Aspiration Exasperation

Thursday May 12th, 2021 | 1:00PM-2:30PM EST

Lucile Packard Foundation for Children's Health

Funded by the Lucile Packard Foundation for Children's Health

Northwestern Medicine® Feinberg School of Medicine

C6 Seminar Series

Presenter Disclosure

- **Presenter:** Katy Peck, M.A., CCC-SLP, CLC, BCS-S
- **Relationships with commercial interests:**
  - Grants/Research Support: No conflict to disclose
  - Speakers Bureau/Honoraria: No conflict to disclose
  - Consulting Fees: No conflict to disclose
  - Other: Full-time employee Children's Hospital Los Angeles and Clinical Consultant Passy Muir

This activity has received funding from the Lucile Packard Foundation for Children's Health.

Presenter Disclosure

- **Presenter:** Christopher J. Russell, MD, MS
- **Relationships with commercial interests:**

  Grants/Research Support: Supported by the Gerber Foundation and the Agency for Healthcare Research and Quality to study respiratory infections in children with tracheostomy

  Speakers Bureau/Honoraria: No conflict to disclose

  Consulting Fees: No conflict to disclose

  Other: Full-time employee Children's Hospital Los Angeles

This activity has received funding from the Lucile Packard Foundation for Children's Health.

Accreditation

Accreditation Statement

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of Northwestern University Feinberg School of Medicine and University of Toronto/Sick Kids Hospital. The Northwestern University Feinberg School of Medicine is accredited by the ACCME to provide continuing medical education for physicians.

Credit Designation Statement

The Northwestern University Feinberg School of Medicine designates this live activity for a maximum of 1.0 *AMA PRA Category 1 Credit(s)*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Objectives

1. Review challenges and controversies in the diagnosis and treatment of aspiration and its complications (e.g., aspiration pneumonia)

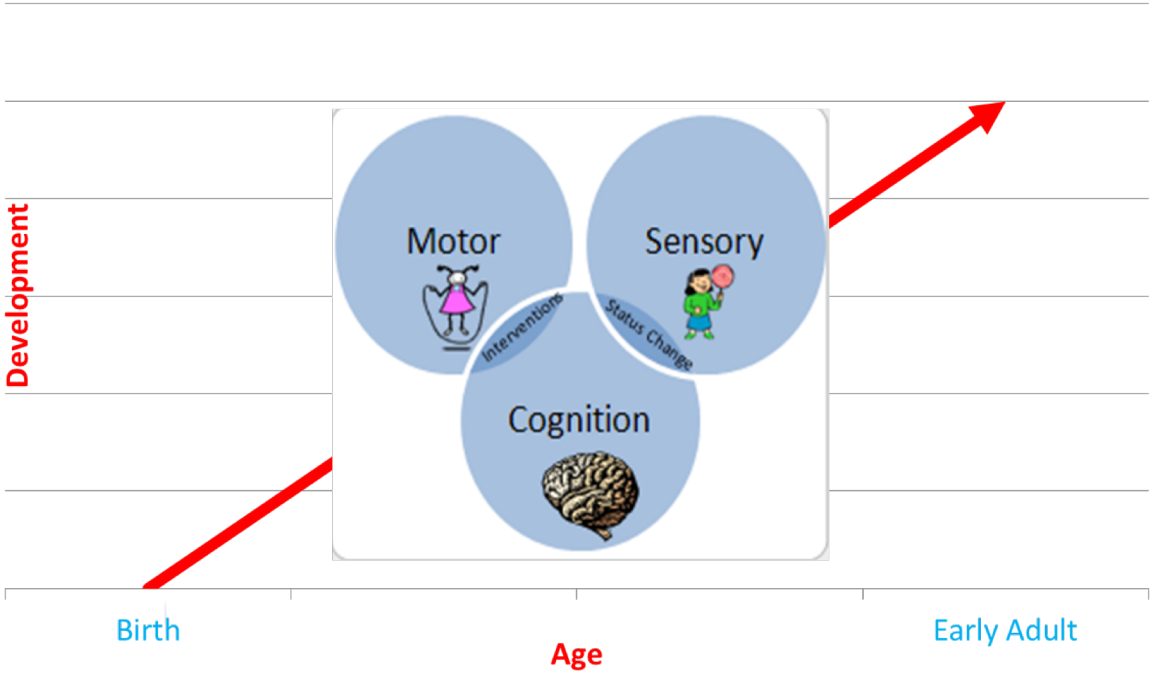
2. Describe the short and long-term impact of an aspiration diagnosis and treatment on the patient and caregiver experience

3. Identify knowledge gaps associated with dysphagia management when tracheal aspiration is identified and how this impacts continuum of care and caregiver experience

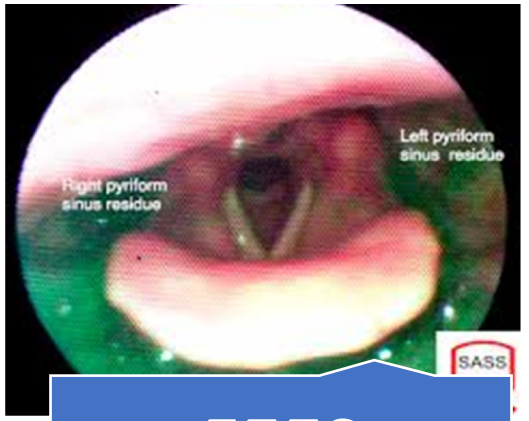
Common Discussion Points

- Oropharyngeal dysphagia “swallow difficulty”
- Pediatric considerations
  - Knowledge gaps
    - Supportive evidence
    - What is aspirated? How much? Timing of events?
    - Dysphagia-associated aspiration pneumonia
  - Partnership in oral feeding plan
    - Caregivers drive decision making in pediatric care
    - Specialty providers provide information for informed decision-making
  - Clinical decision making
    - Index of suspicion based on comorbidities and pathophysiology of swallow
    - Predictors of risk
    - Risk-benefit analysis (experience promotes skill development)

Investigating Aspiration

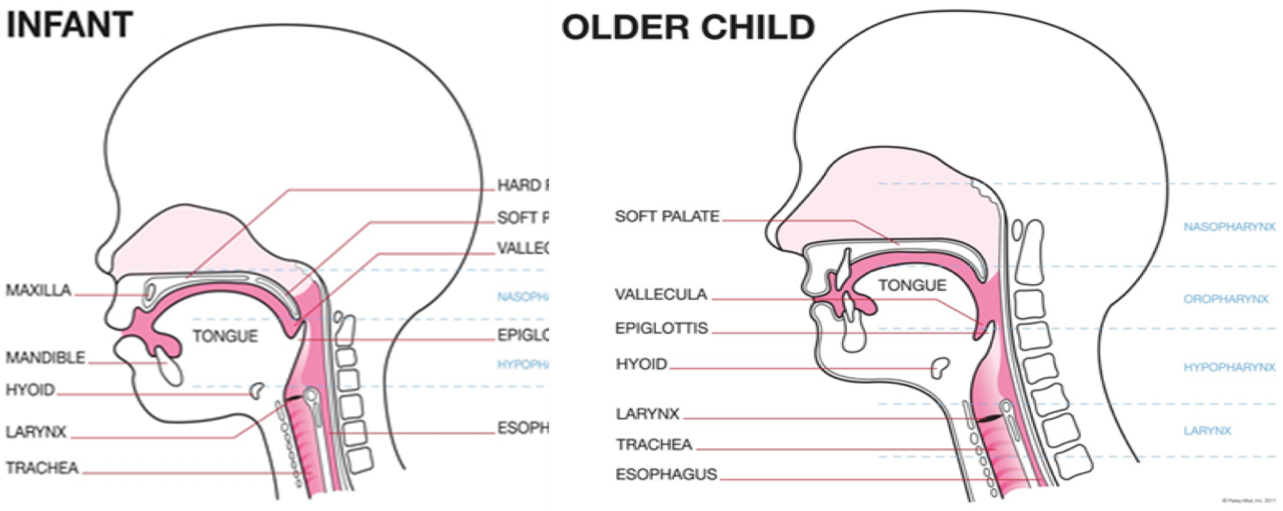


MBSS



FEES

Dysphagia



1 Medical profile
- Aerodigestive and neurologic comorbidities
- Gestational age
- History of feeding

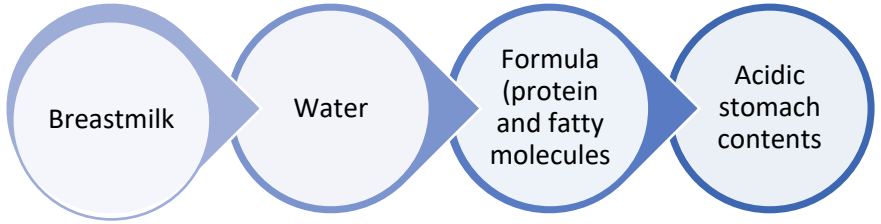
2 Baseline status
- Physiologic stability
- Neurobehavioral regulation
- Feeding readiness cues

3 Clinical presentation
- Tone/movement patterns
- Oral reflexes
- Oral motor skills

4 Quality of feed
- Engagement, interest, coordination
- Pharyngeal swallow safety

Points of consideration

High suspicion, high risk



Low suspicion, low risk

High suspicion, low risk

No clear treatment guidelines

Less invasive

- Sialorrhea
  - Glycopyrrolate
  - Ipratropium
  - Botulinum toxin
- Anti-reflux
  - Pro-motility agents
  - Acid suppression

Moderate

- Feeding therapy
- Adapting feeding
- Feeding tubes
  - Nasogastric

More invasive

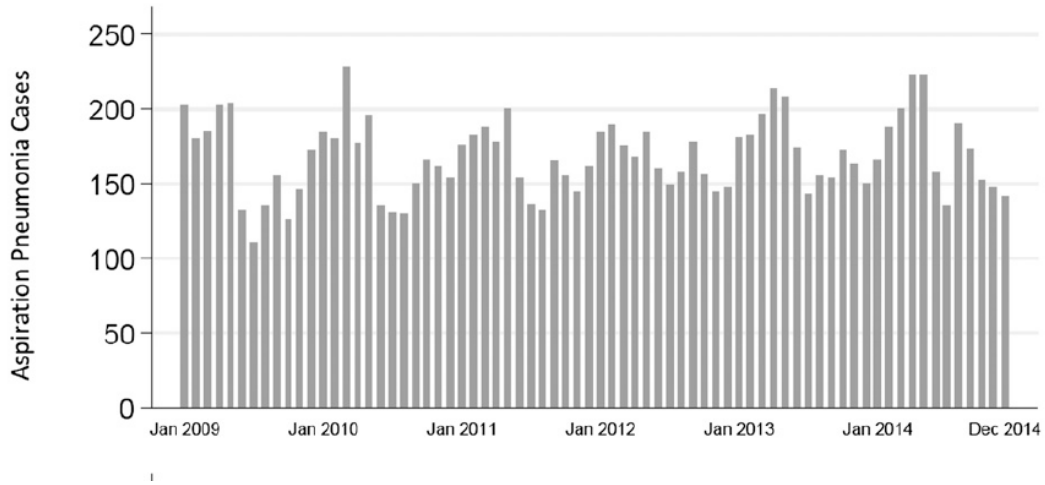
- Feeding tubes
  - Gastrostomy tube (+/- Nissen)
  - GJ tube placement
- Airway surgeries
  - Salivary gland duct ligation
  - Tracheotomy
  - Laryngotracheal separation

Common complications have no specific diagnostic criteria

- Aspiration pneumonia = ?pneumonia in a child with multiple complex conditions

Characteristics of Children Hospitalized With Aspiration Pneumonia

Alexander W. Hirsch, MD, Michael C. Monuteaux, ScD, Genna Fruchtman, BA, Richard G. Bachur, MD, Mark I. Neuman, MD, MPH

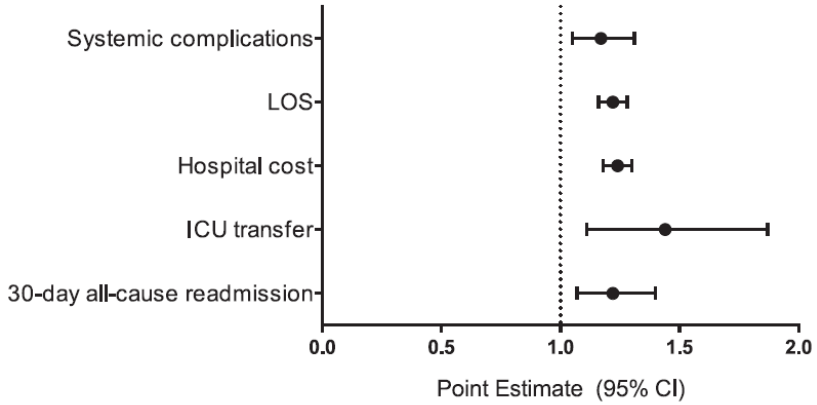


Common complications have no specific diagnostic criteria

- Aspiration pneumonia = ?pneumonia in a sicker child with multiple complex conditions

Aspiration and Non-Aspiration Pneumonia in Hospitalized Children With Neurologic Impairment

Joanna Thomson, MD, MPH,[a,b] Matt Hall, PhD,[c] Lilliam Ambroggio, PhD, MPH,[a,b,d] Bryan Stone, MD, MS,[e,f] Rajendu Srivastava, MD, MPH,[e,f,g] Samir S. Shah, MD, MSCE,[a,b,h] Jay G. Berry, MD, MPH[i,j]



Aspiration pneumonia

- AP diagnosis leads to recurrent broad-spectrum antibiotic exposure with unclear benefit on outcomes

Characteristics of Children Hospitalized With Aspiration Pneumonia

Alexander W. Hirsch, MD, Michael C. Monuteaux, ScD, Genna Fruchtman, BA, Richard G. Bachur, MD, Mark I. Neuman, MD, MPH

TABLE 4 Antibiotics and Corticosteroid Administration to Children Admitted to 47 Pediatrics Hospitals From January 1, 2009 Through December 31, 2014, with Aspiration and CAP

Antibiotic Type	Aspiration Pneumonia, n = 12 097, n (%)	CAP, n = 121 489, n (%)	P[a]
Individual antibiotic			
Penicillin/aminopenicillin	900 (7.4)	29 829 (24.6)	<.001
Ampicillin/sulbactam	4845 (40.0)	10 131 (8.3)	<.001
Cephalosporin	5604 (46.3)	80 551 (66.3)	<.001
Macrolide	2150 (17.8)	41 850 (34.5)	<.001
Vancomycin	1835 (15.2)	14 026 (11.6)	.003
Clindamycin	5316 (44.0)	15 076 (12.4)	<.001
Piperacillin/tazobactam	1935 (16.0)	5952 (4.9)	<.001
Meropenem	311 (2.6)	2777 (2.3)	<.001
Fluoroquinolone	995 (8.2)	6289 (5.2)	.088
Other	2457 (20.3)	16 901 (13.9)	<.001
Combination antibiotics			
Cephalosporin + macrolide	1231 (10.2)	27 860 (22.9)	<.001
Cephalosporin + vancomycin/clindamycin	643 (5.3)	3230 (2.7)	<.001
Cephalosporin + vancomycin/clindamycin + macrolide	181 (1.5)	1110 (0.9)	.011
Penicillin/aminopenicillin + macrolide	167 (1.4)	8184 (6.7)	<.001
Corticosteroids	4160 (34.4)	40 427 (33.3)	.009

[a] Adjusted for patient age, sex, race, source of insurance payment, and the presence of CCC.

Antibiotics for Aspiration Pneumonia in Neurologically Impaired Children

Joanna Thomson, MD, MPH[1,2*], Matt Hall, PhD[3], Lilliam Ambroggio, PhD, MPH[4], Jay G Berry, MD, MPH[5,6], Bryan Stone, MD, MS[7,8], Rajendu Srivastava, MD, MPH[7,9], Samir S Shah, MD, MSCE[1,2,10]

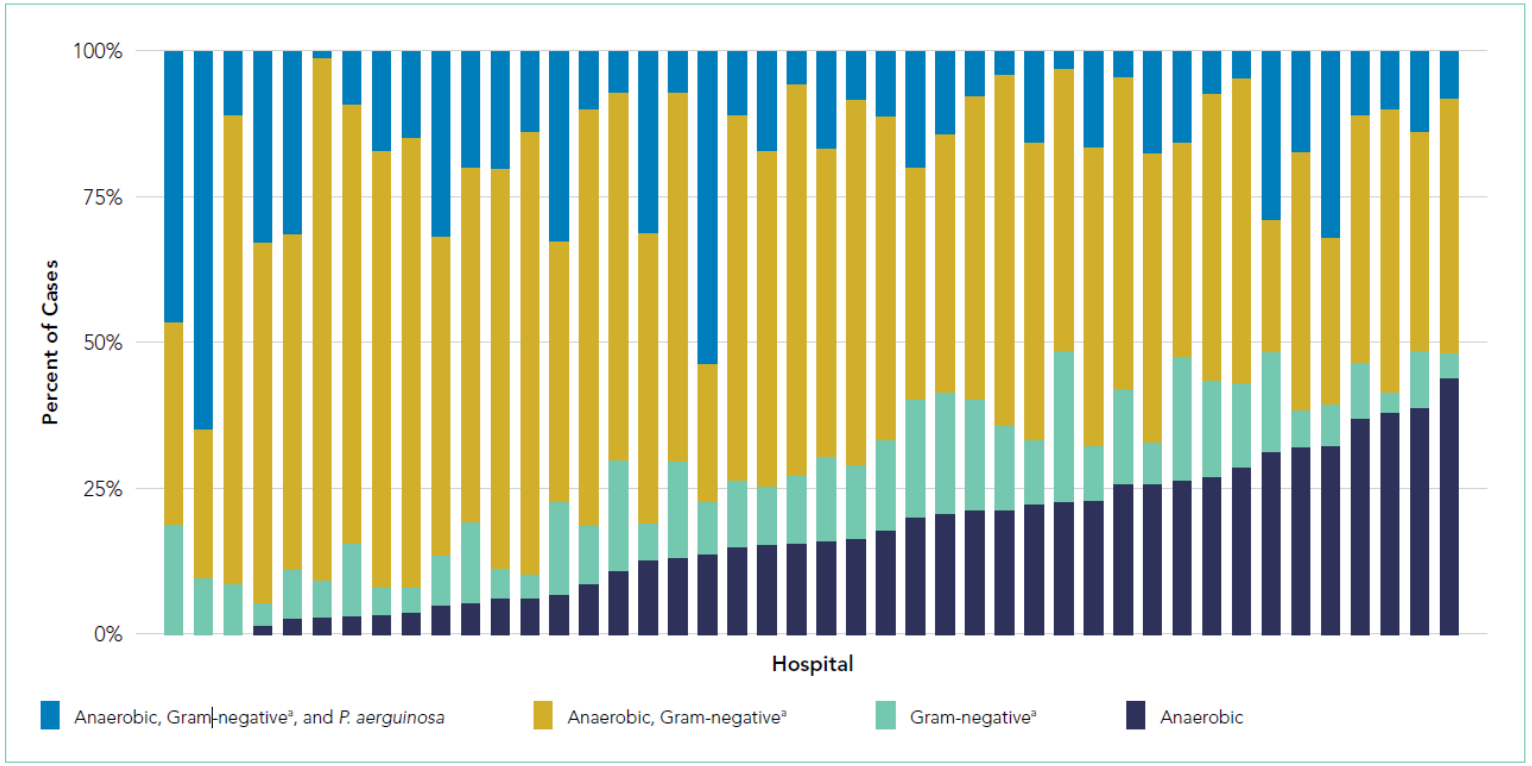
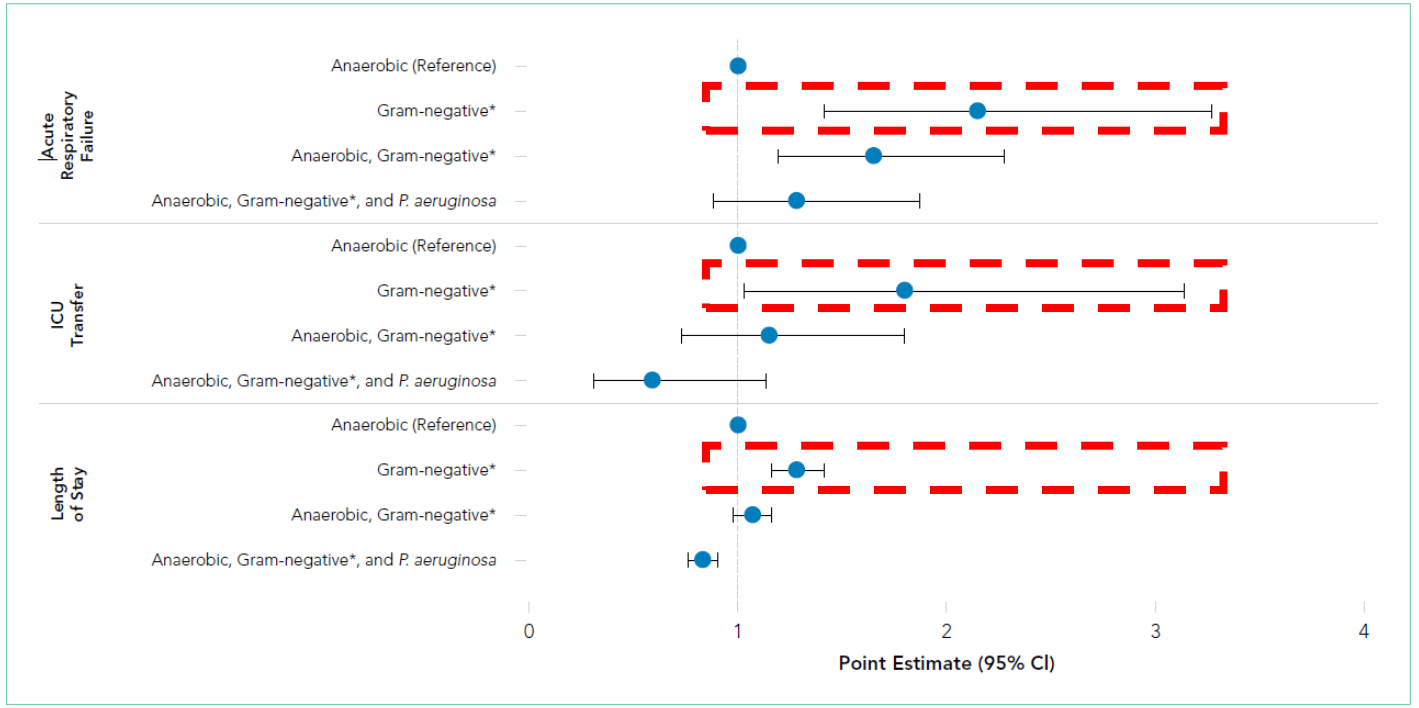


FIG 1. Variation in the Spectrum of Empiric Antimicrobial Coverage across Hospitals.

Large variations in administered antibiotics

Antibiotics for Aspiration Pneumonia in Neurologically Impaired Children

Joanna Thomson, MD, MPH[1,2*], Matt Hall, PhD[3], Lilliam Ambroggio, PhD, MPH[4], Jay G Berry, MD, MPH[5,6], Bryan Stone, MD, MS[7,8], Rajendu Srivastava, MD, MPH[7,9], Samir S Shah, MD, MSCE[1,2,10]



? Improved outcomes with anaerobic coverage

Adult guidelines

- Currently, adult guidelines recommend NOT to provide coverage for aspiration PNA in the absence of an abscess or effusion

AMERICAN THORACIC SOCIETY DOCUMENTS

Diagnosis and Treatment of Adults with Community-acquired Pneumonia

An Official Clinical Practice Guideline of the American Thoracic Society and Infectious Diseases Society of America

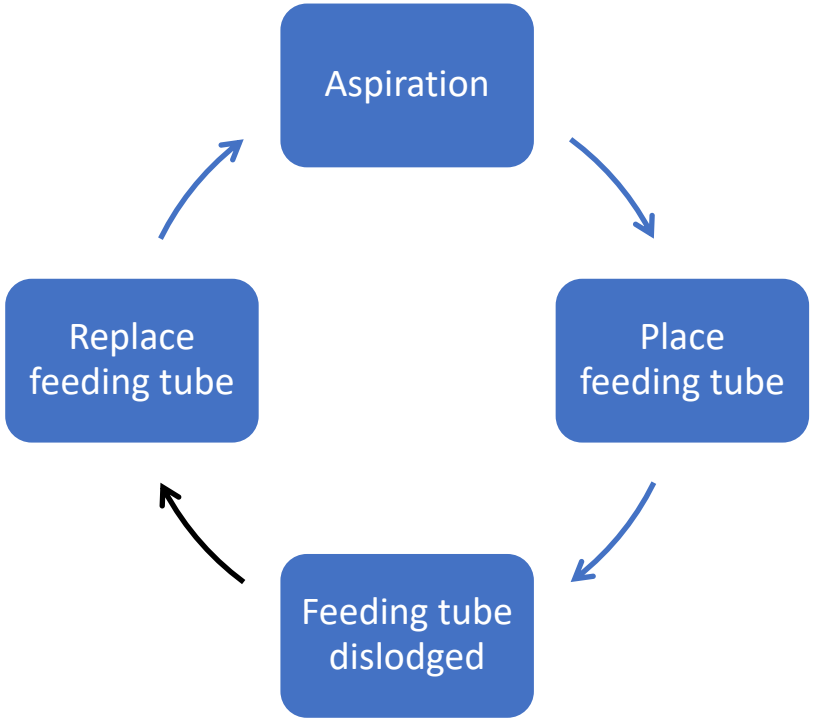
Question 10: In the Inpatient Setting, Should Patients with Suspected Aspiration Pneumonia Receive Additional Anaerobic Coverage beyond Standard Empiric Treatment for CAP?

Recommendation. We suggest not routinely adding anaerobic coverage for suspected aspiration pneumonia unless lung abscess or empyema is suspected (conditional recommendation, very low quality of evidence).

Therapeutic momentum

- Once a feeding tube placed…if dislodged, we [often] reflexively replace it

Aspiration Cycle

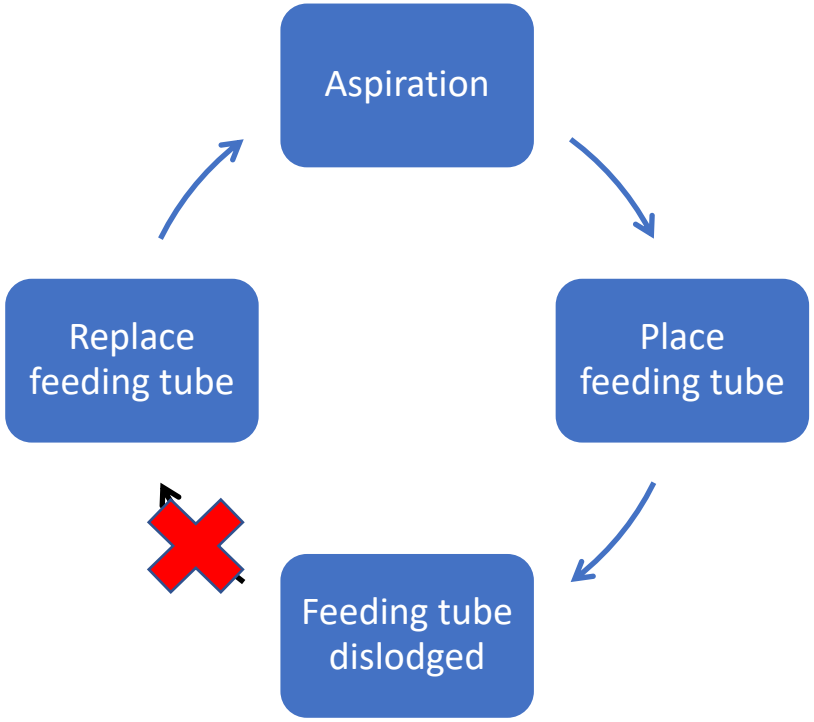


Therapeutic momentum

- Once a feeding tube placed…if dislodged, we [often] reflexively replace it

Re-evaluation of continued need for transpyloric feeds or feeding tubes at all

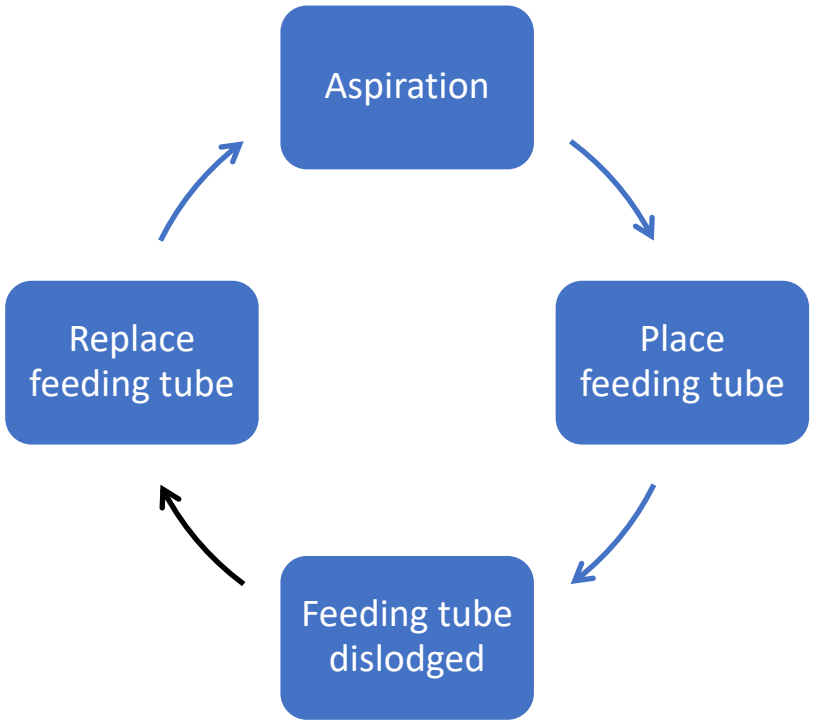
Aspiration Cycle



Therapeutic momentum

- Once a feeding tube placed…if dislodged, we [often] reflexively replace it

- Once you are diagnosed with aspiration pneumonia, you are more likely to be diagnosed with it in the future *[my opinion]*



Conclusion

- Risk-benefit analysis considerations for diagnosing aspiration
  - Swallowing is practice
  - Milestone acquisition
  - Risk-benefit may differ based upon underlying conditions
- Optimal evaluation and management of aspiration may require access to specialty care—not available to everyone equitably
- Prospective (randomized) studies needed on aspiration and its complications in pediatrics needed