Acute Care Speech Pathology: Our Role in an ever changing Healthcare Environment

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ACUTE CARE AND STROKE EVALUATIONS

- WHAT DO WE DO?
- WHAT ARE WE EXPECTED TO ACHIEVE?
NIH Stroke Scale

- Level of Consciousness
- Best Gaze
- Visual Fields
- Facial Palsy
- Motor: Arms

- Limb Ataxia
- Sensory
- Best Language
- Dysarthria
- Inattention

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NIH Stroke Scale

- What happens when someone has a low NIH Scale? How debilitating can it possibly be?
  - Think of loss of language/cognition
  - Think of loss of swallowing

Impact of Mild Stroke

- N= 219, six months post stroke, NIHSS<5
- 87% reported residual stroke & related changes
- Significant changes in work, driving, and recreational activities
- Emotional well being, activity participation were significant concerns
- Edwards, Han, Baum, Dromerick, 2006

Mild Stroke: Return to Work

- 288 people with mild stroke who reported that they had returned to work
  - 49% reported working slower
  - 42% not being able to do the job as well
  - 31% not being as organized
  - 52% not being able to concentrate
- Wolf, Baum, Conner 2009
Cognitive Dysfunction Often Underestimated

- TIA: 40% impaired on at least 1 test of executive functioning within one week post Harnadek, 2010
- Mild Subacute Stroke: N= 177 mean age 50.6 yrs, 2 weeks post; MMSE >23
- 51.5% failed in at least 1 cognitive domain
- Jalliard, 2009

Common Cognitive Complaints

- Mental Fatigue
- Mental Slowness
- Loose train of thought/mind wanders
- Difficulty ignoring distractions
- Missing details
- Can only deal with one thing at a time
- Intolerance for noisy, crowded environments
- Hard to see the big picture

Executive Function Difficulties:

may be hidden but they impact...

- Social Participation
- Personal Relationships
- Ability to Cope
- Self Advocacy
- Learning New Information
- Engaging in New Activities
- Independent in ADL
- Sustain Employment
- Maintain Health
- Pursue academic & occupational goals
Executive Functions: (EF) & Relationship to Participation

- EF and working memory significantly correlated with social functioning. Working Memory was the most affected domain.
- Stroke affects significant associations between divided attention, flexibility, and social participation.
- EF and stroke severity contribute the most to poor functional outcome.

Owensworth T, Shum D. Disability and Rehab 2008

Evaluation of Stroke Patients

- What to expect from a SLP to complete.
- What to expect in communication with family/ancillary professionals and documentation.

Patient-Family Interview/Chart Review

- Assess negative/positive interactions.
- Assess potential for being compliant.
- Assess expectations of patient and family.
- Assess continuum of care.
- Assess potential effect of religious and cultural implications of non-oral feeding.
- Assess Speech/Language/Cognition.
- Assess via bedside/instrumental exams.
Bedside Swallowing Evaluation

- Oral/Physical Evaluation
  - Facial
  - Labial
  - Lingual
  - Velopharyngeal
  - Gag
  - Cough
  - Pulmonary Auscultation

- Trial Feedings/Results
  - Liquids
  - Pureed
  - Solids
  - Decision for instrumental testing?

Fact or Fiction

- The gag reflex is an indicator of swallow function?
- PEG tubes prevent aspiration PNA?
- Are thickened liquids always safe to give?
- Is aspiration on the video swallow study an indicator for NPO?
- A chin tuck will make someone swallow better.
- Dysphagia is the most common predictor of Aspiration PNA.
Risk of Aspiration: Signs and Symptoms

- Silent Aspiration what does this mean?
- What are the largest predictors of Aspiration PNA?
- How important is dysphagia?

Predictors of Aspiration PNA:

How important is Dysphagia?

Langmore, S, Terpenning, M, Schork, A, Chen, Y, Murray, J
VA Ann Arbor, MI, School of Dentistry, Dept of Oral Med, School of Medicine, Division of Geriatrics
Dysphagia. 1998 13:69-81

Predictors of Aspiration Pneumonia

1. Dependence for feeding (41%)
2. Dependence for oral care (40%)
3. Number of decayed teeth (34%)
4. Tube Feeding (27%)
5. More than one medical diagnosis
6. Number of medications prescribed
7. Current Smoking
Predictors of Aspiration PNA

- Reduced activity level (43%)
- GER (28%)
- Esophageal Dysmotility
- Aspiration of Food
- Pharyngeal Delay
- Excess residue
- Xerostomia

Medical Health Status

- Though stroke and other neurologic diseases have historically been associated with a high incidence of aspiration pneumonia, we found that patients with COPD, GI disease, and CHF experienced a similar high rate.

- Patients with COPD and GI issues had the highest rate of PNA

- Highest rate of PNA are in nursing home patients that are debilitated and dependent on all ADLs

Respiratory Infections in Acute Stroke: NG tubes and Immobility are stronger predictors than Dysphagia

Brogan, E, Langdon, C, Brookes, K
Sir Charles Gardner Hospital, Perth Australia 2013
Acute Stroke and Dysphagia

- Swallowing problems occur in 37-78% of Stroke pts
- Evidence points to multiple factors to develop PNA in the first week of Stroke
- 536 Stroke pts
- Dysphagia present in 58% on admission
- Dysphagia present in first week now to 30%
- Overall respiratory infections= 11%

Acute Stroke & dysphagia

- Impaired GCS, ischemic Stroke, significantly impaired mobility were associated with swallowing difficulties.
- Being NPO and insertion of NG tube were significant predictors for respiratory infections

Acute Stroke

- Half of acute Stroke pts recover from dysphagia in the first 2 weeks, the other half have chronic Dysphagia
- Predictors of dysphagia= older in age (70)
- Dysphagia may increase length of stay in hospital by 73%, with only 14% of patients without dysphagia requiring ongoing hospitalization longer than 7 days
Acute Stroke: dysphagia

- Up to 48% of dysphagia Stroke pts develop aspiration PNA; however, up to half of the Stroke pts who develop PNA do NOT have dysphagia
- Instrumental evaluations directly demonstrate dysphagia show little correlation between aspiration and developments of aspiration PNA.
- This supports other factors: decreased mobility, poor oral hygiene, and feeding tubes

Acute Stroke: Prognostic Indicators of Dysphagia

- Poor oral hygiene
- Number of decayed teeth
- Presence of tube feedings, likely due to poor oral hygiene

Overall Acute Stroke: Stats

- 50% or more of acute Stroke admission will be dysphagic
- A significant proportion of patients will have their dysphagia resolved in the first 1-2 weeks
- Factors other than dysphagia will be significant predictors of pts developing respiratory infections
WHEN DO WE DO INSTRUMENTAL EVALUATIONS

• WHY?
• WHAT ARE THE BENEFITS?
• WHAT ARE THE RISKS?

Communication/Documentation

• RN/CNA
• MD
• Ancillary Professionals: CM, SW, PT/OT, RD, Pharmacist, Clergy
• Patient/Family

Bibliography


Crary MA, Carnaby GD, et al., Spontaneous swallowing frequency has potential to identify dysphagia in acute stroke. Stroke 2013; 44(12): 3452-3457


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Owenworth T, Shurr D, Relationship between executive functions and productivity outcomes following stroke, Disabil Rehabilitation 2008, 30 (15) 1341-1349.

Ownsworth T, Barber M, Dodds H, et al., Implementing a simple care bundle is associated with improved outcomes in a national cohort of patients with ischemic stroke. Stroke 2012, 43(2), 66-70.


Medical Fragility: Are Swallowing issues a predictive value for pre and post op Cardiac Surgical Patients

Jo Puntill-Sheltman M.S. CCC BCS-S F-ASHA
B. Jason Bowles, MD

Background

• What is frailty?
  • A clinical syndrome of multisystem impairment that results in a decreased physiologic reserve and an increased vulnerability to stressors
  • Not strictly related to age or comorbidities
  • Increases risk of postoperative complications

• Is dysphagia part of the frailty syndrome?
  • Laryngeal penetration has been associated with frailty.

Once Upon a time in 2013

• Prospective cohort study beginning May 2013
• IRB approved
• Study population:
  • All patients aged 65 and older undergoing non-emergent cardiac surgery at DRMC

DRMC: CV Standard of Care:

• Preoperative Frailty Screening
  • Eyeball Test
  • Which pt the MD thinks will fail

DRMC: CV Standard of Care:
Cardiac Rehab

• Preoperative Frailty Screening
  • Gait speed
  • 5 meter walk
  > 6 secs
DRMC: CV Standard of Care: SLP

- Preoperative Swallow Screen
  - Alert/Oriented/Follows Commands
  - Oral Mechanism screen, facial symmetry, bilateral seal and lingual ROM
  - Strength of Cough
  - 90 mL water challenge
- Repeated postoperatively
  - Within 24 hours of extubation

Background: Questions

1. What is the incidence of dysphagia after cardiac surgery?
2. What do we know about baseline pre-op risk in this patient population?
3. Risk Factors may include: Age, Intubation time, Tee

Methods: a look in the past

- Prospective cohort study beginning May 2013 until December 2013
- IRB approved
- Study population:
  - Patients aged 65 and older
  - elective non-emergent cardiac surgery
  - single 250 bed community hospital

References:
Preoperative Swallow Screen:

- Alert/Oriented able to follow complex commands, communicates upcoming surgery/clear speech
- Oral Mechanism screen, facial symmetry, bilabial seal and lingual ROM (protrusion, elevation, lateralization)
- Strength of Cough
- 90 mL water challenge

Methods

- Repeated postoperatively by SLP’s
  - Within 6-24 hours post extubation
  - Alert/Oriented able to follow complex commands, communicates upcoming surgery/clear speech
  - Oral Mechanism screen, facial symmetry, bilabial seal and lingual ROM (protrusion, elevation, lateralization)
  - 90 mL water challenge
  - Strength of Cough

- Pre-Op Pass/Fail
  - Pass: the patient is able to complete the 90mL water challenge uninterrupted and without coughing
  - Fail: The patient is unable to perform the task and/or coughs.
  - If they fail post operatively there is an automatic bedside swallow evaluation BSE
  - Observations such as alertness, orientation, ability to follow complex commands, speech intelligibility and oral mechanism information were all documented
Results of Pre-op Screen

- 10 of the 96 failed the screen 10.4%
  - Unable to perform sequential swallows or stopped (UPSS) = 4
  - Coughed = 5
  - Combination of UPSS and coughed = 1

- All 10 patients were WFL for all speech, cognitive tasks

Results: Post op screen

- 20 of 96 failed or 20.8%
- All 10 that failed pre-op also failed post op screen
  - Why did the patients fail?
    - 9 were unable to perform sequential swallows or stopped
    - 6 coughed after the task
    - 4 combination of both
    - 1 death

Interesting Findings

- 18 of the failed the post swallow screen pts were discharged either to ARU or SNF
- In addition, patients who fail the post swallow screen had almost double ventilation time.
- The small sample size precluded statistical significance (p = 0.059)

What did we change since 2014?

• All patients whether elective or emergent receive a pre op walk test and swallow screen if possible (with emergent)

New Findings Regarding Frailty and STS Standards

• Risk Stratification: alters the way the CV surgeons think about whether to do surgery or not
• DRMC has the lowest readmission rates in the corporation
• Post-op PNA significantly down since study 8 PNA’s prior to study, 1 post study a=0.05 P-value 0.01
• Pro-Active Care when patient identified pre-operatively

Conclusions

• Aspiration risk may be a pre-existing condition that is undetected.
• Aspiration risk following cardiac surgery may be more common than expected.
• Aspiration Risk may be more predictable of frailty than the walk test
• Luder SB, Suter DM, Green BG. Silent aspiration risk is volume-dependent. Dysphagia 2011.

Life is Pleasant, Death is Peaceful, it’s the transition that’s troublesome!

Isaac Asimov

History Lesson: 1900-2000
• Life expectancy rose from 47 to 77 yrs
• That gain is equivalent to longevity between the stone age, more than 10,000 years
• 100 years to 10,000 to change the course of aging
• Illness and death were central and routine community experience:
  • Death was random
  • Death was common
Why?

• Modern public health with clean drinking water and sanitation
• Antibiotics, vaccinations, medical advances
• Medical care created the feeling that illness would be treated, if not cured
• Our expectations about death begins the journey of change
• Infection, injury, and poor health care touched everyone, no age was spared

Why? Our new obstacles

• Death is avoidable and therefore failure
• Death has been banished and believed to be unacceptable and unendurable
• Death is stigmatized, hidden and avoided
• We now unconsciously believe that we can avoid death

History Lesson cont.

• 1940’s: the location and cause of death in the USA changed 70% of Americans started dying in the hospitals instead of home.
• 1950’s: The baby boomers started to age, leading to greater population
• 1970’s: The number of these adults with chronic disability, multiple illness and functional dependency began to increase
• 1980’s: More and more aging adults living longer with more illness and multiple co-morbidities
History: 21st Century

- More than 2.3 trillion dollars spent on health care (16.9% of the GDP)
- The USA spends 5x as much per person on health care than any other nation
- 46 million are uninsured

Palliative Care

"...comprehensive, interdisciplinary care, focusing primarily on promoting quality of life for patients living with a [serious, chronic, or] terminal illness and for their families... assuring physical comfort (and) psychosocial support. It is provided simultaneously with all other appropriate medical treatments."

Billings, J Pall Med, 1999;1:73-81

How does Palliative Care Fit with Hospice Care

- The name Palliative Care conjures up strong images of end-of-life care, pain control and hospice. Palliative Care is more than that.
- This service encompasses the whole care continuum of the severely ill patient.
- We need to work with patients with serious illnesses SOONER than in their last days!
World Health Organization's View

Palliative Care is an approach that improves the quality of life of patients and their families facing the problems associated with life-threatening illness through the prevention and relief of suffering by means of early identification and impeccable assessment and treatment of pain and other problems: physical, psychosocial and spiritual.

Differences between Palliative Care and Hospice Care, why is this important

Hospice and Palliative Care
Quality of Life

- The Goal of Palliative Care is to prevent and relieve suffering and to support the best possible quality of life for patients and their families, regardless of the stage of the disease or need for other therapies.

One physician’s perception

- “We all aspirate; just don’t do it in front of a speech therapist”

Economic and survival burden of dysphagia among hospitalized patients

Patel, Krishnaswami, Steiger, Conover, Vaezi, Ciucci
Vanderbilt, UW Madison, NFOSD (National Foundation of Swallowing Disorders)
Diseases of the esophagus 2017
Overview

- Prevalence in community dwelling people over 50
  - estimated between 15-20% while 40-60% of assisted living facility and SNF have feeding difficulties
- 2012 National health interview survey
  - estimates 1 in 25 ADULTS* REPORTED SWALLOWING PROBLEMS WITHIN THAT YEAR (9.44 ± 0.33 million adults)
- 2005-2006 National Hospital discharge survey
  - Dysphagia diagnosis was associated with 40% increase in length of hospital stay and patients undergoing rehab had a 13 fold increase risk of mortality

Consequences of untreated or unrecognized dysphagia

- Malnutrition
- Volume depletion
- Quality of life
- Aspiration

*2005-2006 National Hospital discharge survey: Dysphagia diagnosis was associated with 40% increase in length of hospital stay and patients undergoing rehab had a 13 fold increase risk of mortality

This study: 2009-2013 from AHRQ Healthcare Cost and Utilization Project (HCUP) National inpatient sample

- Assess the prevalence of dysphagia in adult patients to determine the effect of having a diagnosis of dysphagia:
  - length of stay (LOS)
  - In-hospital mortality
  - Discharge disposition
  - Total charges and inpatient costs
This study: 2009-2013 from AHRQ Healthcare Cost and Utilization Project (HCUP) National inpatient sample

- Included: 45 years or older with less than/equal to 180 days of stay in hospital
- Dysphagia was defined using international classification of diseases (ICD-9) discharge diagnosis codes of 787.20-787.29

Outcomes considered:

- Hospital length of stay
- Total charges and inpatient care costs
- In-hospital mortality
- Discharge disposition
  - Categorized into home/routine care, acute care facility (SNF, HH), died in hospital, or other

Statistical stratification analysis:

- See details in article they stratified cases with dysphagia and with non-dysphagia cases
- NIS a nationally representative: 20% stratified sample of more than 94% of discharges from US hospitals (excluding rehab and SNF)
Results

• Overall: 3.0% of adult US inpatients had a dysphagia diagnosis (2.7 of 88 million)
• Population Characteristics
  • 50.2% male, 72.4% white, 74.6% age (65-90)

5 most common DRG diagnostic related group

1. Septicemia
2. Intracranial hemorrhage or cerebral infarction
3. Rehabilitation
4. Respiratory infections
5. Esophagitis, gastroenteritis, and miscellaneous digestive disorders

Hospital length of stay

• People with dysphagia have 3.8 additional days in hospital (or 43% longer LOS)
• Dysphagia cases mean of 8.8 days compared to non-D with 5.0 days
Total charges

- Dysphagia cases had 34% higher total charges and 33% higher inpatient care costs than non cases (mean adjusted total charges)
  - dysphagia cases = $65,181
  - non dysphagia cases = $43,669

Discharge disposition and mortality

- A higher proportion of dysphagia cases were transferred to post acute care facilities than transferred home (33.9% more)
- Mortality rate more than doubled among dysphagia cases
  - 5.6% as compared to 2.7%
- Patients with dysphagia were 1.7 times more likely to die in the hospital than non dysphagia cases

Overall discussion

- Compared to other inpatients with similar characteristics, those with dysphagia
  - had 3.8 days longer length of stay
  - 39% higher inpatient care costs
  - 2.8 times more likely to require post acute care services
  - 1.7 fold higher odds of dying in the hospital
- Diagnosis of dysphagia appears to be an indicator of worse outcomes and higher costs
Costs/comparative

- Total costs among inpatients with dysphagia were 42-44% higher per admission.
- Extrapolating these figures: dysphagia was responsible for between $4.3 to $7.1 billion in additional hospital costs annually.
  - Which is higher for inpatient cost of treating non-valvular a-Fib ($4 billion).
  - Treating community-acquired PNA ($2.5 billion).
- Thus, patients with dysphagia incurred an additional $16.8 billion in inpatient costs between 2009-2013 compared to those without dysphagia.

Which patients are diagnosed?

- Most common DRG associated with dysphagia is Stroke and Infection.
  - Post-stroke dysphagia is associated with longer hospital LOS, greater utilization of post acute care facilities, and higher odds of mortality compared to stroke patients without dysphagia.
  - Infection (septicemia/Respiratory) mechanically ventilated ICU patients: post extubation dysphagia was independently associated with PNA, reintubation and death.
  - Elderly residents of Long term care facilities have also shown dysphagia the most important risk factor leading to PNA.

Is dysphagia a marker for disease severity?

- Some argue dysphagia is simply an indicator of overall disease severity:
  - Although, the absolute in-hospital mortality was 2-3% higher per year in patients with dysphagia.
  - This translates into an additional 31,833 to 59,043 deaths per year among patients with dysphagia.
A delay in recognizing dysphagia can also lead to significant morbidity due to: risk of malnutrition and aspiration PNA, need for intubation, antibiotics, and potential need for enteral feeding.

Implications

- It benefits clinicians and hospitals to recognize and treat dysphagia early to reduce the risk of in-hospital mortality.
- Referrals have increased by 63% between 2007-2014.
- Early behavioral swallowing interventions including intensive SLP therapy and dietary modification in inpatients with dysphagia and stroke has been associated with increased proportion of patients who returned to normal diet and recovered swallowing in 6 months.

Limitations

- HCUP data derive from administrative coding, which has inherent limitations.
- 2.7 million inpatients 45 years or older with dysphagia diagnosis between 2007-2013 is likely an underestimate since many patients have subclinical dysphagia and or a dysphagia diagnosis was not coded correctly.
Conclusions

- Dysphagia affects 3.1% of all adult US inpatients 45 years or older and is associated with a significantly longer hospital length of stay, higher inpatient costs, a higher likelihood of discharge to a post-acute care facility, and higher odds of inpatient mortality when compared to inpatients of similar ages and comorbidities.

Thank you

- Questions & Discussion