs that the infant is being fed enough and is well hydrated. Advice should include;
  - The infant should be fed as much as he/she wants as often as demanding. If the infant is regurgitating or vomiting after a feed suggest offering a smaller amount the next feed.
  - Newborn babies take small volumes to start with and by the end of the first week will be having around 150-200 mls per kg per day.
  - Giving lots of milk in one feed will not necessarily enable the infant to go longer between feeds. It is just as likely to make him/her sick, or put on too much weight. Don’t try to make him/her finish the bottle if he/she doesn’t seem to want it. Resting halfway through the feed will allow the infant to register if he/she is feeling full.
  - The mother/caregiver will learn to recognise signs of hunger in the infant and it is helpful to recognise this before he/she starts crying.
  - When he/she wakes they will move about and this is a good time to prepare the bottle.
  - A good time to feed is when the infant starts to move his/her head about and mouth around, start to suck and may suck on their fingers.
  - Signs that the infant is well hydrated and getting enough milk include;
    - The infant should be gaining weight and be having at least 6 wet nappies a day after the first day or so.
    - The urine should be clear or pale yellow.
    - As the Meconium (sticky dark stools of newborns) has passed the stools should become pale yellow or yellowish-brown. Formula fed babies should pass at least one stool a day to feel comfortable.
    - If the infant seems constipated check how the formula is prepared with the right scoops to water and seek advise from your doctor or maternal and child health nurse.

**Calculation of feed volume**

- In a healthy full term infant the feed amount is calculated using the infant’s birth weight until the infant is above birth weight and then the actual weight is used.
- The healthy full term infant will demand feed and requirements may differ slightly from day to day. The infant’s growth and development is monitored by the Maternal and Child Health Nurse and the feeding regimen is assessed or altered where appropriate.
Fluid requirements for full term formula fed infants

<table>
<thead>
<tr>
<th>Age of baby</th>
<th>Ml/kg/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>60 ml/kg/day</td>
</tr>
<tr>
<td>Day 2</td>
<td>90 ml/kg/day</td>
</tr>
<tr>
<td>Day 3</td>
<td>120 ml/kg/day</td>
</tr>
<tr>
<td>Day 4 to 3 months</td>
<td>150 ml/kg/day</td>
</tr>
<tr>
<td>3 – 12 months</td>
<td>90-120 ml/kg/day</td>
</tr>
</tbody>
</table>

Calculating feeds

<table>
<thead>
<tr>
<th>Birthweight (grams)</th>
<th>Ml/kg/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>X</td>
</tr>
</tbody>
</table>

Number of feeds a day = Volume per feed (approx) mls

3 hourly feeds = 8 feeds/day
4 hourly feeds = 6 feeds/day

Feeding technique (education for mothers/caregivers):
1. The caregiver should cradle the baby in the arm and cuddle close holding gently but firmly.
2. The baby should be on a slight incline.
3. Stimulate the rooting reflex by brushing the teat on the lips and slide the teat into the mouth to where the sucking reflex is stimulated.
4. The neck of the bottle should be kept at an angle so it is filled with milk until the baby has finished.
5. Give half of the required feed as volumes get larger.
6. Sit baby up and gently allow to ‘burp’ or rest.
7. Continue with second half of feed.
8. Following feed, encourage parents to cuddle baby.
9. Never leave the baby with a bottle unattended.
10. Recommend changing the position in the arms to the other side regularly.

RELATED DOCUMENTS

<table>
<thead>
<tr>
<th>Internal</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPG/S041 Supplementary Feeding of the Breastfed Baby</td>
</tr>
<tr>
<td>BHS Pamphlet – A guide to infant formula and bottle feeding</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>External</th>
</tr>
</thead>
</table>

REFERENCES


| Reg. Authority: CEO, Executive Directors, Nursing, Medical, Allied health & Psychiatric Services, Clinical Director of Women’s & Children Health | Date Effective: July 2011 |
| Review Responsibility: Maternity Unit | Date Revised:---- |
| Date for Review: July 2014 |
| Original Author: Maternity Unit Project Officer, Lactation Consultant (2010) |
| Updated by: ---- |