25th Annual Clinical Update in Geriatric Medicine
Nothing to Disclose

Jonas Johnson
ENT
Contemporary Perspectives

Dysphagia

Aspiration

Pneumonia
Aspiration

Taking foreign material into the lungs
May result in pneumonitis or pneumonia

80% of pneumonia patients had aspiration
32% of dysphagic patients get pneumonia
Pneumonia is the old man’s friend
Anonymous

Pneumonia is the Captain of the Men of Death
William Osler
Common Causes of Nosocomial Aspiration

- Neurologic conditions
- Head and neck neoplasia
- Emesis
Orthopedic surgery
my “ahha” moment

Hip fracture patients
immediate repair vs delay

Observed aspiration (MBS) in 40% after delay

Johns Hopkins, DRS 2011
Questions

Why do people with intact anatomy aspirate?

How to identify the at-risk patient?

What is to be done to prevent/reduce aspiration?
Goals

Promote awareness

Institute screening

Provide dietary recommendations

Consolidate discharge planning
Impact of Rest on Strength

Impact noticed after WWII

Noticed after space flights

Affects muscles, cardiovascular system, and skeleton

Review

24 trials of bed rest after medical procedure

• no outcome improved
• 8/24 got worse
Extended Bed Rest

Strength decreases 20-30% in a week
  – plateaus at 25-40% of baseline
  – 1 max contraction/day prevents it
  – 5-10% muscle mass lost 1 week

Rate of recovery slower than rate of loss

Cuccurullos. 2004

Dittmer et al. 1993
Dysphagia and Aspiration after Cardiac Surgery

Duration of Intubation

<table>
<thead>
<tr>
<th>Duration</th>
<th>Percentage</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;12 hours</td>
<td>1%</td>
<td>7/699</td>
</tr>
<tr>
<td>12-24 hours</td>
<td>8%</td>
<td>11/134</td>
</tr>
<tr>
<td>24-48 hours</td>
<td>17%</td>
<td>6/36</td>
</tr>
<tr>
<td>&gt;48 hours</td>
<td>68%</td>
<td>27/40</td>
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Covariants

- Smoking
- Type of surgery
- Stroke
- Reintubation

Skoretz et al. 2012
Dysphagia and Aspiration after Cardiac Surgery

Duration of Intubation

- <12 hours: 1% (7/699)
- 12-24 hours: 8% (11/134)
- 24-48 hours: 17% (6/36)
- >48 hours: 68% (27/40)

Covariants

- Smoking
- Type of surgery
- Stroke
- Reintubation

Skoretz *et al.* 2012
Functional Reserve

Strength in excess of what is needed

Frailty limits ability to respond to stress

Loss of Functional Reserve leads to morbidity “seemingly unrelated”, e.g., aspiration after hip fracture
What is Frailty?

- Weakness
  - grip strength
- Weight loss
  - >10 #
- Exhaustion
  - questionnaire
- Low activity
  - leisure activity
- Slow walk speed
  - 5 meter walk

Lowest 20% deemed frail
Frailty and Mortality

N = 1040

ICU patients aged > 18

13 frail

If < 49  20% frail

If 50-65 29% frail

Brummel et al; AJRCCM: 2016
Impact of Exercise on Frailty

- **RCT**
  - frail patients
  - N = 100
  - average age 87
- Exercise vs nutrition vs both vs neither
- Resistance 80% of max 3 x/wk for 10 wks

Fiatarone *et al.* 1994
Another Way to Think about It

- Subclinical frail
- Admitted to hospital
- Subclinical problem becomes disease
- Loses strength – disease/inactivity
Pneumonia (One More Thought)

Community acquired pneumonia (CAP)

Hospital acquired pneumonia (HAP)

Ventilator associated pneumonia (VAP)
Community Acquired Pneumonia (CAP) and Dysphagia

Case-controlled study
  – 36 patients >70 admitted with CAP
  – 10 healthy elderly including 2 age-matched controls

Fluoroscopic examination
  – Swallow abnormal 92% cases vs 40% controls
  – Severe penetration 31% case vs 0% controls
  – Silent aspiration 16.7% case vs 0% controls

Rofes et al. 2012
CAP and Dysphagia

- Longitudinal study 134 elderly patients in acute geriatric unit
  - 53% >84 y/o
  - (In hospital - so they were all sick)
- Bedside evaluation + water test
  - (No instrumented study)
  - 55% abnormal
- Outcome
  - Mortality compare signs of aspiration vs none
    - 30 day 23% vs 8%
    - 1 year 55% vs 27%

Cabre et al. 2010
Ventilator Associated Pneumonia (VAP)

Originally associated with contaminated ventilators

Now generally associated with aspiration while intubated

Oral flora may exceed 20,000,000 organisms/cc
Preventive Oral Hygiene: Intubated Patients

Systemic review in elderly

RCT’s

Absolute risk reduction 6.6%-11.7%

Number needed to treat 8.6-15.3

Sjogren et al. 2008
Questions

Why do people with intact anatomy aspirate?
- acute condition increases frailty and reduces function

How to identify the at-risk patient?
- begin a broad based screening program

What is to be done to prevent/reduce aspiration?
- interventions do work
How do we prevent hospital-acquired pneumonia?
Screening Protocols

Gold standard

Modified barium swallow [MBS]

or

Flexible endoscopic evaluation swallow [FEES]
Bedside Swallow

History of neurologic impairment
make observations (with trials of liquid)
- dysphonia
- dysarthria
- change of vocal quality
- cough after the swallow

2 or more clinical features high risk for aspiration

Daniels 2000

If you fail screen consult SLP
Dysphagia Screening: Does It Work?

2,532 patients neuro patients - 5 institutions

- Adherence
  - 61%

- Pneumonia
  - 2.4% (screened) vs. 5.4% (unscreened)
  - p = 0.0016

- Interventions
  - consistencies
  - compensatory techniques

Hinchey et al. 2012
Risk Factors

- Neurologic disease
- Head and neck cancer
- Emesis (sedated, obtunded, frail)
- Frailty (you need not be old to be frail !)
- Prolonged intubation
Examples of Success: UPMC

CABG patients
   2011

At risk 187 patients
   pneumonia  20  (10.7%)
   STS benchmark 3%
Directives in Cardiac Surgery

Extubate patients in the OR (if possible)
Feed patients only
- if off opiates
- if alert and cooperative
- in the upright position

AND SLP consultation if weak
Examples of Success: CABG patients

2011
CABG 187
• pneumonia 20 (10.7%)
• 87/187 (47%) intubated >18hrs

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2013
CABG 155
• pneumonia 3 (1.94%)
• 19/155 (12%) intubated > 18 hrs

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STS Benchmark for pneumonia 3%
Bottom Line

- Aspiration is associated with pneumonia
- Frailty, prolonged intubation, neuro injury are high risk
- Prolonged bed rest (ICU) reduces functional reserve
- A screening tool is not routinely employed
- BUT - screening helps identify many aspirators
Intervention

What can be done if the patient is aspirating?
Treatment of Dysphagia

Assess (diagnose)

Exercise

Strategies & Diet modification
The Basics

- Feed only when alert
- Always sit upright
- Small sips and bites
- Slowly - be attentive
- Cut solids
- Good oral hygiene
- Use dentures (that fit)
- Stop if coughing/choking
Feeding Tubes - Not a Panacea

- Aspiration Pneumonia *higher* in tube-fed patients
  - Selection bias
  - Disuse
  - Oro-pharyngeal secretion accumulation
- NG tubes impair swallowing
  - Pain
  - Erosion
  - Reflux
- G-tube does not significantly alter aspiration risk

Langmore 1998, 2002
Goal during the exam: MBS or FEES

1. To identify if there is a way to reduce or eliminate the symptoms

2. Intervention: compensatory strategies
   - Posture change
   - Swallow maneuvers
   - Behavioral strategies
   - Diet modifications
If aspiration/dysphagia is reported on exam...

Report should include:
- when the aspiration occurs
- the cause
- Recommended intervention
Intervention:

Compensatory Strategies
Change Food Consistency

- poor oral control leading to premature spillage and aspiration → thicken liquids
- poor lingual ROM → puree instead of solids
- poor mastication → soft diet/puree instead of solids
Intervention

Rehabilitation - Swallowing Therapy Program
American College of Sports Medicine

Exercise

☑ 10 repetitions
☑ 3 times
☑ 3 days/week
Tongue Exercises

Seminal report 2000 by Robbins et al
  - 8 elderly patients with normal swallow

Multiple corroborating studies

Several devices now available
  - IOPI best known
    • Iowa Oral Performance Instrument

www.IOPIMedical.com
<table>
<thead>
<tr>
<th>Subject</th>
<th>Baseline</th>
<th>8-Weeks</th>
<th>Change %</th>
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<tbody>
<tr>
<td>cm³</td>
<td>cm³</td>
<td></td>
<td></td>
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<tr>
<td>74-year-old man</td>
<td>78.7</td>
<td>87.1</td>
<td>↑10.68</td>
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<tr>
<td>84-year-old woman</td>
<td>58.5</td>
<td>60.2</td>
<td>↑2.91</td>
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<tr>
<td>71-year-old woman</td>
<td>71.4</td>
<td>72.9</td>
<td>↑2.16</td>
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<tr>
<td>75-year-old woman</td>
<td>89.1</td>
<td>93.3</td>
<td>↑4.67</td>
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Journal of the American Geriatrics Society 53(9):1483-1489, 2005
Bottom Line

- Aspiration & pneumonia need not be “the captain of death”
- Screening programs can help
- Therapy works – even if NPO
- Tubes do not prevent pneumonia
- Recognition of the frail may enhance care
Recommendations

Begin a screening program - before oral eating

• patients who fail screen get
  – assessed (SLP)
  – diet modification
  – exercises (therapy)

Enhance post-discharge instructions

• reduce related readmissions
Questions?

Thank you!