

# Evaluation of feeding equipment in the pre-repair cleft lip/palate population in Australia

## Background

Children with cleft lip/palate often experience feeding difficulties and may not be able to breast feed or bottle feed via standard teats (Hartzell & Kilpatrick, 2014). Lady Cilento Children's Hospital (LCCH) may provide recommendations pertaining to feeding equipment to enable safe and adequate feeding and swallowing. A review of the products provided by LCCH and those recommended to families of children with cleft lip/palate was warranted in the context of usual evidence based practice reviews and the emergence of new products/services.

## Methodology

Evidence based practice (EBP) involves the integration of current best evidence with clinical expertise and patient preferences (Sackett, 1997). Evaluation of feeding equipment and recommendations will consider all components of EBP by combining results from literature searching and appraisal, benchmarking of comparable services and product evaluation by speech pathologists.

## Literature Review

CINAHL complete and MEDLINE complete databases were searched using the key words "cleft palate" AND "feeding". Journal articles pertaining to feeding pre-cleft lip or palate repair were included in the review.

### Pre-operative Feeding

There are many benefits to breastfeeding however babies with cleft lip often experience difficulties breastfeeding and babies with cleft palate are usually unable to generate adequate suction for successful breastfeeding (Australian Breastfeeding Association, 2015; Reilly, Reid, Skeat, Cahir, Mei & Bunik, 2013). Expressed breast milk can still be provided to infants that are unable to breastfeed and support around managing expressed feedings can be provided.

Several products have been identified as suitable alternative methods for feeding in the pre-operative cleft lip/palate population including:

- Pigeon cleft palate teat and cleft palate bottle (Dailey, 2013).
- Special Needs Feeder (previously known as the Haberman feeder) (Glass and Wolf, 1999).
- Mead Johnson cleft lip/palate nurser (Hartzell & Kilpatrick, 2014).
- Chu Chu Easy Feed Teat (The Royal Children's Hospital Melbourne, 2010; Crossman, 1998).
- Dr. Brown's specialty feeding system (Gailey, 2016).
- Squeezable bottles rather than rigid bottles (Lindberg & Berglund, 2013)
- Bottle/teats that use one way valves (Fullman & Boyer, 2012).

Specialised feeding equipment is recommended by several authors, as noted above, however there is a scarcity of clinical trials to guide selection of bottles and teats with respect to specific feeding behaviours or diagnoses (Bessell, Hooper, Shaw, Reilly, Reid & Glenn, 2011). In addition, there are no published clinical guidelines for cleft feeding available through Speech Pathology Australia or Royal College of Speech and Language Therapists.

Only one study was identified which compared the use of teats (Brine et al., 1994). Brine and colleagues (1994) compared the Mead Johnson cleft lip/palate nurser with a standard cross cut nipple and bottle and found no statistically significant differences in weight gain between the two groups. This study was published more than 20 years ago and had several limitations including exclusion of infants with malformation syndromes, recognisable medical conditions, Pierre Robin sequence or any other abnormalities; limited patient numbers and no data related to the quality of the feeding.

Shaw, Bannister and Roberts (1999) compared the use of a squeeze bottle with a rigid bottle and found that use of the rigid bottle resulted in significantly increased specialist review and the need for modifications to the feeding method. Further, 11% of babies randomised to the rigid bottle group were not successful in using this bottle to feed and were subsequently switched to a squeeze bottle.

Several expert-level recommendations for feeding in the pre-repair cleft palate population have been proposed including the provision of consistent and effective advice from health care specialists (Lindberg & Berglund, 2013), use of upright positioning for feeding (Fullman & Boyer, 2012; Glass and Wolf, 1999) and frequent burping (Glass and Wolf, 1999) in the non-complex cleft population. Alternative positioning, pacing or milk flow considerations are required for babies presenting with micrognathia or other respiratory diagnoses (Glass and Wolf, 1999).

**In summary, several teats, bottles and intervention strategies have been proposed in the literature however there remains a scarcity of clinical trials to determine the most effective product or strategy for feeding of cleft lip/palate babies in the pre-repair phase.**

## Benchmarking

Speech pathologists working across Australia in cleft palate craniofacial services in Victoria (VIC), Western Australia (WA), New South Wales (NSW) South Australia (SA) and Queensland (QLD) were contacted to provide responses to the question “What feeding equipment do you currently use pre lip/palate cleft repairs”? It should be noted that some hospitals did not provide neonatal services and therefore rarely prescribed pre-cleft repair feeding equipment for babies.

Benchmarking responses revealed consistency amongst speech pathologists both with respect to equipment prescription and rationale. Several comments were made that highlighted the need for speech pathology assessment prior to teat/bottle selection, including “it depends on the child”, “[A] syndromic child may need something else instead”, and “use a MAM CLAPA squeeze bottle if [there’s a] wide cleft lip or macrostomia”. In addition to these comments, a number of teats and bottles were described indicating that a “one size fits all” approach is not clinically indicated for the cleft population.

Speech pathologists consistently reported use of the following products:

- Pigeon cleft teat (VIC, NSW, QLD)
- Standard ward teat, usually fast flow (VIC, WA, NSW, SA, QLD)
- Special Needs Feeder (VIC, WA, NSW, QLD)
- MAM CLAPA squeeze bottle (WA, NSW, SA)
- Pigeon cleft squeeze bottle (VIC, WA, NSW, QLD)
- Generic squeeze bottle (VIC, WA, QLD)
- Chu Chu Easy Feed teat (QLD)

## Product Evaluation

Products reviewed were selected on the basis of the benchmarking and literature review results. A product evaluation was completed on the basis of reported ease of use, availability, expense and appearance. The results are shown in the table below. Most products are similarly priced and are more expensive than standard bottle feeding equipment. Many products are available online.

Product	Approximate price and supplier details <small>* as at November 2017</small>	Manufacturers care instructions	Pros	Cons	Photo
<p><b>Chu Chu Easy Feed Teat</b></p> <p>Teat only. Soft silicone, long nipple, flattened teat top and bottom.</p> <p>This teat is typically used with a squeezable bottle but can also be used with a standard bottle if appropriate for the child.</p>	<p><b>\$13 +</b></p> <p><b>Wholesale:</b> Traztolo Pty Ltd 02 4329 3093</p> <p><b>Retail:</b> Cleft Pals QLD Cleft Pals VIC Cleft Pals NSW Atrium Pharmacy RBWH Amigo store LCCH</p> <p>Available online from a number of pharmacies and cleft support agencies. Local pharmacies are able to order.</p>	<p>Clean before each use. Wash teat then boil for 4 minutes in water.</p>	<ul style="list-style-type: none"> <li>• Easy to use</li> <li>• Good price</li> <li>• Delivers a large bolus with a strong suck</li> <li>• Easy to source</li> <li>• Looks “normal”</li> <li>• Having ‘soft’ and ‘hard’ sides to the teat is a good feature</li> <li>• Seems popular, even in the non-cleft population</li> <li>• Consistent quality</li> <li>• Easy to clean</li> </ul>	<ul style="list-style-type: none"> <li>• Hard to order and replace (need to order online)</li> <li>• Delivers a large bolus with a strong suck</li> </ul>	
<p><b>Special Needs Feeder (Medela)</b></p> <p>Multi-flow option soft squeeze teat, one way valve.</p>	<p><b>\$57-\$70</b></p> <p><b>Wholesale:</b> Medela Australia 03 9552 8600 <a href="http://www.medela.com.au/breastfeeding/products/feeding/special-needs-feeder">http://www.medela.com.au/breastfeeding/products/feeding/special-needs-feeder</a></p> <p><b>Retail:</b> Amigo shop at LCCH</p> <p>Available online from Medelastore.com.au, cleftpals Victoria and various online pharmacies and baby stores.</p>	<p>Dishwasher safe.</p> <p>Commercially available.</p> <p>Dishwashing liquid suitable for cleaning.</p>	<ul style="list-style-type: none"> <li>• Works well for babies with complex issues (e.g. Pierre Robin or complex craniofacial)</li> <li>• Families like the flow variability that it offers</li> <li>• Has a squeeze option for the teat</li> <li>• Available from select pharmacies and can be ordered</li> </ul>	<ul style="list-style-type: none"> <li>• Expensive</li> <li>• Fiddly for families and nursing staff to put together</li> <li>• Lots of parts and parts get lost</li> <li>• Needs to be practised to be used</li> <li>• Requires more education and training for nursing staff</li> <li>• Can be used inappropriately, resulting in gagging or infant distress.</li> <li>• Does not have a cap/lid</li> <li>• Looks unusual</li> </ul>	

Product	Approximate price and supplier details <small>* as at November 2017</small>	Manufacturers care instructions	Pros	Cons	Photo
<p><b>Dr. Brown's speciality feeding system</b></p> <p>Standard teat, non-squeeze bottle, anti-colic vent (removable). One way valve.</p>	<p><b>\$20</b></p> <p><a href="http://www.drbrownsbaby.com">www.drbrownsbaby.com</a></p> <p><b>Retail:</b> Cleft Connect</p> <p>Available online from ebay and some pharmacies. Available for purchase from some retail stores.</p>	<p>Dishwasher safe in top rack.</p>	<ul style="list-style-type: none"> <li>Reported to be liked by families overseas</li> </ul>	<ul style="list-style-type: none"> <li>Limited experience with product in Australia</li> <li>Difficult to obtain</li> </ul>	
<p><b>Pigeon nursing bottle &amp; teat for cleft lip/palate baby</b></p> <p>Cross cut teat, one way valve, squeezable bottle, flattened on one side of teat only.</p>	<p><b>\$15+ / \$11 (teat only)</b></p> <p><b>Wholesale:</b> Havenhall Pty Ltd 02 9316 9810 <a href="http://www.pigeonbaby.com.au">www.pigeonbaby.com.au</a></p> <p><b>Retail:</b> Cleft Connect Cleft Pals QLD Amigo Shop at LCCH Various online pharmacies and retail stores</p>	<p>Immediately rinse in warm water and wash using a pigeon liquid cleanser following use.</p>	<ul style="list-style-type: none"> <li>Flattened side of teat functions well when used in the correct direction</li> <li>Easier to squeeze than other squeeze bottles</li> <li>Pack comes with 2 different size teats which could be suitable for smaller or larger babies with smaller or larger clefts</li> </ul>	<ul style="list-style-type: none"> <li>Unreliable (valve can fall into the bottle during the feed, inconsistent flow rate)</li> <li>Issues with assembly (valve can be placed in upside down)</li> <li>Pack comes with 2 different size teats which could cause confusion</li> </ul>	
<p><b>MAM CLAPA bottle</b></p> <p>Standard size neck which can be used with most teats. Squeeze bottle.</p>	<p><b>\$12-\$47 (with teats)</b></p> <p><b>Wholesale:</b> (N/A)</p> <p><b>Retail:</b> Cleft Pals VIC Cleft Pals NSW Various online pharmacies and stores</p>	<p>Dishwasher safe, common dishwashing liquid safe.</p>	<ul style="list-style-type: none"> <li>Good price for bottle alone</li> </ul>	<ul style="list-style-type: none"> <li>No anecdotal reports provided</li> <li>Difficult to source</li> <li>Some online reports providing difficulties providing appropriate/safe squeeze pressure</li> </ul>	<p>No image available</p>

Product	Approximate price and supplier details <small>* as at November 2017</small>	Manufacturers care instructions	Pros	Cons	Photo
<p><b>Cleft Pals QLD Squeeze bottle</b></p> <p>Bottle is made from soft plastic which allows the bottle to be squeezed.</p>	<p><b>\$5+</b></p> <p><b>Wholesale:</b> Traztolo Pty Ltd 02 4329 3093</p> <p><b>Retail:</b> Cleft Pals QLD</p>	<p>Soak in cold water sterilising solution (i.e. Milton antibacterial solution).</p>	<ul style="list-style-type: none"> <li>• Works well</li> <li>• Can be used post operatively with spouts or witches hat attachments</li> </ul>	<ul style="list-style-type: none"> <li>• Variable results depending on the user and how hard the bottle is squeezed</li> <li>• Very large bottle which can be difficult to use when baby is only taking small volumes of milk</li> <li>• They wear out quite quickly/warp/melt/don't respond well to repeated washing</li> <li>• Can be stiff to use (disposable hospital bottles have more squeeze comparatively)</li> <li>• Hand tires with repeated squeezing</li> </ul>	

**Please note:** This table is not meant as a purchasing guide. Please note prices may vary significantly. Parent support groups sell a variety of equipment:

Cleft Connect <http://cleftconnect.org.au/welcome/shop/>

Cleft Pals NSW <http://cleftpalsnsw.org.au/index.php/equipment/>

Cleft Pals Victoria <https://www.cleftpalsvic.com/shop/>

Cleft Pals QLD <https://www.cleftpalsqld.org.au/shop/>

*\*Prices last updated 22 November 2017*

## Summary

In summary, many teats, bottles and feeding strategies have been used for feeding in the pre-repair cleft palate population. Research findings and clinical benchmarking both provide support for the role of the speech pathologist in prescribing the most suitable feeding equipment for the individual child. The use of squeeze bottles is supported by both literature findings and clinical experience, however, use of a squeezable bottle is not universal nor has one brand been identified as superior to others. There is currently insufficient evidence to recommend a specific teat.

With respect to availability, standard bottles and teats are able to be purchased in stores or online. Specialised cleft feeding equipment is more difficult to source than regular equipment and often is only available online with prices ranging from \$20-70 per bottle and teat set.

## Recommendations

- Babies with cleft lip and palate may benefit from an initial assessment by a speech pathologist or specialist cleft nurse prior to prescription of feeding equipment or strategies;
- There should be recognition by speech pathologists and others involved in the care of infants with clefts (eg parent support agencies, nursing and medical professionals) that different options may result in successful feeding for different children;
- Written and verbal information should be provided to families if they are given or sold special feeding equipment. This information should include where to seek health advice or assessment of feeding. This information should also include where to obtain further supplies of equipment.
- Consideration should be given to alternative means of purchasing cleft feeding equipment to cater for consumers who do not wish to, are unable to shop online or need a product urgently;
- There should be consultation with local speech pathologists regarding products listed above, to evaluate less commonly used products and provide expert opinion comparison of similar products and
- Results should be disseminated to stakeholders throughout Queensland Health and those clinicians interstate who contributed to the review. The information should also be disseminated to parent support groups and to professional interest groups including the Paediatric Dysphagia Interest Group and Australasian Cleft Lip and Palate Association.

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Developed by Department of Speech Pathology, Lady Cilento Children's Hospital. Updated: January 2018. All information contained in this sheet has been supplied by qualified professionals as a guideline for care only. Seek medical advice, as appropriate, for concerns regarding your child's health.

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