ANKYLOGLOSSIA
DOES IT MATTER
AND
CAN YOU
FIX IT?

Diana Mayer, MD FAAP IBCLC
International Board Certified Lactation Consultant
Chairman, Department of Pediatrics
CentraState Medical Center
Freehold, New Jersey
In the past 12 months, I have not had a significant financial interest or other relationship with the manufacturer(s) of the product(s) or provider(s) of the services that will be discussed in my presentation.

This presentation will not include discussion of pharmaceuticals or devices that have not been approved by the FDA.
GOALS

• How ankyloglossia is categorized
• Problems associated with ankyloglossia
• How breastfeeding mechanics are altered in infants with ankyloglossia
• The indications for performing a frenotomy
• Discuss recent studies (including randomized control studies) that indicate that the frenotomy procedure helps correct latch problems and alleviates maternal nipple pain
• Appropriate oral motor assessment
• Understand when a frenotomy is NOT indicated
• Review frenotomy procedure- (Practice procedure on oral models this afternoon)
Does Ankyloglossia Matter?

Does Breastfeeding Matter?
INFANTS
↑NEUROCOGNITIVE SCORES
↓NEC
↓SEPSIS
↓RESPIRATORY ILLNESS
↓OTITIS MEDIA
↓GASTROENTERITIS
↓TYPE 1 DIABETES
↓TYPE 2 DIABETES
↓OBESITY
↓CELIAC DISEASE
↓INFLAMMATORY BOWEL DISEASE
↓CHILDHOOD CANCER
↓ATOPY (asthma, eczema)
↓SIDS

FAMILIES
MORE ECONOMICAL
↓INFANT ILLNESS
↓PARENTAL LOSS OF WORK

HEALTH OUTCOMES RESEARCH AND BREASTFEEDING

MOTHERS
REACH PRE-PREGNANCY WEIGHT FASTER
↓RATE OF POST-PARTUM BLEEDING AND ANEMIA
↓POSTPARTUM DEPRESSION
↓BREAST CANCER
↓OVARIAN CANCER
POSTMENOPAUSAL DISEASES:
↓OSTEOPOROSIS
↓HIP FRACTURES
↓TYPE 2 DIABETES
↓HYPERTENSION
↓HYPERCHOLESTEROLEMIA
↓CARDIOVASCULAR DISEASE

SOCITY
↓INFANT MORTALITY RATES
↓ANNUAL HEALTHCARE COSTS
↓PARENTAL ABSENTEEISM DUE TO CHILDHOOD ILLNESS
Breastfeeding, Maternal & Infant Health Outcomes AHRQ 2007
“The debate is over…”

“The debate is over about the importance of breastfeeding and healthy outcomes for women and children in the United States. There is no debate…

The real questions are:
- How do we support women and families in breastfeeding and exclusively breastfeeding?
- What can the healthcare system do?
- What is our responsibility?”

David Meyers, MD
Director
Center for Primary Care, Prevention and Clinical Partnerships
Agency for Healthcare Research and Quality
REMOVING BARRIERS TO SUCCESSFUL NURSING

OPTIMIZED HEALTH OUTCOMES
BABY/CHILD AND MOTHER
Ankyloglossia:
the presence of a lingual frenulum which alters the function/movement of the tongue

In rare situations a lingual frenulum is absent and the tongue directly is fused to the floor of the mouth
**CLASSIFICATION OF ANKYLOGLOSSIA**

Academy of Breastfeeding Medicine:

**Partial Ankyloglossia**
- most common
- partial movement of the tongue
- amenable with frenotomy

**Complete Ankyloglossia**
- extremely rare
- extensive fusion of the tongue to the floor of the mouth

Academy of Breastfeeding Medicine, Protocol # 11
OTHER CLASSIFICATIONS

**TYPE 1**: lingual frenulum attaches to the tip of the tongue

**TYPE 2**: lingual frenulum attaches 2-4mm behind the tongue tip and attaches to the alveolar ridge

**TYPE 3**: lingual frenulum attaches mid-tongue and to the middle of the floor of the mouth

**TYPE 4**: Posterior tongue tie: frenulum tissue exists behind the mucosal lining and is far back toward the junction of the tongue’s underside and the floor of the mouth (6% of ankyloglossia, ♀♂) or rarely tongue is attached directly to the floor of the mouth

TYPE 1

- MAXILLA
- GUM
- SUPERIOR LONGITUDINAL M.
- LINGUAL FRENULUM
- GUM
- MANDIBLE
- GENIOHYOID M.
- MYLOHYOID M.
- SOFT PALATE
- GENIOGLOSSUS M.
- HYOID BONE
- EPIGLOTTIS

© D Mayer March 2011
TYPE 3
NEAR-COMPLETE FUSION OF TONGUE /TYPE 4

COURTESY OF GLENN ISAACSON, MD, PHILADELPHIA, PA
TYPE 4/POSTERIOR TONGUE TIE

COURTESY OF JIM MURPHY MD
TYPE 4/POSTERIOR TONGUE TIE

COURTESY OF JIM MURPHY MD
TYPE 4/POSTERIOR TONGUE TIE

COURTESY OF JIM MURPHY MD
PREVALENCE

3-5% of infants

BREASTFEEDING

DENTAL
Separation of lower incisors
Manipulating food boluses
Caries
In old age-denture fitting

ANKYLOGLOSSIA

SOCIAL
Licking
Kissing

SPEECH?
Delay-disproven
Articulation problems? controversial

TRAUMA
Tissue irritation
Spontaneous tear
Controversies:
• Can a lingual frenulum cause speech delay?
• Can a lingual frenulum cause articulation errors?
Authors agree that expressive speech delay is not associated with ankyloglossia.
ARTICULATION PROBLEMS

CONSONANTS REQUIRING TONGUE ELEVATION:

D  N  T
L  S
Can ankyloglossia cause articulation errors?

YES……NO…..MAYBE
SPEECH CONTROVERSIES

COMPENSITORY TONGUE MOVEMENTS
Approximating sounds by lifting posterior and middle aspect of tongue

STRETCHING OF LINGUAL FRENULUM OVER YEARS
Most, but probably not all, people are able to compensate for their ankyloglossia
BREASTFEEDING PROBLEMS
IS THE PRESENCE OF A LINGUAL FRENULUM ALWAYS A PROBLEM?

25-40% OF BABIES WITH A LINGUAL FRENULUM HAVE BREASTFEEDING PROBLEMS

CONSEQUENCES OF ANKYLOGLOSSIA

Latch Problems

Insufficient milk retrieval

Nipple Pain/TRAUMA

premature weaning

poor weight gain

Nipple/breast infections


RECENT RESEARCH
**Recent Studies**

**RANDOMIZED CONTROLLED STUDY**

**Hogan, et al:**

immediate frenotomy vs 48 hours of intensive feeding consultation

- **28-immediate frenotomy**
  - 27 improved (p<0.001)
  - 1 did not improve

- **29 controls-48 hours intensive feeding consultation**
  - 1 improved
  - 28 no improvement
  - after 48 hours 28 offered and accepted frenotomy
  - 27 improved
  - 1 did not improve

**54/57 (95%) : feeding improvement**

Recent Studies

RANDOMIZED CONTROLLED STUDY

Buryk et al
Single blinded randomized control trial
Frenotomy (30) vs Sham procedure (28)

- ankyloglossia assessment tool used to choose infants with significant ankyloglossia
- Infant Breastfeeding Assessment Tool (IBFAT) and pain scale (Short Form McGill Pain Questionnaire) done before and after frenotomy or sham
- Mothers blinded until post-evaluation was completed
- Adequate number of subjects as determined by F test

Recent Studies

RANDOMIZED CONTROLLED STUDY

(Buryk et al continued)

• **Pain**: both groups had decreased levels of pain but the frenotomy group had a significantly greater decrease in pain compared to the sham group ($p<0.001$)
• **IBFAT scores** significantly improved in frenotomy group ($p=0.029$) but not sham group
• Crossover of sham group within 2 weeks (27/28 accepted)- Pain scores and IBFAT post-frenotomy “equalled out” after both groups had the frenotomy following the crossover
• Maintained decreased SF-MPQ and improved IBFAT scores at 2, 6 and 12 months
• Breastfeeding rates postfrenotomy 66% (2mo) 44% (6mo) and 28% (12mo)

Recent Studies

**Berry et al**

Double-Blind Randomized Controlled Trial

Frenotomy (27) vs Sham (30)

- Feeding: LATCH scoring and Infant Breastfeeding Assessment Tool (IBFAT) used
- Maternal pain score (1-10)
- Minimum required sample size was 25 for each group (2 group $\chi^2$ test with 0.05 two-sided significance level)
- Mothers and observer were blinded until after feed that followed sham or procedure
- Feeding scores showed improvement in the frenotomy group at $p<0.02$ level (95% confidence level 6-51%) 78% frenotomy vs 47% sham
- Maternal pain did not reach clinical significance
- Crossover of sham group occurred after sham procedure evaluation was completed

Berry et al  A Double-Blind, Randomized, Controlled Trial of Tongue-Tie Division and Its Immediate Effect on Breastfeeding Breastfeeding Medicine 2012;7(3):189-193
FEEDING MECHANICS IN INFANTS WITH ANKYLOGLOSSIA

Geddes, et al
Ultrasound of feeding mechanics in infants pre and post frenotomy

24 infant-mother pairs

Evaluated Pre and post frenotomy for:

• LATCH
• MILK VOLUME
• NIPPLE PAIN
• FEEDING MECHANICS via ultrasound

FEEDING MECHANICS IN INFANTS WITH ANKYLOGLOSSIA

Geddes, et al

- **LATCH** LATCH tool (latch, audible swallowing, type of nipple, comfort, and hold) 
  LATCH scores (graded 0-10) significantly improved from 7.9±1.4 to 9.4±0.8 (P<.05)

- **MILK RETRIEVAL** in only 6 of the pairs due to maternal anxiety related to desire to get procedure done ASAP 
  For 24 hours prior to /24 hours after the procedure test-weigh method before and after feeds 
  pre-frenotomy 505±291g    post-frenotomy 691±319g (p< .01)

- **MATERNAL PAIN** maternal pain score (0-10) 
  pre-frenotomy 3.6±3.0    post-frenotomy 0.5±1.2  (p< .05)

Geddes et al. Frenulotomy for Breastfeeding Infants With Ankyloglossia : Effect on Milk Removal and Sucking Mechanism as Imaged by Ultrasound. Pediatrics, 2008;122;e188-e194
## FEEDING MECHANICS - ULTRASOUND RESULTS

<table>
<thead>
<tr>
<th>Pressure on nipple</th>
<th>BASE COMPRESSION GROUP (46%)</th>
<th>POINT COMPRESSION GROUP (37%)</th>
<th>&quot;MIXED&quot; (13%)</th>
<th>OTHER (4%) n=1</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-FRENOTOMY</td>
<td>base of nipple pinched</td>
<td>posterior tongue humps up, compressing the tip of the nipple to a point</td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>POST-FRENOTOMY</td>
<td>reduction</td>
<td>reduction</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

HSPJ=Hard Soft Palate Junction   ND=Not Discussed in article
### FEEDING MECHANICS - ULTRASOUND RESULTS

<table>
<thead>
<tr>
<th></th>
<th>BASE COMPRESSION GROUP (46%)</th>
<th>POINT COMPRESSION GROUP (37%)</th>
<th>“MIXED” (13%)</th>
<th>OTHER (4%) n=1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nipple Relationship to HSPJ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRE-FRENOTOMY</td>
<td>close</td>
<td>far</td>
<td>far</td>
<td>-</td>
</tr>
<tr>
<td>POST-FRENOTOMY</td>
<td>same</td>
<td>closer to HSPJ</td>
<td>closer to HSPJ</td>
<td>none</td>
</tr>
</tbody>
</table>

HSPJ=Hard Soft Palate Junction  
ND=Not Discussed in article
## FEEDING MECHANICS-
### ULTRASOUND RESULTS

<table>
<thead>
<tr>
<th>BASE COMPRESSION GROUP (46%)</th>
<th>POINT COMPRESSION GROUP (37%)</th>
<th>“MIXED” (13%)</th>
<th>OTHER (4%) n=1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Posterior tongue movement</strong></td>
<td><strong>POST-FRENOTOMY</strong></td>
<td><strong>PRE-FRENOTOMY</strong></td>
<td><strong>ND</strong></td>
</tr>
<tr>
<td>Less up and down movement of posterior tongue than expected</td>
<td>Less up and down movement of posterior tongue than expected</td>
<td>ND</td>
<td>none</td>
</tr>
<tr>
<td>better up &amp; down movement of posterior tongue</td>
<td>better up &amp; down movement of posterior tongue</td>
<td>ND</td>
<td>NA</td>
</tr>
<tr>
<td>↑negative suck pressure generated better flow</td>
<td>↑negative suck pressure generated better flow</td>
<td>ND</td>
<td>NA</td>
</tr>
</tbody>
</table>

HSPJ=Hard Soft Palate Junction  ND=Not Discussed in article
# FEEDING MECHANICS- ULTRASOUND RESULTS

## BASE COMPRESSION GROUP (46%)

### POINT COMPRESSION GROUP (37%)

### "MIXED" (13%)

### OTHER (4%; n=1)

### PRE-FRENOTOMY

<table>
<thead>
<tr>
<th>Nipple Relationship to HSPJ</th>
<th>Base Compression Group</th>
<th>Point Compression Group</th>
<th>&quot;Mixed&quot;</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>close</td>
<td>base of nipple pinched</td>
<td>posterior tongue humps up, compressing the tip of the nipple to a point</td>
<td>far</td>
<td>-</td>
</tr>
<tr>
<td>far</td>
<td></td>
<td></td>
<td>far</td>
<td>-</td>
</tr>
<tr>
<td>far</td>
<td></td>
<td></td>
<td>none</td>
<td>none</td>
</tr>
<tr>
<td>far</td>
<td></td>
<td></td>
<td>none</td>
<td>none</td>
</tr>
</tbody>
</table>

### POST-FRENOTOMY

<table>
<thead>
<tr>
<th>Nipple Relationship to HSPJ</th>
<th>Base Compression Group</th>
<th>Point Compression Group</th>
<th>&quot;Mixed&quot;</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>same</td>
<td>reduction</td>
<td></td>
<td>closer to HSPJ</td>
<td>none</td>
</tr>
<tr>
<td>closer to HSPJ</td>
<td></td>
<td></td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>closer to HSPJ</td>
<td></td>
<td></td>
<td>ND</td>
<td>NA</td>
</tr>
</tbody>
</table>

### Posterior tongue movement

<table>
<thead>
<tr>
<th>Base Compression Group</th>
<th>Point Compression Group</th>
<th>&quot;Mixed&quot;</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>less up and down movement of posterior tongue than expected</td>
<td>less up and down movement of posterior tongue than expected</td>
<td>ND</td>
<td>none</td>
</tr>
</tbody>
</table>

### Posterior tongue movement

<table>
<thead>
<tr>
<th>Base Compression Group</th>
<th>Point Compression Group</th>
<th>&quot;Mixed&quot;</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>less up and down movement of posterior tongue than expected</td>
<td>generated better flow</td>
<td>ND</td>
<td>NA</td>
</tr>
</tbody>
</table>

HSPJ=Hard Soft Palate Junction  
ND=Not Discussed in article
A good latch includes:
Phlanged lips
Chin rests into breast tissue
A good latch includes:
Phlanged lips
Chin rests into breast tissue
Trauma to face of nipple is most likely consistent with point compression group mechanics where nipple is far from HSPL and tongue bunches up, compressing tip of nipple.

PHOTO PERMISSION GRANTED 2010 THE BREASTFEEDING ATLAS 3RD ED ©2005
Normal vs abnormal nipple pain

**Normal**
- 60-80% of women have transient nipple pain that lasts less than 30 seconds and resolves by 2 weeks
- no evidence of excoriation or bruising of nipple - areolar complex

**Abnormal**
- lasts more than 30 seconds after latching or continues beyond 2 weeks
- there may or may not be evidence of excoriation or bruising of the nipple-areolar complex

NIPPLE PAIN AND PREMATURE WEANING

For every day of maternal breast pain there is a 10-26% risk of breastfeeding cessation, during the initial 3 weeks

PHOTO PERMISSION: GRANTED 2010    THE BREASTFEEDING ATLAS 3RD ED ©2005

Schwartz K, et al Factors associated with weaning in the first 3 months postpartum JFamPract 2002;51 (5) :439-44
Frenotomy: incision of the lingual frenulum *without* repair

Synonymous with frenulotomy
FRENULOPLASTY

Division of the lingual frenulum followed by surgical repair

usually involves z-plasty repair
COMMON PRIMARY CARE PROCEDURES

- WART REMOVAL
- BURN/WOUND DEBRIDEMENT
- EAR PIERCING
- SUTURE REMOVAL
- CIRCUMCISION
- I & D ABCESS
- FRENOTOMY
- FOREIGN BODY REMOVAL
- UMBILICAL CAUTERIZATION
- LACERATION REPAIR
- REDUCTION NURSEMAID’S ELBOW
- SPLINTING
HISTORY OF FRENOTOMY

“and the string of his tongue was loosened and he spoke plain”
Mark 7:35

The Young Wife’s Guide to the Management of Children by
John Theobald, MD 1764 describes nurse midwife’s use of
sharp fingernails to divide the lingual frenulum

“(tongue-tie can be divided) with little or no pain
to the child who will commonly take to the breast
immediately”
physician 1794

“usually it gives no trouble, but uncommonly and in
marked cases, it may interfere with sucking and
later with articulation. Treatment consists in nicking
the edge of the frenulum with blunt pointed scissors,
and tearing through the remaining membrane”
Griffith and Mitchell
The Diseases of Infants and Children
1934

Marmet et al
Why were they routinely done until the early and mid twentieth century?

Why did physicians stop doing them?
• Research supporting that ankyloglossia rarely or never caused speech problems

• Delay, until recently, of evidenced-based research that demonstrated an association between breastfeeding problems and ankyloglossia in some patients
ASSESSMENT TOOLS

• Research Tools
• Frenotomy Decision Rule for Breastfeeding Infants

FRENOTOMY DECISION RULE FOR BREASTFEEDING INFANTS

A lingual frenulum is present

Mother and infant have a problem
(latch problems AND/OR nipple pain AND/OR insufficient weight gain < 15 gms /day)

Abnormality in tongue function
Inability to protrude tongue beyond the alveolar ridge*
AND/OR
Inability to lift the tongue to the roof of the mouth*
AND/OR
Inability to adequately cup the nipple-areolar complex

TONGUE CUPPING

PHOTO PERMISSION: GRANTED 2010  THE BREASTFEEDING ATLAS 3RD ED ©2005
**Good inter-rater reliability**

LIMITED TONGUE EXTENSION

Good inter-rater reliability
Assessment of Oromotor Function
Tongue Lateralization

Transverse tongue reflex
Trace the lower gum ridge while lightly brushing the lateral aspect of the tongue from side to side. Impairment is no or little movement of tongue toward the stimulated area.

Good inter-rater reliability
ASSESSMENT OF OROMOTOR FUNCTION

Tongue extension beyond the lower alveolar ridge
- Visual observation
- Pull lower lip down while baby sucks on gloved finger
  Observe how far tongue goes over the alveolar ridge
- Insert gloved finger feel impact of tongue on finger as it moves over alveolar ridge
- Lightly stroke down on center edge of lower lip with cotton applicator

Tongue elevation (at least half way)
- Visual Observation
- Lightly stroke center edge of lower lip with cotton applicator
- Allow baby to suck on gloved finger then observe tongue elevation as finger pulls out

Tongue cupping
- Visual observation
- baby sucks on gloved finger: feel sides of tongue on finger

Phot courtesy of Jim Murphy MD/ Photo permission granted 2010 Breastfeeding Atlas 3rd ED © 2005
SUMMARY OF CLINICAL ASSESSMENT

SIGNS/SYMPHTOMS MAY INCLUDE:

- inability to cup tongue (also sustain cupped tongue)
- inability to extend tongue beyond alveolar ridge
- inability to lift tongue a little more than half way toward the palate
- clicking sound
- shallow latch
- high arched or v shaped palate
- constantly hungry (especially in the face of inadequate weight gain / inadequate output)
- maternal nipple pain / sores or mastitis
- poor weight gain
- retraction of tongue when jaw is open
FRENOTOMIES PERFORMED BY PRIMARY CARE PROVIDERS

- Infants less than 4 months old
- For partial ankyloglossia
- Frenulum should be translucent, rather than thick or muscular in appearance
- Anterior tongue-tie – 94% of ankyloglossia cases
  (posterior tongue-tie frenotomies are performed by ENT, oral surgeons and some Breastfeeding Medicine specialists)
- Procedure can be performed in nursery or in office
Frenotomies performed at CentraState Medical Center: 10 Primary Care Physicians
TRANSLUCENT LINGUAL FRENULUM
• Tongue elevator
  various names for same thing: grooved retractor, grooved director, Lorenz tongue elevator
• Scissors
  traditionally, iris scissors, but any scissors will work
• Gloves, gauze

  (Gelatin foam or a silver nitrate stick available as a precaution)
Grooved Director 7 inch (17.8cm)
COMPLICATIONS

Very Safe

Theoretical potential for:
• reattachment
• bleeding
• infection
• injury to Wharton’s duct
  (submandibular salivary duct)

FRENOTOMY PROCEDURE

immobilize
↓
assistant stabilizes jaw
↓
isolate lingual frenulum with tongue elevator
↓
clip
↓
compression with gauze
↓
baby feeds at breast
↓
Evaluate feeding and maternal comfort
LATCH BEFORE AND AFTER FRENOTOMY

Before frenotomy 10 minutes after 3 weeks later
VIDEO OF PROCEDURE

Frenotomy Video Using Grooved Director
Courtesy of Jeanne Ballard M.D.
VIDEO OF PROCEDURE

Frenotomy Video
(Finger Stabilizing Method) Courtesy of Evelyn Jain MD
Post-procedure Management

- Follow-up in office in 3-4 days
- Expect white Eschar
Billing Codes

Incision of lingual frenulum  41010
Tongue-tie, ankyloglossia  750.0

ICD 10 (in 2014)
Q38.1 Tongue-tie, Ankyloglossia (was 750.0)
R63.3 Infant feeding problems (was 783.3)
Newborn feeding problems:
P92.2 Slow feeding of the newborn
P92.3 Underfeeding of newborn
P92.5 Neonatal difficulty feeding at the breast
P92.8 Other feeding problems of the newborn
P92.9 Feeding problems of newborn unspecified

[Note Incision of the lingual frenulum stays as 41010]
Malpractice Insurance Information

• Considered low risk procedure
• Most carriers don’t consider procedure to be under “surgery” category because there is no surgical repair done
• Usually covered but confirm with your carrier
• Make it clear that the procedures you intend to do involve “incision without repair” within the oral cavity (frenotomy rather than frenuloplasty)
• Request documentation for your records
A select group of breastfeeding infants with ankyloglossia would benefit from the frenotomy procedure. Breastfeeding infants who would likely benefit from frenotomy include those who have a feeding problem (such as poor latch, milk retrieval problems or that the mother is experiencing nipple pain/trauma) AND who also have an abnormal oral motor assessment.
Bibliography


Berry et al A Double-Blind, Randomized, Controlled Trial of Tongue-Tie Division and Its Immediate Effect on Breastfeeding Breastfeeding Medicine 2012;7(3):189-193


Dollberg S et al Immediate nipple pain relief after frenotomy in breastfed infants with ankyloglossia randomized, prospective study Ped Surgery, 2006, 41 (1598-1600)


Geddes, et al Tongue movement and intra-oral vacuum in breastfeeding infants Early Human Development, 2008;84,:471-477

Griffith DM Do tongue-ties effect breastfeeding? JHumLact 2004;20:409-414


Marmet C, Shell E, Marmet R. Neonatal frenotomy may be necessary to correct breastfeeding problems. *J Hum Lactation.* 1990;6:117-121

Mayer, D. Frenotomy for breastfed tongue-tied infants: a fresh look at an old procedure. *AAP News* 2012; 33:12


