

## **PEG Tubes in Adults: Use, Overuse, and the SLP's Role**

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### **Case Study: "James"**

- Frail 90-year-old African American nursing home resident with COPD and CHF
- One choking episode and within 24 hours develops fever, lethargy, and SOB
  - Hospitalized and diagnosed with aspiration pneumonia
  - Swallowing study confirms gross aspiration
  - Attending physician refers the patient to GI for PEG tube placement and his daughter consents to the procedure over the phone
    - PEG tube placed and transferred back to nursing home the following day
    - **He aspirates again one month later and dies after three days in the hospital**

## Case Study: "Thomas"

- 86-year-old nursing home resident with severe dementia, CAD, HTN, and T2DM
- He has been declining slowly over the past year and has lost 10% of his weight over the past three months
- The nursing facility informs the patient's daughter that something must be done to "keep him from starving to death."
  - She requests feeding tube placement.
  - The patient is referred to a GI specialist, who places the PEG as an outpatient.
  - The PEG works well, allowing for adequate nutritional intake
  - **Thomas dies two months later**

## Case Study: "Mary"

- 75-year-old nursing home resident with multiple medical problems
- She told her family on several occasions that she would never want a feeding tube
- Hospitalized with an acute CVA with dense aphasia
  - A swallowing study shows marked dysphagia
  - Resident informs the family she needs a PEG tube to prevent her from "choking and dying," and says it should be only temporary until she regains her ability to swallow.
  - After much debate, they consent.
  - A PEG tube is placed on the third hospital day, and she is transferred back to the facility the next day for skilled rehab
  - **Attending compliments the resident on his efficient disposition of the case**

## Conventional Wisdom, c. 1989

- Beta-blockers contraindicated in CHF
- Acute back pain requires 3d bedrest
- Digoxin effectively converts afib
- Antibiotics required in otitis media
- Aspiration or inadequate oral intake necessitates PEG tube placement

## Percutaneous Endoscopic Gastrostomy Insertion

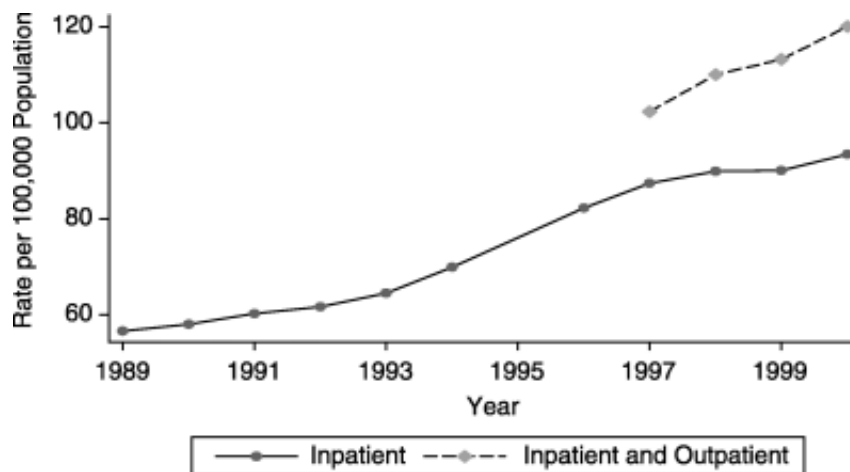
- Reported by Gauderer in 1980 as alternative to surgical gastrostomy
- Safe (<2% intraop complication rate)
- Simple (endoscopic, <15 minutes)
- Effective (allowed tube feeding)
- Beneficial (assumed better nutrition produced better outcomes)

## PEG Tubes in Adults

### PEG Tube Popularity

- PEG tubes placed in U.S. in patients 65 and older:
- 1989 ~15,000
- 1995 ~123,000

National Hospital Discharge Surveys, 1989 and 1995



Data not available for 1995

Lewis, C. L., Cox, C. E., Garrett, J. M., et al. (2004). Trends in the use of feeding tubes in North Carolina hospitals. *Journal of General Internal Medicine*, 19, 1034-8.

## PEG Tube Popularity

- In 1999, 34% of severely cognitively impaired residents of U.S. nursing homes had PEG tubes.

Mitchell, S. L., et al. (2003). Clinical and organizational factors associated with feeding tube use among nursing home residents with advanced cognitive impairment. *Journal of the American Medical Association*, 290, 73.



## PEG Tubes in Adults

### Concerns With Increased Use

	1992	2002
Procedure-related mortality	2%	0%
30-day mortality	8%	22%
Non-evidence-based indications	16%	31%

Janes, S. E., Price, C. S., & Khan, S. (2005). Percutaneous endoscopic gastrostomy: Mortality trends and risk factors. *Journal of Postgraduate Medicine*, 51, 23-29.

### High 6-month Mortality Associated With PEG Use in Certain Populations

Outcome	CNS* (n = 44)	Malignancy† (n = 12)	ALS (n = 5)	Other (n = 10)
Died	12 (27%)	9 (75%)	4 (80%)	3 (30%)
PEG in place	17 (39%)	1 (8%)	1 (20%)	4 (40%)
PEG removed	15 (34%)	2 (17%)	—	3 (30%)

\*Predominantly stroke and head injury.

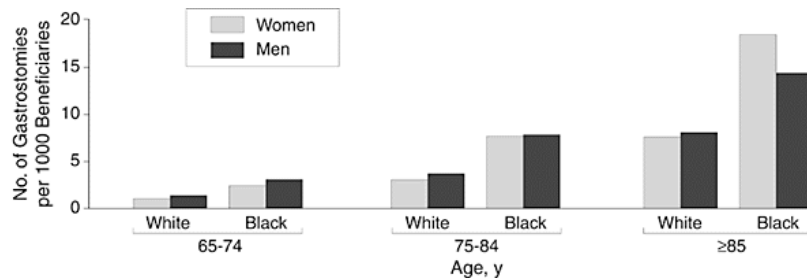
†Predominantly those of the head and neck.

CNS indicates central nervous system.

Verhoef, M. J., & Van Rosendaal, G. M. (2001). Patient outcomes related to percutaneous endoscopic gastrostomy placement. *Journal of Clinical Gastroenterology*, 32, 49-53.

## PEG Tubes in Adults

### Gastrostomy placement rates per 1000 eligible Medicare beneficiaries in 1991 according to age, race, and sex



Grant, M. D., Rudberg, M. A., & Brody J. A. (1998). Gastrostomy placement and mortality among hospitalized Medicare beneficiaries. *Journal of the American Medical Association*, 279, 1973-1976.

## PEG Tube Complications and Health Care Utilization

Home PEG tube use over average follow-up of 26 months required:

Telephone call	69%
Clinic visit	45%
ER visit	35%
Hospital admission	11%

Crosby, J., & Duerksen, D. (2005). A retrospective survey of tube-related complications in patients receiving long-term home enteral nutrition. *Digestive Diseases and Sciences*, 50, 1712-7.

## PEG Tubes Reconsidered

- Placement an invasive surgical procedure
- Like mechanical ventilation, an artificial means of life support
- While safe perioperatively, significant long-term complications exist
- Patient-oriented clinical outcomes (mortality, QOL) poorly studied
- Maintenance often requires multiple medical interventions
- Ethical and legal imperatives unclear (Cruzan, Schiavo, papal allocution)

## Goals

- Review existing published evidence
- Identify patient-oriented, outcome-based indications
- Discuss briefly the ethics of withholding or withdrawing nutritional support
- Identify barriers to appropriate use



## PEG Tubes in Adults

### Poor Prognostic Indicators for PEG Placement

- Age > 75
- Male gender
- Diabetes mellitus
- COPD
- Advanced cancer
- Previous aspiration
- UTI
- Charlson score > 3
- Low BMI
- Albumin < 3 g/dl
- Hospitalized
- Bedridden
- Pressure sores
- Dementia

Taylor, C. A., et al. (1992). Predictors of outcome after percutaneous endoscopic gastrostomy: A community-based study. *Mayo Clinic Proceedings*, 67, 1042-9.

Shah, P. M., Sen, S., Perlmutter, L. C., & Feller, A. (2005). Survival after percutaneous endoscopic gastrostomy: The role of dementia. *The Journal of Nutrition, Health, and Aging*, 9, 255-9.

### Burdens and Complications Associated With PEG Tube Use (partial list)

Wound dehiscence	Local bleeding	Stoma stenosis
Skin excoriation	Hematoma	Bumper erosion
Tube migration	Tube malfunction	Placement failure
Pain at tube site	Aspiration	Gastric perforation
Gastric prolapse	Gastrocolic fistula	Pneumoperitoneum
Eviseration	Pneumatosis intestinalis	Prolonged ileus
Intussusception	Peritonitis	Cellulitis
Necrotizing fasciitis	Abdominal abscess	Subphrenic abscess
Diarrhea	Bowel obstruction	GI bleeding
Nausea	Gastroesophageal reflux	Vomiting
Fluid overload	Death	Restraint use
Metabolic disturbance	Loss of gustatory pleasure	Pneumonia
Esophageal perforation	Loss of social interaction	Loss of dignity

Finucane, T., Christmas, C., & Travis, K. (1999). Tube feeding in patients with advanced dementia: A review of the evidence. *Journal of the American Medical Association*, 282, 1365-70.

## PEG Tubes in Adults

### Elderly Have Fewer Inpatient Complications but Higher Mortality

Table 3. Outcomes After Gastrostomy and Jejunostomy Placement

Outcome	Age < 65 y	Age ≥ 65 y	P Value
Total complications, n (%)	22 (15.6)	5 (5.1)	.017* .051‡
Major complications	10 (7.1)	2 (2.0)	.078* .042‡
G/J in place at discharge	137 (97.9)	98 (100)	.270‡
Discharge to nursing facility	112 (79.4)	80 (81.6)	.674‡
Hospital mortality	5 (3.6)	5 (5.1)	.400* .972‡
30-day mortality	7 (5.0)	17 (17.4)	.002* .041‡
1-year mortality	24 (17.0)	48 (49.0)	<.001‡ .001‡

\* Fisher exact test.  
‡ Logistic regression, controlling for gender, place of residence prior to admission, underlying condition, and Charlson comorbidity index.  
‡ Chi-square test.

Phillips, T. E., Comejo, C. J., Hoffer, E. K., & McCormick, W. C. (2005). Gastrostomy and jejunostomy placement: The urban hospital perspective pertinent to nursing home care. *Journal of the American Medical Directors Association*, 6, 390-5.

## Dementia

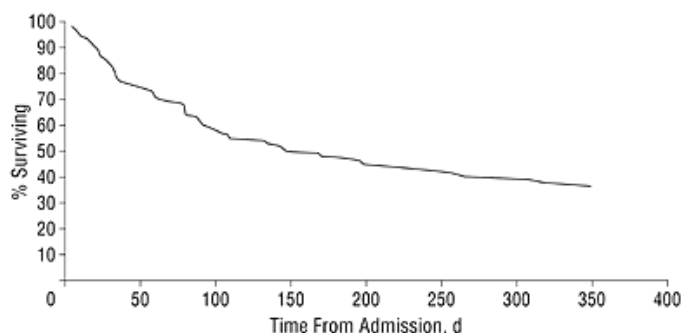
No evidence that tube feeding in patients with advanced dementia:

- Prolongs survival
- Prevents aspiration pneumonia
- Reduces the risk of pressure sores or infections
- Improves function
- Provides comfort

Finucane, T., Christmas, C., & Travis, K. (1999). Tube feeding in patients with advanced dementia: A review of the evidence. *Journal of the American Medical Association*, 282, 1365-70.

## PEG Tubes in Adults

### Mortality of Hospitalized Patients With Advanced Dementia



Meier, D. E., et al. (2001). High short-term mortality in hospitalized patients with advanced dementia: Lack of benefit of tube feeding. *Archives of Internal Medicine*, 161, 2385-6.

**Table 4. Cox Proportional Hazards Regression Model for Mortality After Index Hospitalization in 99 Subjects With Advanced Dementia**

Risk Factor	Hazard Ratio	95% Confidence Interval
Nursing home	1.02	0.5-2.0
Intervention status	1.18	0.7-1.9
Reisberg dementia stage*		
7c and 7d	0.97	0.5-1.8
7e and 7f	0.92	0.5-1.7
Presence of a pressure ulcer	1.07	0.6-1.8
Feeding tube status†		
Present on admission to the hospital	1.2	0.5-2.8
Placed during index hospitalization	0.97	0.5-1.9
Race‡		
Black	1.10	0.6-2.1
Hispanic	0.55	0.3-1.2
Admitting diagnosis§		
Dehydration or metabolic abnormality	1.6	0.6-4.3
Pneumonia or urinary tract infection	1.9	1.0-3.6

\* Reference category is Reisberg dementia stages 6d to 7b.<sup>26</sup>

† Reference category is no tube feeding.

‡ Reference category is white.

§ Reference category is other diagnosis.

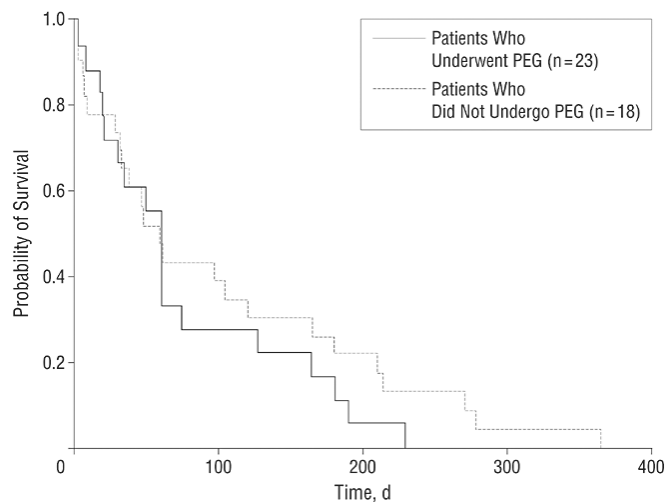
## PEG Tubes in Adults

### Dementia

- VA Medical Center, Washington DC.
- Of 41 patients with dementia referred for PEG, 23 received PEG, 18 did not because family declined after discussion of benefits/burdens.
- Without PEG placement, median survival was 60 days.
- With PEG placement, median survival was 59 days.

Murphy, L. M., & Lipman, T. O. (2003). Percutaneous endoscopic gastrostomy does not prolong survival in patients with dementia. *Archives of Internal Medicine*, 163, 1351-3.

Survival of patients with dementia referred for PEG  
VAMC Washington DC



Murphy, L. M., & Lipman, T. O. (2003). Percutaneous endoscopic gastrostomy does not prolong survival in patients with dementia. *Archives of Internal Medicine*, 163, 1351-3.

## Dementia

- Feeding tubes in demented patients are associated with significant increases in
  - Restraint use
  - ER utilization
  - Hospitalization

Li, I. (2002). Feeding tubes in patients with severe dementia. *American Family Physician, 65*, 1605-10.

Odom, S. R., et al. (2003). Emergency department visits by demented patients with malfunctioning feeding tubes. *Surg Endo, 17*, 651-3.

## Dementia

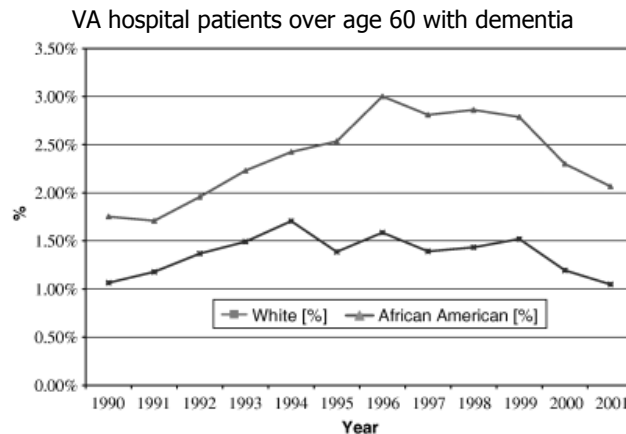
“There is a pervasive failure—by both physicians and the public—to view advanced dementia as a terminal illness, and there is a strong conviction that technology can be used to delay death.

“The first step in changing these attitudes is for physicians to acknowledge that feeding tubes are generally ineffective in prolonging life, preventing aspiration, and even providing adequate nourishment in patients with advanced dementia.”

Gillick, M. R. (2000). Rethinking the role of tube feeding in patients with advanced dementia. *New England Journal of Medicine, 342*, 206-210.

## PEG Tubes in Adults

### Use of PEG in Dementia Decreasing in VA System



Braun, U. K., Rabeneck, L., McCullough, L. B., et al. (2005). Decreasing use of percutaneous endoscopic gastrostomy tube feeding for veterans with dementia: Racial differences remain. *Journal of the American Geriatric Society*, 53, 242-248.

### Another Opinion

“When a patient with dementia cannot or will not eat and drink, how is it possible that providing nourishment via a simple, usually well-tolerated means has not been shown to provide any meaningful benefits?”

“I believe that if available data on the withholding of a basic necessity of life such as food and water are inconclusive, physicians should err on the side of providing tube feedings to dementia patients in need.”

Daniel Buff, MD FACP CNSP  
AAHPM Bulletin, Spring 2006

## Questions and Answers



## Cancer

- Klein and Koretz systematically reviewed the published prospective randomized controlled trials of nutrition support in cancer that had clinically significant endpoints (morbidity, mortality, duration of hospitalization).
- The data “failed to demonstrate the clinical efficacy of providing nutrition support to most patients with cancer.”

Klein, S., & Koretz, R. L. (1994). Nutrition support in patients with cancer: What do the data really show? *Nutrition in Clinical Practice*, 9, 87-9.

## Head and Neck Cancer

- PEG placement improved QOL but not mortality in head and neck cancer patients.
- Placement prior to radiotherapy or intraoperatively with resection improved morbidity but not mortality.

Scolapio, J. S., et al. (2001). Prophylactic placement of gastrostomy feeding tubes before radiotherapy in patients with head and neck cancer: Is it worthwhile? *Journal of Clinical Gastroenterology*, 33, 215-7.

Raynor, E. M., et al. (1999). Timing of percutaneous endoscopic gastrostomy tube placement in head and neck cancer patients. *Otolaryngology, Head and Neck Surgery*, 120, 479-82.

## Complications With PEG Placement in HNC Patients

Fatal or severe complications occurred in 26% of cases over two years.

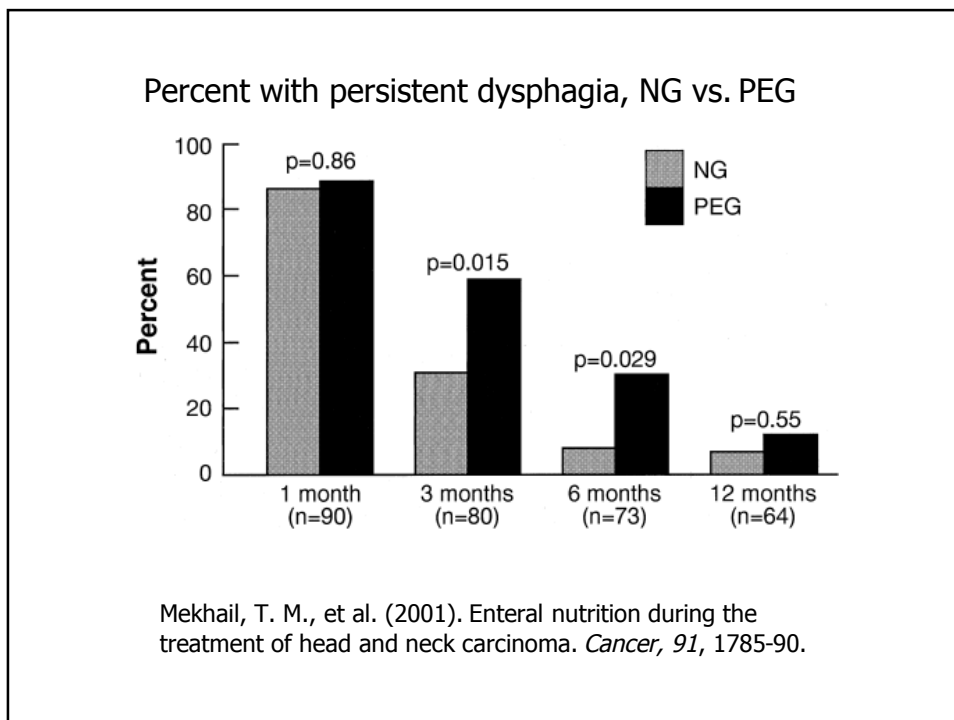
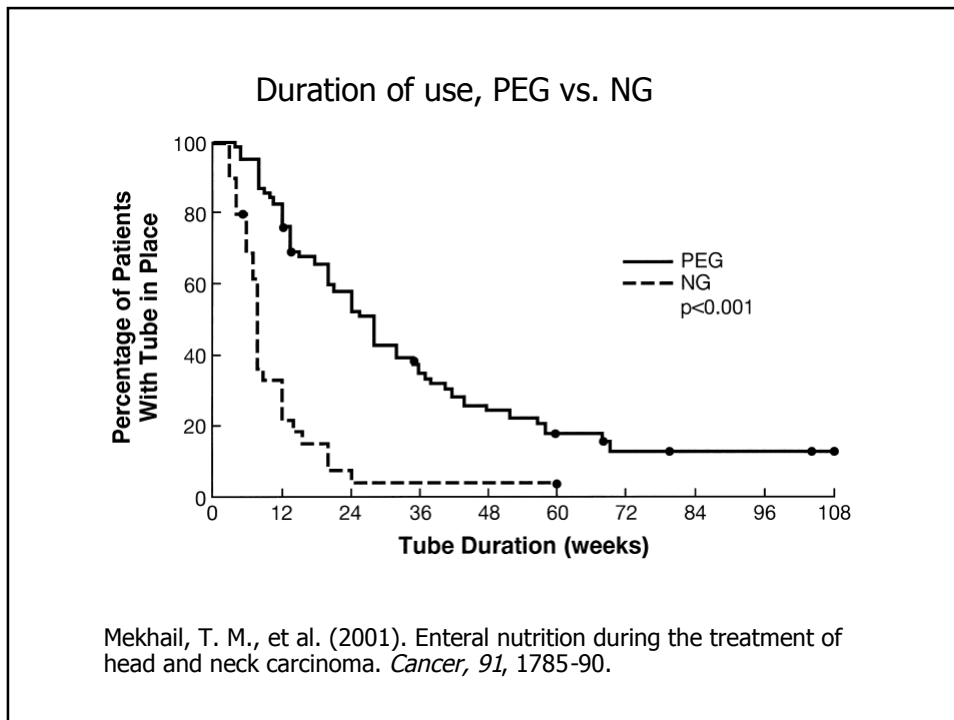
- PEG use (vs. NG) resulted in longer duration of feeding tube use and more persistent dysphagia.

Ehrsson, Y. T., Langius-Eklöf, A., Bark, T., & Laurell, G. (2004). Percutaneous endoscopic gastrostomy (PEG): A long-term follow-up study in head and neck cancer patients. *Clinical Otolaryngology*, 29, 740-6.

Mekhail, T. M., et al. (2001). Enteral nutrition during the treatment of head and neck carcinoma. *Cancer*, 91, 1785-90.



## PEG Tubes in Adults



## Amyotrophic Lateral Sclerosis

- PEG use improved QOL scores and weight but not mortality in ALS with bulbar dysfunction.
- However, a recent British study showed a cumulative use of only 11%, a median survival from insertion of < 5 months, and a 30-day mortality of 25%, outcomes similar to those in dementia.

Forbes, R. B., et al. (2004). Frequency, timing, and outcome of gastrostomy tubes for amyotrophic lateral sclerosis/motor neurone disease. *Journal of Neurology*, 251, 813-7.

Chio, A., et al. (1999). Safety and factors related to survival after percutaneous endoscopic gastrostomy in ALS. *Neurology*, 22, 1123-5.

Mitsumoto, H., et al. (2003). Percutaneous endoscopic gastrostomy (PEG) in patients with ALS and bulbar dysfunction. *Amyotrophic Lateral Sclerosis and Other Motor Neuron Disorders*, 4, 177-85.

## Muscular Dystrophy

- No adequately controlled trials

Hill, M., et al. (2005). Treatment for dysphagia in chronic muscle disease. *Cochrane Database System Reviews*.

## PEG Tubes in Adults

### CVA

- Two RCTs published in BMJ in 1992 and 1996 showed that, compared to NG use, PEG placement after stroke decreased mortality, treatment failures, and malnutrition.
- These trials were short (6 weeks), small (49 patients total), and poorly randomized (NG patients were both older and sicker).
- Cochrane Review: "Too few studies have been performed, and these have involved too few patients."

Park, R. H., et al. (1992). Randomised comparison of percutaneous endoscopic gastrostomy and nasogastric tube feeding in patients with persisting neurological dysphagia. *BMJ*, 304, 1406-1409.

Norton, B., et al. (1996). A randomized prospective comparison of percutaneous endoscopic gastrostomy and nasogastric tube feeding after acute dysphagic stroke. *BMJ*, 312, 13-16.

Bath, P. M., et al. (2005). Interventions for dysphagia in acute stroke. *Cochrane Database System Reviews*, 2005.

### CVA: Long Term Outcomes

Outcome of stroke patients with PEG

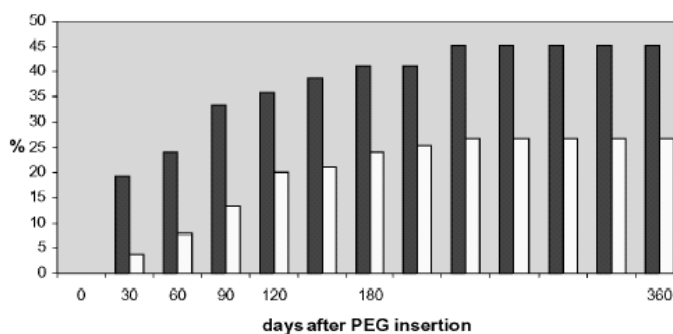


Fig. 2. Stroke patients who had PEG tubes removed or who died with PEG tube in place during 1 year post-PEG insertion (■ = death; □ = PEG removed).

Ha, I., & Hauge, T. (2003). Percutaneous endoscopic gastrostomy (PEG) for enteral nutrition in patients with stroke. *Scandinavian Journal of Gastroenterology*, 9, 962-6.

## One Year Outcomes of PEG Placement After Stroke

- 1) Death (45%)
- 2) Survival with permanent PEG tube (30%)
- 3) Survival with PEG tube removed (25%)

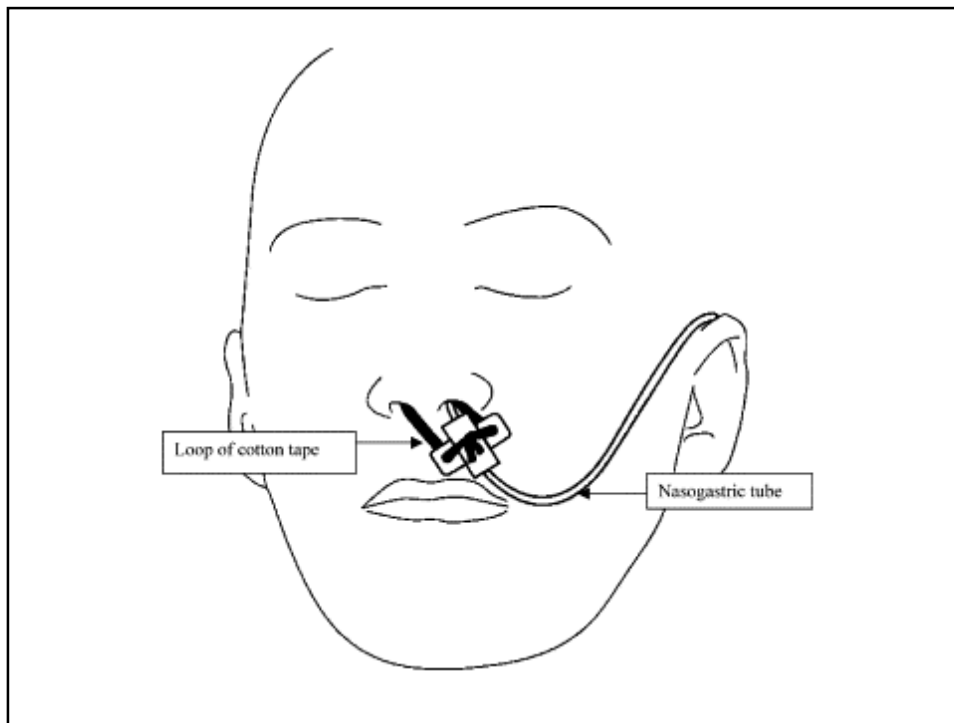
Ha, I., & Hauge, T. (2003). Percutaneous endoscopic gastrostomy (PEG) for enteral nutrition in patients with stroke. *Scandinavian Journal of Gastroenterology*, 9, 962-6.

## CVA: FOOD Trial 2005

- Multicenter international RCT using an intention-to-treat analysis with 6 month follow-up
- Tube feed vs. avoid tube feed for 7 days (N=859)
  - No significant difference in mortality
  - No significant difference in risk of death or poor neurologic outcome
- PEG vs. NG (N=321)
  - No significant difference in mortality
  - Significantly increased risk of death or poor neurologic outcome with PEG (p=0.05)

Dennis, M. S., Lewis, S. C., Warlow, C., et al. (2005). Effect of timing and method of enteral tube feeding for dysphagic stroke patients (FOOD): A multicentre randomised controlled trial. *Lancet*, 365, 764-772.

## PEG Tubes in Adults



### Using NG Tubes: Nasal Loops

- “Nasal loops allow time for patients who may recover normal swallowing to do so, and avoid unnecessary PEG insertion in those with a poor prognosis who will not ultimately survive their initial stroke.”

Anderson, M. R., et al. (2004). The nasal loop provides an alternative to percutaneous endoscopic gastrostomy in high-risk dysphagic stroke patients. *American Journal of Clinical Nutrition*, 23, 501-6.

## PEG Tubes in Adults

### Effect of PEG Use on Stroke Rehabilitation

- Large observational study (PRSOP) showed early PEG tube use after CVA was associated with improved rehabilitation outcomes.
- Case-controlled study showed that compared to matched patients without PEG tubes, inpatient stroke rehabilitation patients with PEG tubes had significantly:
  - less efficient rehabilitation
  - more hospitalizations (31% vs. 12%,  $p=.001$ )
  - higher mortality (8% vs. 2%,  $p=.006$ )

James, R., Gines, D., Menlove, A., Horn, S. D., Gassaway, J., & Smout, R. J. (2005). Nutrition support (tube feeding) as a rehabilitation intervention. *Archives of Physical Medicine and Rehabilitation, 86*, S82-S92.

Horn, S. D., DeJong, G., Smout, R. J., Gassaway, J., James, R., & Conroy, B. (2005). Stroke rehabilitation patients, practice, and outcomes: Earlier and more aggressive therapy better? *Archives of Physical Medicine and Rehabilitation, 86*, S101-S114.

Iizuka, M., & Reding, M. (2005). Use of percutaneous endoscopic gastrostomy feeding tubes and functional recovery in stroke rehabilitation: a case-matched controlled study. *Archives of Physical Medicine and Rehabilitation, 86*, 1049-52.

### CVA: PEG Complications

#### PEG complications after stroke

- 11% aspiration pneumonia
- 6% occlusion
- 6% accidental removal
- 3% wound infection
- 1% fatal GI bleed

Wijdicks, E. F., & McMahon, M. M. (1999). Percutaneous endoscopic gastrostomy after acute stroke: Complications and outcome. *Cerebrovascular Diseases, 9*, 109-11.

## Aspiration Pneumonia

- No data show that feeding tubes decrease the risk of aspiration pneumonia.
- Neurogenic dysphagia patients fed with PEG vs. NG have similar rates of aspiration pneumonia.

Park, R. H., et al. (1992). Randomised comparison of percutaneous endoscopic gastrostomy and nasogastric tube feeding in patients with persisting neurologic dysphagia. *BMJ*, *304*, 1406-9.

Fox, K. A., et al. (1995). Aspiration pneumonia following surgically placed feeding tubes. *American Journal of Surgery*, *170*, 564-6.

Finucane, T. E., & Bynum, J. P. W. (1996). Use of tube feeding to prevent aspiration pneumonia. *Lancet*, *348*, 1421-4.

## Aspiration Pneumonia

- Jejunostomy tubes and post-pyloric tubes (PEG-J's) show no advantage over PEG tubes in the prevention of aspiration pneumonia.
- Aspiration pneumonia is the most common cause of death after PEG placement.

Marik, P. E., & Zaloga, G. P. (2003). Gastric vs. post-pyloric feeding: A systematic review. *Critical Care*, *7*, R64-51.

Fox, K. A., et al. (1995). Aspiration pneumonia following surgically placed feeding tubes. *American Journal of Surgery*, *170*, 564-6.

Strong, R. M., et al. (1992). Equal aspiration rates from postpyloric and intragastric-placed small-bore nasogastric tubes: a randomized prospective study. *Journal of Parenteral and Enteral Nutrition*, *16*, 59-63.

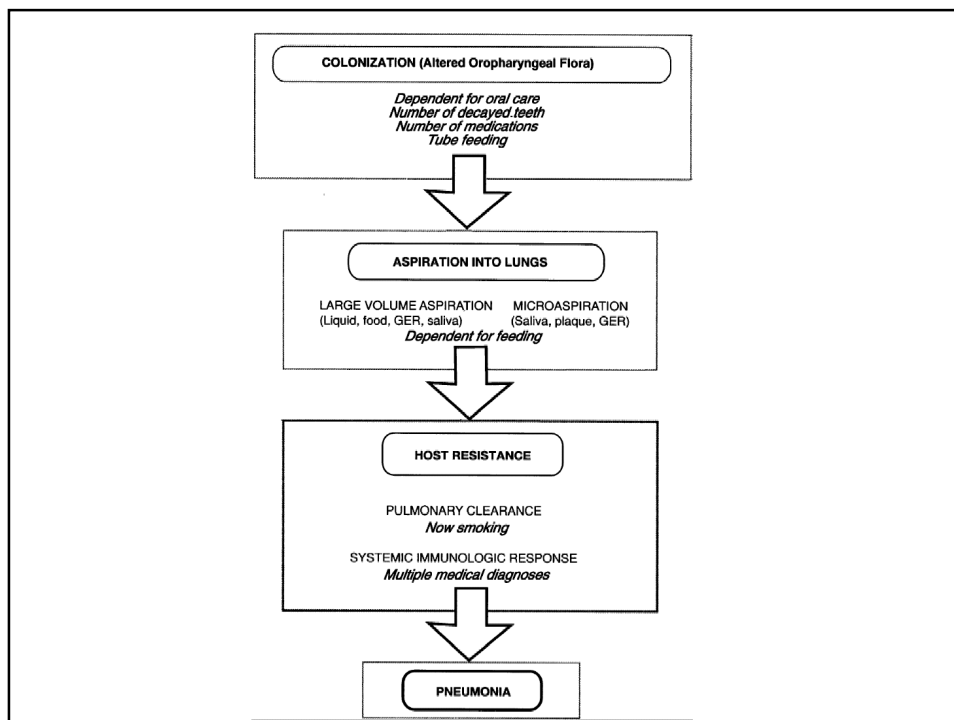
James, A., Kapur, K., & Hawthorne, A. B. (1992). Long-term outcome of percutaneous endoscopic gastrostomy feeding in patients with dysphagic stroke. *Age and Aging*, *7*, 671-6.

## Aspiration Pneumonia

Independent risk factors for AP:

- Dependent for feeding
- Dependent for oral care
- Number of decayed teeth
- Tube feeding
- More than one medical diagnosis
- Number of medications
- Smoking

Langmore, S. E., et al. (1998). Predictors of aspiration pneumonia: How important is dysphagia? *Dysphagia*, 13, 69-81.





## PEG Tubes in Adults

### Relative Risks for Community-Acquired Pneumonia by Exposure to Gastric Acid-Suppressive Therapy

**Table 1.** Relative Risks for Community-Acquired Pneumonia by Exposure to Gastric Acid-Suppressive Therapy

	Total	Unexposed	Exposed to Acid-Suppressive Drugs		
			Overall	H <sub>2</sub> -Receptor Antagonists	Proton Pump Inhibitors
No. of patients	364 683	345 224	19 459*	10 177	12 337
Person-years	977 893	970 331	7562*	2351	5191
No. of cases of pneumonia	5551	5366	185	54	131
Unadjusted relative risk (95% CI)		1.00	4.47 (3.82-5.12)	4.24 (3.18-5.43)	4.63 (3.84-5.43)

Abbreviation: CI, confidence interval.  
\*Some patients used H<sub>2</sub>-receptor antagonists plus proton pump inhibitors.

Laheij, R. J. F., et al. (2004). *Journal of the American Medical Association*, 292, 1955-1960.

### Effect of PEG Tubes and pH on GI Microbial Flora

- Found only in patients with PEG tubes:
  - Enterococcus
- Found only in patients with gastric pH > 3:
  - Staphylococcus
  - Bifidobacteria
  - Klebsiella species

O'May, G. A., Reynolds, N., Smith, A. R., Kennedy, A., & Macfarlane, G. T. (2005). Effect of pH and antibiotics on microbial overgrowth in the stomachs and duodena of patients undergoing percutaneous endoscopic gastrostomy feeding. *Journal of Clinical Microbiology*, 43, 3059-65.

## Aspiration Pneumonia

- Aspiration on MBS (vs. no aspiration) was not associated with the risk of pneumonia.
- Feeding tube placement (vs. no feeding tube) in patients who aspirated significantly **increased** the risk of pneumonia and pneumonia death. (PEG=NG)

Croghan, J. E., et al. (1994). Pilot study of 12 month outcome of nursing home patients with aspiration on videofluoroscopy. *Dysphagia*, 9, 141-6.

## Natural History of Dysphagia and Aspiration After Stroke

- About 20% of patients have dysphagia after stroke, but it resolves within one month 80% of the time.
- Only 12% of patients with aspiration on MBS following stroke will develop aspiration pneumonia.

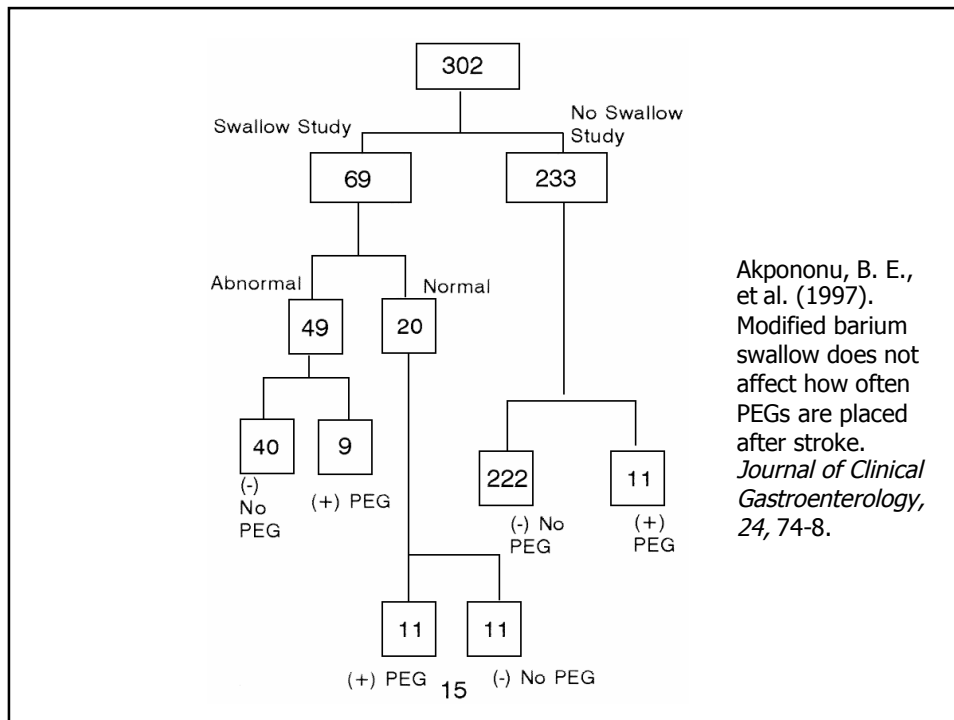
Kidd, D., et al. (1995). The natural history and clinical consequences of aspiration in acute stroke. *QJM*, 88, 409-13.

Smithard, D. G., et al. (1996). Complications and outcomes after acute stroke: Does dysphagia matter? *Stroke*, 27, 1200-4.

Smithard, D. G., et al. (1997). The natural history of dysphagia following a stroke. *Dysphagia*, 13, 230-1.

Ramsey, D. J., Smithard, D. G., & Kalra, L. (2003). Early assessments of dysphagia and aspiration risk in acute stroke. *Stroke*, 34, 1252-7.

## PEG Tubes in Adults



## Malignant Bowel Obstruction (Gastric Decompression)

- Gastric decompression with PEG tube effectively resolved persistent vomiting in bowel obstruction due to gynecologic malignancy in 85% of cases.
- Median survival after PEG insertion was 8 weeks.
- Octreotide (a somatostatin analogue) resolved symptoms in cases unresponsive to PEG placement.

Campagnutta, E., et al. (1996). Palliative treatment of upper intestinal obstruction by gynecologic malignancy: The usefulness of percutaneous endoscopic gastrostomy. *Gynecological Oncology*, 62, 103-5.

Pothuri, B., Montemarano, M., Gerardi, M., et al. (2005). Percutaneous endoscopic gastrostomy tube placement in patients with malignant bowel obstruction due to ovarian carcinoma. *Gynecological Oncology*, 96, 330-4.

## Malignant Bowel Obstruction (Gastric Decompression)

- The combination of octreotide, metaclopramide, and dexamethasone also resolved the symptoms of malignant bowel obstruction in ~85% of cases.
- A randomized trial comparing medical vs. surgical treatment is needed.

Mercadante, S., Ferrera, P., Villari, P., & Marrazzo, A. (2004). Aggressive pharmacological treatment for reversing malignant bowel obstruction. *Journal of Pain and Symptom Management*, 28, 412-6.

## Timing of PEG Placement

- Inpatients who underwent PEG placement had significantly higher 30-day mortality (29%) compared to outpatients (4%) and matched inpatients (13%).
- Patients who had PEG tube placed one month after hospital discharge had 88% lower 30-day mortality than those who had PEG tube placed during their hospitalization.

Abuksis, G., et al. (2000). Percutaneous endoscopic gastrostomy: High mortality rates in hospitalized patients. *American Journal of Gastroenterology*, 95, 128-32.

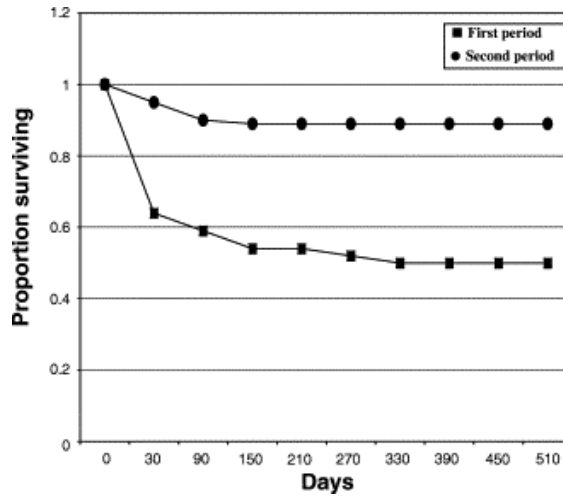
Abuksis, G., et al. (2004). Outcome of percutaneous endoscopic gastrostomy (PEG): Comparison of two policies in a 4 year period. *American Journal of Clinical Nutrition*, 23, 341-6.

## PEG Tubes in Adults

Survival curve since PEG insertion (by protocol analysis) ( $p < 0.0001$ )

First period 1/1/97-12/31/98 PEG placed within 3 days of request

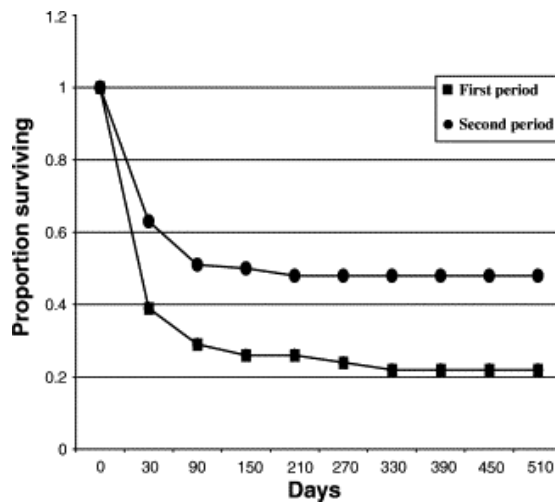
Second period 1/1/99-12/31/00 PEG placed one month after hospital discharge



Survival curve since PEG request (intention to treat analysis) ( $p = 0.01$ )

First period 1/1/97-12/31/98 PEG placed within 3 days of request

Second period 1/1/99-12/31/00 PEG placed one month after hospital discharge



## Questions and Answers



### “If the family wants it, I can’t say no.”

- The burden of proof of benefit lies with the physician ordering the feeding tube.
- The emotional symbolism attached to feeding affects the judgment of both families and physicians.
- Without an expectation of benefit, artificial feeding can be considered a form of torture.

Yarborough, M. (1989). Why physicians must not give food and water to every patient. *Journal of Family Practice*, 29, 683-4.

## Laws, Sausage, and PEG Tube Decisions

- Patients or their surrogate decision-makers reported multiple discussants, incomplete information, and considerable distress in arriving at the decision to proceed with artificial feeding.
- This distress was usually in the context of an acute debilitating illness that overshadowed the decision about artificial feeding.
- The decision for PEG often was a "non-decision" in the sense that decision-makers perceived no alternatives.

Callahan, C. M., Haag, K. M., Buchanan, N. N., & Nisi, R. (1999). Decision-making for percutaneous endoscopic gastrostomy among older adults in a community setting. *Journal of the American Geriatric Society, 47*, 1105-9.

## Inadequacy of Informed Consent

- At one large community teaching hospital, there was documented adequate informed consent (discussion of procedure-specific benefits and burdens and of alternatives) in only 0.6% of PEG placements.
- Although 61% of patients were clearly capable of MDM, only 36% signed their own consents, and 24% of surrogate consents were obtained over the phone.
- One-third of these patients died either in the hospital or within 30 days of discharge.
- Families unsure about PEG placement commonly feel pressured into consenting and often later regret their decisions.

Brett, A. S., & Rosenberg, J. C. (2001). The adequacy of informed consent for placement of gastrostomy tubes. *Archives of Internal Medicine, 161*, 745-748.

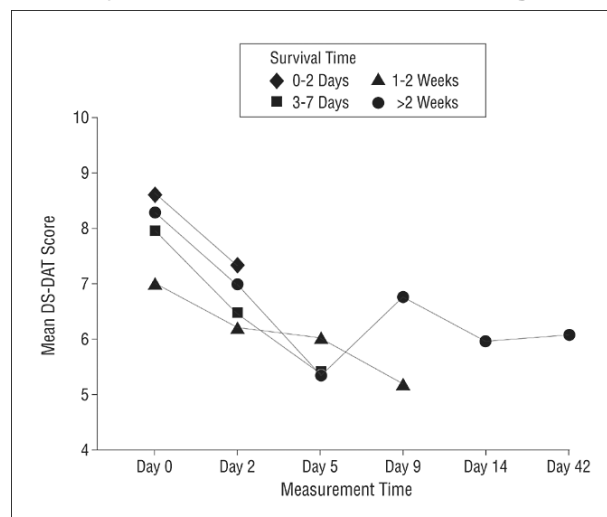
Van Rosendaal, G. M., et al. (1999). How are decisions made about the use of percutaneous endoscopic gastrostomy for long-term enteral support? *American Journal of Gastroenterology, 94*, 3225-8.

## Withholding Artificial Nutrition

- 97% of dying patients who stopped eating experienced no hunger or hunger only initially.
- Terminal anorexia may benefit dying patients by inducing ketosis and endorphin release which artificial feeding may reverse.

McCann, R. M., et al. (1994). Comfort care for terminally ill patients: The appropriate use of nutrition and hydration. *Journal of the American Medical Association*, 272, 1263-6.

### Mean Scores on the Discomfort Scale-Dementia of Alzheimer Type (DS-DAT)20 According to Survival



Pasman, H. R. W., et al. (2005). *Archives of Internal Medicine*, 165, 1729-1735.



## Withholding Artificial Nutrition

- Terminal anorexia and cachexia appear to be due in part to inflammatory cytokines and other transferable humoral factors.
- Even prolonged tube feeding with adequate formula fails to improve nutritional parameters in chronically ill nursing home patients.
- Theoretically, forced nutrition may accelerate cancer progression.

Ross, D. D., & Alexander, C. S. (2001). Management of common symptoms in terminally ill patients. *American Family Physician, 64*, 807-14.

Henderson, C. T., et al. (1992). Prolonged tube feeding in long-term care: Nutritional status and clinical outcomes. *Journal of the American College of Nutrition, 11*, 309-25.

## Hernia Repair vs. PEG Placement in Dementia

- Both are simple, safe, and effective surgical procedures.
- Both are without evidence of benefit.
- Yet if families demand one, we tell them it's "not indicated," but if they demand the other, we "honor the request."
- Saying yes avoids the difficult discussion of poor prognosis and appropriate goals of care.

## Withdrawal of Artificial Nutrition

- Stopping tube feeding is ethically and legally indistinguishable from never starting it.
- Artificial nutrition is typically the last life-supporting measure withdrawn.
- 25% of demented nursing home residents die while still receiving tube feedings.

Fins, J. J., et al. (1999). End of life decision-making in the hospital: Current practice and future prospects. *Journal of Pain Symptom Management*, 17, 6-15.

Asch, D. A., et al. (1999). The sequence of withdrawing life-sustaining treatment from patients. *American Journal of Medicine*, 107, 153-6.

Mitchell, S. L., Kiely, D. K., & Hamel, D. B. (2004). Dying with advanced dementia in the nursing home. *Archives of Internal Medicine*, 164, 321-6.

## PEG Trials

- Time- or goal-limited trials of artificial nutrition are suggested by many when the benefit/burden ratio is unclear, or consensus cannot be reached.
- My experience is that families and staff have a very difficult time withdrawing tube feedings at the end of the trial period.
- It is harder emotionally to discontinue a life-supporting intervention than it is never to initiate it.
- Compassionate physicians should reconsider starting any intervention it will be unusually difficult for patients or families to stop.

## PEG Tubes in Adults

<b>Practice Guidelines for PEG Tube Placement</b>					
	Do not offer	Offer but advise against	Offer and recommend	Discuss PEG vs. no PEG	Discuss PEG vs. NG
AGA 1995		Feeding need < 30 days	Feeding need > 30 days		
Rabeneck 1997	Anorexia-cachexia syndrome	Permanent vegetative state	Uncomplicated dysphagia with no other quality of life deficits	Complicated dysphagia (dementia, stroke)	
Angus/Burakoff 2003	Prognosis < 2 months Cancer cachexia Advanced progressive unresponsive cancer	Persistent vegetative state End-stage dementia without acute neurologic deficit	Bowel obstruction with prognosis > 2 months and unable to place stent Cancer treatment expected > 4 weeks with moderate-severe malnutrition and intact GI tract Dysphagia with persistent obtundation, brain stem stroke, bilateral stroke, or gross aspiration	Complicated dysphagia End-stage COPD Advanced dementia	Dysphagia without gross aspiration
Niv/Abuksis 2002	Aspiration Cancer with short life expectancy Dementia PVS Anorexia-cachexia syndromes		Head and neck cancer Acute stroke with dysphagia (delay until one month after hospital discharge) Neuromuscular dystrophy syndromes Gastric decompression		

## PEG Guidelines (Niv/Abuksis 2002)

Recommend PEG for nutritional impairments associated with:

- Head and neck cancer
- Acute stroke with dysphagia persistent one month after hospital discharge
- Neuromuscular dystrophy syndromes
- Gastric decompression

## PEG Guidelines (Niv/Abuksis 2002)

Do not offer PEG for:

- Aspiration
- Cancer with short life expectancy
- Dementia
- Persistent vegetative states
- Anorexia/cachexia syndromes

Niv, Y., & Abuksis, G. (2002). Indications for percutaneous endoscopic gastrostomy insertion: Ethical aspects. *Digestive Diseases and Sciences, 20*, 253-6.

## Barriers to Appropriate PEG Tube Use

- Educational
- Emotional
- Financial
- Institutional

## Educational Barriers

- Many physicians are unfamiliar with the evidence-based indications for PEG tubes and continue to recommend them for aspiration, advanced dementia, and late-stage cancer.
- Published practice guidelines are conflicting and often unsupported by the literature.
- Physicians in training often are taught not to question PEG placement decisions and to insert them even for inappropriate indications.

Shega, J. W., et al. (2003). Barriers to limiting the practice of feeding tube placement in advanced dementia. *Journal of Palliative Medicine, 6*, 885-93.

Scott, L. D. (2005). The PEG "consult". *American Journal of Gastroenterology, 100*, 740-3.

## Emotional Barriers

- In part due to the cultural association of feeding with caring, families are often reluctant to withhold or withdraw artificial nutrition from loved ones.
- Physicians often find it easier to recommend or perform a non-beneficial procedure than to confront difficult and time-consuming end-of-life issues.

Callahan, C. M., Haag, K. M., Buchanan, N. N., & Nisi, R. (1999). Decision-making for percutaneous endoscopic gastrostomy among older adults in a community setting. *Journal of the American Geriatric Society, 47*, 1105-9.

### Financial Barriers

- PEG placements may be a valued source of physician income and referrals.
- Hospitals may encourage PEG placements to generate revenue, though data suggest they actually lose money on inpatient insertions.
- It costs nursing facilities significantly less (and they are reimbursed more) to feed severely demented patients by PEG tube than by hand.

Mitchell, S. L., Buchanan, J. L., Littlehale, S., & Hamel, M. B. (2004). Tube-feeding versus hand-feeding nursing home residents with advanced dementia: A cost comparison. *Journal of the American Medical Directors Association, 5*, S22-9.

Plonk, W. M. (2005). Lack of financial benefit of inpatient percutaneous endoscopic gastrostomy tube placement. *American Journal of Gastroenterology, 100*, 1894-5.

### Institutional Barriers

- Hospitals may encourage PEG placements to expedite patient discharges, support specialist incomes, or provide fellow training.
- Ethics, geriatric, or palliative care consultations are rarely called in PEG placement cases, and usually only after the tube has failed to provide clinical improvement.
- Nursing homes may "require" PEG placement for facility admission due to staffing, regulatory, or legal concerns, and nurses or speech therapists may promote PEG insertions in this setting.

Van Rosendaal, G. M., Verhoef, M. J., & Kinsella, T. D. (1999). How are decisions made about the use of percutaneous endoscopic gastrostomy for long-term nutritional support? *American Journal of Gastroenterology, 94*, 3225-8.

Morgenstern, L., Laquer, M., & Treyzon, L. (2003). Ethical challenges of percutaneous endoscopic gastrostomy. *Surgical Endoscopy 2004 Epub of Poster #216 at SAGES meeting 3/14/03.*

Mitchell, S. L., et al. (2003). Nursing home characteristics associated with tube feeding in advanced cognitive impairment. *Journal of the American Geriatric Society, 51*, 75-79.

## PEG Tubes in Adults

**Table 3. Multivariate Analysis of Nursing Home Characteristics Associated with a High Proportion of Tube Feeding of Cognitively Impaired Residents (N = 1,057 Facilities)**

Characteristic	Odds Ratio (95% Confidence Interval)
Speech therapist on staff	2.06 (1.51–2.82)
Percentage of Medicaid beds > median	1.68 (1.28–2.19)
Number of residents aged 65 and older living in the facility > median	1.67 (1.27–2.19)
FTE nurses/100 beds > median	1.67 (1.22–2.28)
Percentage of residents with advance directives < median	1.66 (1.27–2.17)
>10% of residents have pressure ulcers	1.69 (1.15–2.48)
Facility does not have an Alzheimer's unit	1.45 (1.01–2.08)
FTE nursing assistants/100 beds < median	1.39 (1.02–1.91)
Percentage of residents with total functional dependency > median	1.66 (1.23–2.10)

FTE = full-time equivalent (35 hours per week).

Mitchell, S. L., et al. (2003). Nursing home characteristics associated with tube feeding in advanced cognitive impairment. *Journal of the American Geriatric Society, 51*, 75-79.

### One physician's perception:

“We all aspire; just don't do it in front of a speech therapist.”

Tom Finucane MD

11/7/05

## NH physician comments AMDA conference 3/06

"When the speech therapist writes NPO, I have no choice but to order a PEG."

"If the speech therapist gives me no alternatives, what am I supposed to do?"

"Someone needs to tell the speech therapists how much influence they have."

## Ethical Barriers

- Some political and religious groups feel artificial hydration and nutrition constitute ordinary medical care it is unethical or immoral to withhold or withdraw.
- PEG tubes clearly can reduce mortality in persistent vegetative states, but that outcome is of questionable benefit in patients with no demonstrable quality of life.
- Physicians who place PEG tubes often consider themselves technicians, not clinicians, thus distancing them from ethical responsibility.

Scott, L. D. (2005). The PEG "consult". *American Journal of Gastroenterology*, 100, 740-3.



## PEG Tubes in Adults

### PEG tubes

1. Which of the following are benefits of PEG tube placement in patients with advanced dementia?
  - a. Improved nutritional status
  - b. Reduced aspiration pneumonia risk
  - c. Improved pressure ulcer healing
  - d. Improved survival
  - e. Improved functional status
  - f. None of the above

### PEG tubes

1. Which of the following are benefits of PEG tube placement in patients with advanced dementia?

a. Improved nutritional status	94%
b. Reduced aspiration pneumonia risk	76%
c. Improved pressure ulcer healing	75%
d. Improved survival	61%
e. Improved functional status	27%
f. None of the above	

Shega, J. W., et al. (2003). Barriers to limiting the practice of feeding tube placement in advanced dementia. *Journal of Palliative Medicine*, 6, 885-93.

## PEG Tubes in Adults

### PEG tubes

2. What is the average one month mortality of all inpatients over age 65 after PEG tube placement?
  - a. 5%
  - b. 10%
  - c. 20%
  - d. 45%
  - e. 60%

### PEG tubes

2. What is the approximate average one month mortality of all inpatients over age 65 after PEG tube placement?
  - a. 5%
  - b. 10%
  - c. 20%
  - d. 45%
  - e. 60%

1 month mortality  
6 month mortality  
12 month mortality

Mitchell, S. L., & Tetroe, J. M. (2000). Survival after percutaneous endoscopic gastrostomy tube placement in older persons. *Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 55, M735-9.

## PEG Tubes in Adults

### Mortality After Inpatient PEG Tube Placement

	1 month	6 months	1 year
USA	19%	44%	62%
Japan	8%	36%	45%

Mitchell, S. L., & Tetroe, J. M. (2000). Survival after percutaneous endoscopic gastrostomy tube placement in older persons. *Journals of Gerontology Series A: Biological Sciences and Medical Sciences*, 55, M735-9.

Onishi, J., Masuda, Y., Kuzuya, M., et al. (2004). Long-term prognosis and satisfaction after percutaneous endoscopic gastrostomy in a general hospital. *Geriatrics & Gerontology International*, 4.

### Do Interventions Work? Proactive staff education and palliative care consultations

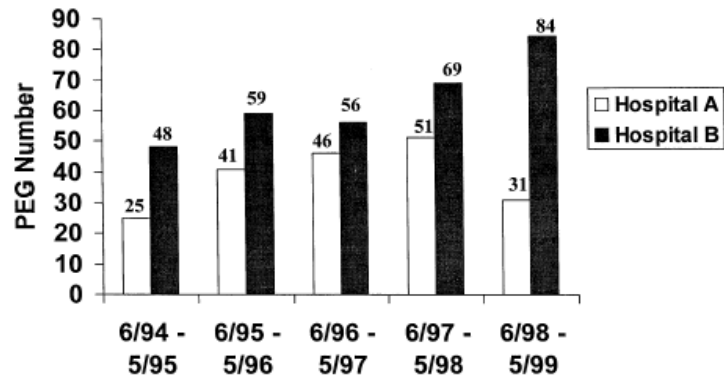
Lenox Hill Hospital, NY, NY

	3/02-9/02	3/03-9/03
PEGs	71	27
PEGs in dementia	40	8

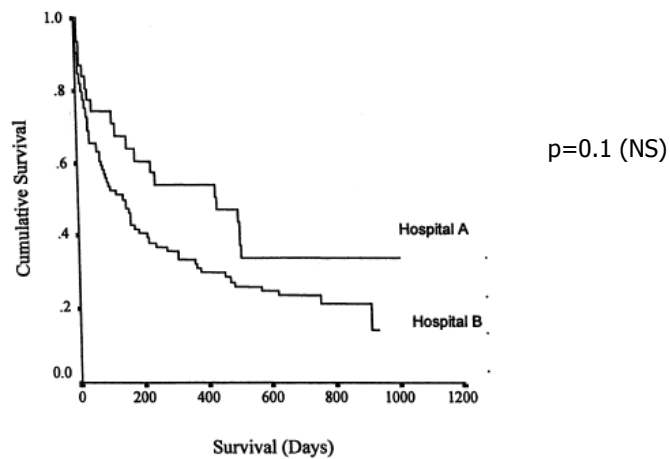
Monteleoni, C., & Clark, E. (2004). Using rapid-cycle quality improvement methodology to reduce feeding tubes in patients with advanced dementia: Before and after study. *BMJ*, 329, 491-4.

## PEG Tubes in Adults

### Do Interventions Work? Hospital-specific evidence-based practice guidelines

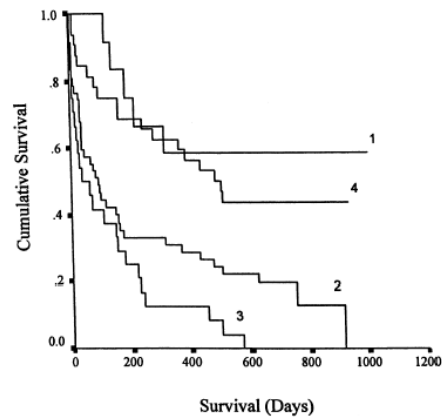


Sanders, D. S., et al. (2002). Percutaneous endoscopic gastrostomy: A prospective audit of the impact of guidelines in two district general hospitals in the United Kingdom. *American Journal of Gastroenterology*, 97, 2239-2245.



Sanders, D. S., et al. (2002). Percutaneous endoscopic gastrostomy: A prospective audit of the impact of guidelines in two district general hospitals in the United Kingdom. *American Journal of Gastroenterology*, 97, 2239-2245.

## PEG Tubes in Adults



### Indication for PEG

- 1) Head and Neck CA
- 4) Miscellaneous
- 2) Acute CVA with dysphagia
- 3) Dementia

Sanders, D. S., et al. (2002). Percutaneous endoscopic gastrostomy: A prospective audit of the impact of guidelines in two district general hospitals in the United Kingdom. *American Journal of Gastroenterology*, 97, 2239-2245.

## Conclusions

PEG tube placement should be offered only in:

1. Early head and neck cancer
2. Stroke with dysphagia persistent one month after hospital discharge
3. ALS
4. Malignant bowel obstruction with intractable vomiting

## Conclusions

Even in these four conditions, the medical literature raises significant questions concerning the benefit of PEG tube placement over NG use or medical management.

## Conclusions

After a stroke, waiting one week to begin artificial nutrition is not harmful, and the use of NG rather than PEG tubes for the first month significantly decreases the risk of death or poor neurologic outcome.

## What % of PEG Tubes Are Clinically Indicated?

At one academic medical center, only 22% of PEG tubes placed in inpatients over age 65 in 2004 were potentially appropriate by the Niv/Abuksis guidelines.

Plonk, W. M. (2005). "Appropriateness of Percutaneous Endoscopic Gastrostomy Tube Placement in the Hospitalized Elderly." Research Poster, AGS 2005 Annual Scientific Meeting.

## Shared Decision-Making Aids For PEG Tubes

[Decisionaid.ohri.ca/decaids.html](http://Decisionaid.ohri.ca/decaids.html)

[Dhmc.org/shared\\_decision\\_making.cfm](http://Dhmc.org/shared_decision_making.cfm)

### **A 93-Year-Old Man With Advanced Dementia and Eating Problems**

Susan L. Mitchell, MD, MPH, Discussant (2007). *Journal of the American Medical Association*, 298(21), 2527-2536.

## PEG Tubes in Adults

### Steps to Decision Making for Feeding Problems in Advanced Dementia

**Table.** Steps to Decision Making for Feeding Problems in Advanced Dementia<sup>a</sup>

Step	Specific Factors to Consider	Application to Mr P's Case
1. Clarify clinical situation	Proxy should understand dementia is a terminal condition <sup>11-16,36</sup>	Daughter perceived that Mr P was near the end of life
	Explain feeding problems within context of end-stage dementia <sup>25,26,77,78</sup>	
	Review compounding acute medical conditions <sup>18</sup>	Hip fracture, renal mass
	Address easily modifiable factors	Ill-fitting dentures repaired, constipation treated
2. Establish primary goal of care	Is overriding goal of care life prolongation, maximizing function, or promoting comfort? <sup>79</sup>	Physician discussed goals of care with daughter; daughter wanted her father to be comfortable
	Where do treatment options fit in with the primary goal?	
3. Present treatment options and pro/cons of each choice	Ensure adequate time for counseling <sup>83</sup>	
	Explain components of palliative care and that hand-feeding option does not necessarily imply cessation of all medical treatment	Hip fracture repaired, urinary tract infections treated with antibiotics
	Be knowledgeable about the best available evidence regarding tube feeding <sup>65,69,82,81</sup>	Physician reassured daughter that Mr P would not suffer from hunger or thirst without artificial nutrition and hydration
	Address common misconceptions about tube feeding. <sup>85,86</sup>	
4. Weigh options against values and preferences	What would the patient want?	Mr P's daughter believed her father would not want to be tube fed
	Follow principles of substitute decision making: advance directives, substituted judgment, best interests <sup>82</sup>	
	Promote culturally sensitive decisions <sup>13,68,69,80,83</sup>	Consider how Russian background may influence decision making
5. Provide additional and ongoing decision support	May need to readdress decisions as clinical course evolves <sup>78</sup>	Initially parenteral hydration used, then discontinued
	Engage interdisciplinary team	Nurses, speech therapy, dietician were involved
	Encourage family to speak to other trusted advisors	Daughter consulted other family members
	Consider use of decision aids, <sup>77,81,85</sup> other printed materials, <sup>85</sup> and guidelines <sup>87,88</sup>	

<sup>a</sup>Adapted from Making Choices: Long-Term Feeding Tube Placement in Elderly Patients: A Book and Audiotape for Substitute Decision-Makers.<sup>84</sup>

Mitchell, S. L. (2007). *Journal of the American Medical Association*, 298, 2527-2536.

## Two Final Thoughts...

- "There is no evidence that nutritional support prolongs life or decreases morbidity in patients with cancer, sepsis, or advanced cardiac or respiratory disease."
- "Unrequested nutrition [by either the enteral or parenteral route] is neither medically nor ethically justifiable in terminally ill patients and should not be considered appropriate."

Winter, S. M. (2000). Terminal nutrition: Framing the debate for the withdrawal of nutritional support in terminally ill patients. *American Journal of Medicine*, 109, 723-6.



## Two Final Thoughts...

- "Because of its simplicity and low complication rate, [PEG placement] lends itself to overutilization."
- "Much of our effort in the future needs to be directed toward the ethical aspects associated with long-term enteral feeding."
- "We as physicians must continuously strive to demonstrate that our interventions truly benefit the patient."

Gauderer, M. (1999). Twenty years of percutaneous endoscopic gastrostomy: Origin and evolution of a concept and its expanded applications. *Surgical Endoscopy*, 50, 882.

## Questions and Answers



**Note: Writing Recommendations mentioned by Carol Monteleoni, MS, CCC-SLP can be found at the end of this handout packet.**

## PEG Tubes in Adults

Thank you!

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HEARING  
ASSOCIATION

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### PEG Tubes in Adults: Use, Overuse, and the SLP's Role

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### PEG Tubes in Adults: Use, Overuse, and the SLP's Role

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### PEG Tubes in Adults: Use, Overuse, and the SLP's Role

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**Additional Resource for PEG Tubes in Adults Use, Overuse, and the SLPs  
Role: Writing Samples by Carol Monteleoni, MS CCC-SLP**

**Speech Pathology and Palliative Care**

**Writing dysphagia recommendations for patients with advanced dementia or other terminal conditions**

**General guidelines:**

- Be aware of the power of an NPO or PEG recommendation
- Avoid framing recommendations only in terms of aspiration risk
- Focus on consensus re prognosis and goals of care
- Recommend feeding strategies

**Some sample recommendations:**

“Pt presents with eating dysfunction consistent with her diagnosis of advanced dementia. Recommend family meeting to reach consensus on a plan of feeding management consistent with patient’s prognosis and goals of care.”

“Pt presents with severe oral apraxia typical of late stage dementia. Feed patient only when fully alert and evidencing desire to eat. Do not force feed patient.” [enumerate strategies]

“Pt presents with severe oropharyngeal dysphagia and is at high risk for aspirating his secretions and food/liquid taken either p.o. or via enteral feeding. To minimize risk of development of aspiration pneumonia, ensure that patient is given scrupulous oral care and maintain strict aspiration precautions when feeding patient.” [enumerate aspiration precautions, strategies, etc.]

“Given patient’s poor prognosis and goal of comfort care, recommend attentive hand feeding, respecting patient’s food preferences and desire or lack of desire to eat. Consider hospice evaluation for care after discharge.”