Feeding and Swallowing in Infants and Children with Neurodevelopmental Concerns

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UCT
Feeding and Swallowing Difficulties

- Feeding disorders = difficulty with any aspect of eating or drinking, including swallowing

- Swallowing difficulties = problem in 1 or more phases e.g.
  - bolus formation in oral preparatory phase
  - bolus transit in oral phase
  - transit of bolus through pharynx
  - transit through oesophagus

Arvedson, 2008
It's not just about swallowing

- Consider infant / child in context
- Focus on Quality of Life
- Use ICF as framework:
  - Body structures and function
  - Activities and participation
  - Environmental factors
  - Personal Factors
Factors that may affect feeding and swallowing

- Aversion
- Motor impairment
- Fear
- Sensory impairment
- Epilepsy
- Oral motor
- Swallowing
- Respiratory
- Behaviour
- Positioning & posture
- Communication
- Past experience
- Social factors
- GOR
- Medication
- Developmental level

Andrew & Sullivan, 2010; Reilly et al., 2011
Consequences of dysphagia

- Growth faltering
- LRTI / respiratory compromise (due to aspiration)
- Reduced social interaction & communication
- Increased stress for caregivers
- Pain / discomfort
- Constipation
- Dental problems

Andrew & Sullivan, 2010; Reilly et al., 2011
Respiratory consequences

• Association between aspiration & LRTI reported by some

• Other factors, such as medical diagnosis and neurological impairment, may contribute

• Preliminary results (N=446)
  – 279/446 LRTI
  – 261 hospitalized
  – 121 >1 hospitalization
  – 17.9% aspiration pneumonia
  – Significant association (p=.0001) between aspiration & unspecified LRTIs (>70%)

Oosthuizen et al., 2011; Taniguchi & Moyer, 1994; Weir et al., 2007
Prevalence of feeding & swallowing difficulties

- 20 - 45% typically developing children
- 30 - 40% children with neurological involvement & others report 80%
- 40 - 70% infants / children with chronic medical problems
South Africa

• No prevalence data but some population specific information

• 80% of infants and children with tracheostomies

• 29% of patients attending neurodevelopmental clinic (dev delay, genetic, CP, ASD, LD)

• 33% children recovering from TBM (small sample size)

Allies et al., 2009; Barratt & Ogle, 2010; Norman et al., 2007;
RXH review: 446 participants with feeding and swallowing difficulties

Oosthuizen et al., 2011
Presenting Feeding & Swallowing Difficulties
N=446

Feeding-related signs 25%

Dysphagia 97%

Oral Prep 82%
Oral Phase 14%
Pharyngeal 59%
Oesophageal 55%

Oosthuizen et al., 2011
“Risk” Populations
Autistic Spectrum Disorder

• 46 – 89% selectivity or refusal

• Food selectivity most common
  – texture, temperature, colour, type
  – food refusal & selectivity > typically developing children

• Neophobic

• May persist into adolescence / adulthood

Field et al., 2003; Sieverling et al., 2010; Andrew & Sullivan, 2010
Traumatic Brain Injury

- 3.8 – 5.3% of all TBI
  - 1% mild TBI
  - 10 – 15% moderate TBI
  - 68 – 76% severe TBI in acute phase
- Oral and pharyngeal phase difficulties
- Risk for silent aspiration
- Generally good dysphagia prognosis with cortical injury (improvement <12 weeks)
- Some will require long term non-oral feeding

Morgan, 2010
Cerebral Palsy

• Association between degree of motor impairment and severity of feeding and swallowing difficulties

• 58 – 90% feeding and swallowing difficulties reported
  – oral motor impairment
  – coughing, choking, gagging
  – difficulty transitioning to solids
  – longer mealtimes or mealtimes cut short
  – GOR

Andrew & Sullivan, 2010; Calis et al., 2008; Reilly et al., 2010; Wilson & Hustad, 2009
Oxford Feeding Study
N=440

• 89% help with feeding
• 56% choking with food
• 28% > 3hrs feeding time / day
• 26% constipation
• 22% vomiting
• 56% caregiver reported mealtimes as “stressful”
166 children with severe CP (GMFCS IV/V) and ID

- 99% dysphagia
  - 8% mild
  - 76% moderate – severe (29% partial tube feeds)
  - 15% Profound (NPO)

Calis et al., 2008
RXH review:
123 children with CP who had VFSS

Dysphagia
N=117

- Oral prep 61.5%
- Oral phase 27.4%
- Pharyngeal 79.5%
- Oesophageal 76%

Le Roux et al., 2011
Cerebral palsy cont

RXH review:

- Oral motor difficulties = 56%
- Aspiration = 61.5% (72 participants)
- GOR = 76% (89 participants)

Comprehensive interview & assessment NB

- Increased risk for dysphagia & GOR
- Caregivers under-report → used to feeding habits or behaviour
- Further investigation such as VFSS to determine aspiration
- Difficulties more likely long term

Le Roux et al., 2011; Reilly et al., 2011
Management of infants and children with dysphagia

• Early intervention to ensure optimal nutrition, health and development

• Multidisciplinary team which includes the FAMILY

• First decision: safety & adequacy of oral feeding

Andrew & Sullivan, 2010; Reilly et al., 2011
Management may include

• Positioning & seating

• Techniques / programme for oral sensorimotor difficulties

• Consistency modification

• Utensils

• Supplementing intake

• Caregiver counselling and training

• Alternative feeding e.g. gastrostomy

Arvedson & Brodsky, 2002; Reilly et al., 2011
Indications for gastrostomy

In conjunction with caregiver considerations:

- Aspiration → respiratory compromise
- Inadequate intake
- Dysphagia
- ↑ stress with oral feeding (child / caregiver / both)
- ↑ mealtimes
- Structural
- Chronic food refusal
- Medications

Gottrand & Sullivan, 2010; Reilly et al., 2011; Srinivasan et al., 2009
RXH indications N=137

- Dysphagia = 60%
- Aspiration = 50%
- Nutrition = 46%
- Other indications e.g. structural <5% each

- Previous study 77% dysphagia
- Dysphagia, aspiration & nutritional support reported in international literature, but also reduced endurance in CHD

Norman et al., 2011; Novotny et al., 2009; Srinivasan et al., 2009
Medical conditions associated with gastrostomy placement

• Neurological diagnosis most frequently associated with g-tube
  – 41% (Srinivasan, 2009)
  – >80% (Hittler et al., 2010)
    • >50% CP

• Congenital heart disease, respiratory disease and GIT
Advantages

• ↓ respiratory illness

• ↑ weight gain

• ↑ QoL of caregivers

• ↑ health QoL for children reported by caregivers

Andrew & Sullivan, 2010; Craig et al., 2006; Sullivan et al., 2004 & 2006
RXH review results

- ↓ admissions for LRTI
  - Decrease in respiratory illnesses reported in literature
- ↑ weight gain (significant)

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<th>Time after placement</th>
<th>p-value</th>
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<td>.219</td>
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<tr>
<td>CP</td>
<td>12 months</td>
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<tr>
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<td>6 months</td>
<td>.001</td>
</tr>
<tr>
<td>No CP</td>
<td>12 months</td>
<td>.0001</td>
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</tbody>
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Hittler et al., 2010, Sullivan, 2006
Disadvantages

• Complications e.g. site infection
• Feeds
• Parental concerns
  – lack of information
  – managing gastrostomy
  – impact on family life
  – emotional & psychosocial issues
• Risk of excessive weight gain
• GOR (reports vary; small %)
• Difficulty weaning to oral feeds

Andrew & Sullivan, 2010; Craig et al., 2003; Guerriere et al., 2003; Sullivan, 2004
Outcomes

• RXH:
  – 57% gastrostomy
  – 23% oral
  – 20% combination

• Similar to other findings
  – Reduced removal related to high number of children with neuro involvement
  – Higher number of removals in CHD

Hittler et al., 2010; Srinivasan et al., 2009
Weaning from tube feeds

• Some children may require long-term or life long tube feeding to varying degrees
• Should be considered early – at time of insertion

• WHEN?
  – Safe
  – Nutrition
  – Unlikely to ‘relapse’
Why is it difficult to transition from tube to oral?

- Lack of experience
- ↑ risk of oral hypersensitivity
- ↓ feeling of hunger / appetite regulation
- ↑ food refusal
- Fear or aversion
- Change to daily living
- Caregiver considerations

Bryon, 2011; Harding et al., 2010; Trabi et al., 2010
Approaches to ‘difficult to wean’ child

• Multidisciplinary team

• May require intensive programme

• Traditional intervention has usually failed

• Some programmes use a behavioural approach

Bryon, 2011; Harding et al., 2010; McGrath Davis et al., 2010; Trabi et al., 2010
Tube weaning programmes usually include:

- Messy play / food play / water play
- Play picnic / play meal time (with peers)
- NO pressure to eat or force-feeding
- Caregiver feedback using video
- Hunger stimulation – reduction of tube feeds
- Psychological support for children and parents (considered post-traumatic)
- Input from dietician / SLT / OT / PT

Bryon, 2011; Harding et al., 2010; McGrath Davis et al., 2010; Trabi et al., 2010
TAKE HOME MESSAGE

• Feeding is an important social interaction and emotional activity for children and caregivers
• Dysphagia intervention is about more than just the swallowing
• Awareness of ‘risk groups’ for early referral for assessment and management


