An Evidence Based Approach to the Assessment and Treatment of Pediatric Feeding Disorders

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Disclaimer: There are multiple systems used to classify evidence, which differ across professional and geographical boundaries. This, in conjunction with the multifactorial and complex nature of pediatric feeding disorders, leads to research across disciplines. I did not conduct formal literature reviews on topics included today, therefore I can not claim that this summary is exhaustive. In addition, although I love working in teams, I view the research through the lens of an occupational therapist. I know there must be evidence that I have not included. I would welcome any additional references at rstankey@usa.edu
What is Evidence Based Practice (EBP)?

ASSESSMENTS AND INTERVENTIONS ARE GUIDED BY A COMBINATION OF:

• The best available evidence
• Clinical expertise and judgment
• Patient values and preferences
The Evidence Hierarchy
What Causes Feeding Disorders?

USUALLY, LOTS OF DIFFERENT FACTORS...

• Eating is learned, not instinctual
• History of negative experiences
• Gastrointestinal issues
• Neurological problems
• Congenital malformation
• Allergies
• Cardiac and/or respiratory problems
• Abnormal muscle tone
• Disordered child-caregiver relationships

• KIDS DON’T EAT IF THEY DON’T FEEL WELL
What Causes Feeding Disorders?

It is extremely common for the feeding disorder to persist long after the underlying issues have been resolved.
How Are Pediatric Feeding Disorders Defined?

- Persistent problem with eating, feeding, and/or swallowing*
  - Chronic food refusal
  - Feeding tube dependence
  - Food selectivity
  - Poor oral intake
  - Swallowing disorder

- Lack of standardized definition impacts research and demographic data collection

*Schwarz, 2010
How Are Pediatric Feeding Disorders Defined?

• ICD-9 codes
  • 783.3 – Feeding difficulties and mismanagement
  • 779.31 – Feeding problems in newborn

• DSM-IV
  • Feeding Disorder of Infancy or Early Childhood

• DSM-V
  • Feeding and Eating Disorders of Childhood

• Failure to thrive/pediatric undernutrition
• Dysphagia
• Developmental delay
How Are Pediatric Feeding Disorders Defined?

Early Intervention Programs

• Federally mandated in all states by educational law - IDEA, Part C
• Serves children from birth – 3rd birthday
• Every state has different standards of delay for eligibility
  • Self-help (adaptive) skills – this includes feeding/eating
  • Social-emotional (personal-social) development – relationships, behavior, social communication
• Feeding is the major ‘work’ of infant and toddler
• Often red flag for other medical or developmental problems
How Are Pediatric Feeding Disorders Defined?

School Systems (3-21)

• Children may receive services or accommodations if:
  • Categorically eligible under IDEA AND feeding disorder is affecting participation in educational environment
  • Some schools may provide accommodations under Section 504
  • Feeding disorder itself is not a category for special education services
Why Should We Care About Pediatric Feeding Disorders?

HIGH PREVALENCE IN ALL OF WESTERN SOCIETY*

• Between 25%-45% of typically developing children
• Between 33%-80% of children with developmental delays/disabilities
• 40%-70% of premature infants born before 36 weeks require significant feeding support

Miller, 2009; Lefton-Greif, 2008; Link, 2002, Mankam & Perman, 2002
Why Should We Care About Pediatric Feeding Disorders?

FEEDING DISORDERS IN CHILDREN AFFECT THE ENTIRE FAMILY*

- Mothers demonstrate higher rates of:
  - Depression
  - Anxiety
  - Social Isolation
  - Decreased Role Satisfaction
  - Decreased financial security
  - Obsessive-Compulsive Tendencies
  - Stress
  - Feelings of Guilt and Failure
  - Lack of Leisure and Social Time

* Didenhban, Kelly, Austing, & Wiechmann, 2011; Gree, Gulotta, Masler, & Laud, 2007; Coulthard & Harris, 2003
Why Should We Care About Pediatric Feeding Disorders?

FEEDING DISORDERS IN CHILDREN AFFECT THE ENTIRE FAMILY

• Siblings, dads, and other caregivers are also affected
• Financial burden on families (and society?)
• Food is an important part of our social relationships, especially with:
  • Family routines (e.g. weeknight dinners)
  • Family rituals (e.g. Thanksgiving)
ASSESSMENT AND INTERVENTION: TEAMS

• Children are best assessed and treated by multidisciplinary/interdisciplinary teams*

• Strength of evidence is low (expert opinion/consensus) however is consistent across disciplines

• Teams have family members/caregivers as key members

• Teams can also include:
  - Occupational Therapists
  - Speech-Language Pathologists
  - Dietitians
  - Gastroenterologists
  - Pediatricians
  - Psychologists
  - Case Managers
  - Social Workers
  - Nurses

* Miller, 2009; Arvedson, 2008; Bell & Alper, 2007; Bernard-Bonnin, 2006; Manikam & Perman, 2000
Feeding observations are best done in natural environments.*

Assessments should include:
- Manifestation of problem
- Data on growth and weight
- Family Stressors
- Antenatal and perinatal history
- Oral motor skills and swallowing
- Feeding routines/environments
- Self-regulation/level of alertness
- Context

Thorough medical/developmental history
Emotional climate during meals
Motor skills, posture and tone
Feeding routines and environments
Sensory processing
Child behavior prior to and during meals
Strategies previously used

* Miller, 2009; Arvedson, 2008; Bell & Alper, 2007; Bernard-Bonnin, 2006; Manikam & Perman, 2000
PICKY EATER OR FEEDING DISORDER?

• https://www.feedingmatters.org/education/early-identification-questionnaire

• Gives you a printable summary to take to physician

• Designed for concerns about **chronic** feeding issues
ASSESSMENT: ORAL MOTOR SKILLS AND SWALLOWING

Expert opinion – some signs of dysphagia may be detected through clinical observation and assessment

- Quality and timing of oral motor skills
- Strength
- Coordination
- Sensory function
- Tone
- Asymmetry
- Cranial nerve function
- Motor planning
- Gag, cough, quality of voice, watery eyes/nose – may be indicators of aspiration
ASSESSMENT: ORAL MOTOR SKILLS AND SWALLOWING

• Strong evidence suggests that the **best** diagnostic tool to detect dysphagia is radiography, including:
  • Modified barium swallow studies
  • Dynamic and static studies of the pharynx
  • Biphasic esophograms

• Other tools are considered acceptable:
  • Scintigraphy
  • Endoscopy
  • Esophageal manometry
ASSESSMENT: ORAL MOTOR SKILLS AND SWALLOWING

• Recurrent pneumonia or upper respiratory infections may be indicative of aspiration (expert opinion, consistent across disciplines)

• Should consider possibility of anatomic abnormalities when:
  • Children have difficulty swallowing
  • Stridor is present in relation to feeding*

  • Bernard-Bonnin, 2000
ASSESSMENT: OTHER EVIDENCE

• There is no evidence to inform clinical practice on the use of a formal feeding readiness tool to determine a preterm infant’s readiness to commence oral feeding*

• There is limited, but high quality, evidence to suggest that many children with feeding difficulties present with sensory processing challenges**

*Crow, Chang, & Wallace, 2012

**Davis, Bruce, Khasawneh, Schulz, Fox, & Dunn, 2013
After Assessment – Is There Evidence for Intervention?

Oral Motor Stimulation and Exercise

Positioning

Behavioral Strategies

Medications

Altered Diets

Sensory Strategies

Feeding Tubes

Vital Stim
INTERVENTIONS: NEONATES

Non-Nutritive Sucking (NNS):
• Strong, high-quality evidence that NNS in preterm infants is correlated with significantly shorter hospital stay
• Weak evidence that NNS improves transition from tube to bottle feeds
• Weak evidence that NNS improves bottle feeding performance (although recommended by expert opinion)
• No negative outcomes from NNS*

*Pinelli & Symington, 2005
INTERVENTIONS: NEONATES

In hospitalized, pre-term infants:

• Insufficient, high-quality evidence to determine if scheduled or on-demand feeds earlier full-oral feeding/hospital discharge*

• Cup feeding should not be recommended over bottle feeding as supplement to breast feeding; no benefits seen after discharge and resulted in longer hospital stays. The evidence is high-quality albeit few studies**

* McCormick, Tosh, & McGuire, 2010

** Fint, New & Davies, 2007
INTERVENTIONS: ORAL-MOTOR

• Parents report high degree of oral-motor and related feeding problems in their children with cerebral palsy (CP); fair strength of evidence*

• Low-level evidence (primarily expert opinion) that oral motor therapy improves specific oral motor skills**

• Despite expert recommendations to use oral sensorimotor interventions with children with neurological impairment and dysphagia, there is insufficient high-quality evidence to support effectiveness***

*Ghay & Sulman, 2013

**Wilcox, Potvin, & Prelock, 2009

***Morgan, Dodrill, & Ward, 2012
INTERVENTIONS: FEEDING TUBES

• Feeding tubes are common interventions for children with significant feeding disorders, however there is a lack of research regarding the efficacy of this intervention vs. oral feeding alone*

• High level of evidence that decision-making re: feeding tube placement in children is fraught with stress and conflict for families**

Sleigh, Sullivan & Thomas, 2004
Mahant, Jovcevska, & Cohen, 2011
INTERVENTIONS: FEEDING TUBES

• Placement of feeding tube in children with significant feeding disorder relieves some caregiver stress; low-level evidence*

• Mixed evidence about risks and benefits of feeding tubes in children with CP
  • Most children gained weight with feeding tubes
  • Many had increased complications that may/may not be result of tube, including reflux and death **

*Peterson, Kadia, Davis, Newman & Temple, 2006
**Sleigh & Brocklehurst, 2004
INTERVENTIONS: POSITIONING

- Fair evidence that proper positioning has many benefits for feeding*
  - Normalize or decrease abnormal neurological influences on body
  - Increase range of motion, maintain neutral skeletal alignment and control, and prevent skeletal deformities and muscle contractures
  - Upgrade stability to increase function
  - Increase comfort and position tolerance
  - Enhance function of autonomic nervous system
  - Decrease fatigue
  - Facilitate components of normal movement
  - Facilitate maximum function with minimal pathology

Jones & Gray, 2005
INTERVENTIONS: POSITIONING

• Limited, but positive evidence that positioning interventions improve oral intake and skill in children with CP* (systematic review)

• Videofluoroscopy may be helpful to determine optimal position for feeding** (case series)

• Key factors for positioning older children*** (good evidence)
  • Goal – Most function with the least support/restriction
  • Stable pelvis in neutral position
  • Supported feet!
  • Neutral or slightly flexed head
  • Arms forward and free to move

*Snider, Majnemer, & Darsaklis, 2011
**Morton, Bonas, Fourie, & Minford, 1993
***Joanna Briggs Institute, 2009 (BEST Evidence Statement); Snider, Majnemer, & Darsaklis, 2011 (systematic review); Stavness, 2006; (systematic review); Hulme, Gallacher, Walsh, Niesen, & Waldren, 1987
INTERVENTIONS: POSITIONING

• Key factors for positioning infants*(fair evidence)
  • Positioning should be first intervention
  • Overall ‘feeling of flexion”
  • Head aligned with trunk, elevated
  • Most feed optimally semi-upright, with side-tilt positioning
  • May also position in front of you with head/neck supported to facilitate eye contact
  • Swaddling provides additional support

*NGC, 2010; Fraker and Walbert, 2008; Swigert, 1998,
INTERVENTIONS: REFLUX

• Lack of high-quality evidence to support or refute the efficacy of thickening feeds in infants with reflux*

• Despite significant costs and risks, there is no evidence to assist families and practitioners in determining the most optimal treatment (surgery or medication) for reflux for children with neurological impairment and gastrostomy tubes**

*Huang, Forbes, & Davies, 2002

**Vernon-Robers & Sullivan, 2007
INTERVENTIONS: INTENSIVE TREATMENT AND BEHAVIORAL

• Fair evidence that intensive, multidisciplinary feeding programs are effective at*:
  • Decreasing dependence on gastrostomy tubes
  • Decreasing some elements of caregiver stress
  • However, studies are limited by small sample sizes and lack of long-term follow-up

• There were no well-designed studies in this review that did not include behavioral intervention as primary intervention
  • All participants demonstrated significant improvements in feeding behavior while enrolled in intensive, multidisciplinary programs**

* Cornwell, Kelly, & Austin, 2010; Clawson, Kuchinski & Bach, 2007; Greer, Gulotta, Masler, & Laud, 2007; Byars, Burklow, Ferguson, O’Flaherty, Santory, & Kaul, 2003

** Sharp, Jaquess, Morton, & Herzinger, 2010
INTERVENTIONS: SENSORY

• There is expert opinion that sensory-based interventions are effective at improving number and variety of accepted foods in children with sensory processing issues

FEEDING AND MEALTIMES SHOULD BE FUN!!

• Exploration and play with food
• Find new ways to interact with food
• Consider the sensory properties of food
• “Stretch” sensory horizons

http://confessionsofthechromosomallyenhanced.blogspot.com/2011/03/feeding-therapy.html
INTERVENTIONS: STRUCTURE

• There is expert opinion (consistent across disciplines) that creating structure around food and mealtimes is important when working with children with feeding disorders

• How?
  • Environment (positive place, sensory tools, conducive to self-regulation)
  • Time (3 meals, 2-3 snacks, water between meals, food first, then drinks)
  • Consistent preparatory activities (sensory, warn of transitions)
  • Visual and/or written schedules, counting
INTERVENTIONS: OTHER STRATEGIES

• Work on mealtime relationships; “positive tilt”
• Parents choose the what and the when of meals; children choose the whether and how much
• Consider the size of the bolus; aim for success!
• Try pretend play with real food
• Engage children in meal prep and cooking
• Food academics
• Fun tools and toys
DECISION MAKING PROCESS

- **History**
- **Review Evidence**
- **Assessment (safety first)**
- **Assessment (all other areas)**
- **Reassessment**
- **Goal setting**
- **Intervention**
- **Review further evidence**
- **Adjust Interventions**
- **SUCCESS!**
QUESTIONS?
REFERENCES


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