

Brief description of patient problem/setting: An 83 year old male residing in LTC facility has advanced Alzheimer's dementia and is dependent on staff for all activities of daily living. Over the past several months, he has experienced progressive weight loss, declining oral intake, and increasing difficulty swallowing despite assistance with meals. Nursing staff report that he frequently pockets food, requires extensive feeding assistance, and often consumes less than 50% of his meals. His family is concerned about malnutrition and dehydration and is considering placement of a percutaneous endoscopic gastrostomy (PEG) tube because they believe it will prevent aspiration and prolong his life. The healthcare team must determine whether enteral tube feeding would provide meaningful clinical benefit compared with continued careful hand feeding.

Search Question: In older adults with advanced dementia and eating difficulties residing in long-term care facilities, does enteral tube feeding compared with continued careful hand feeding improve survival, nutritional status, and quality of life while reducing aspiration pneumonia, pressure ulcers, and hospitalizations?

Question Type: What kind of question is this? ☐Prevalence ☐Screening ☐Diagnosis
☐Prognosis ☒**Treatment** ☒**Harms**

Assuming that the highest level of evidence to answer your question will be meta-analysis or systematic review, what other types of study might you include if these are not available (or if there is a much more current study of another type)?

The highest level of evidence for this question would be a systematic review or meta-analysis. However, no randomized controlled trials have directly compared enteral tube feeding with careful hand feeding in patients with advanced dementia, largely due to ethical concerns involving this vulnerable population. If systematic reviews or meta-analyses were unavailable, I would consider prospective cohort studies followed by large retrospective cohort studies. These studies can compare important outcomes such as survival, nutritional status, aspiration pneumonia, and quality of life. Clinical practice guidelines may also be used as supporting evidence to guide clinical decision-making.

PICO search terms:

P	I	C	O
Advanced Dementia	Enteral tube feeding	Hand Feeding	Mortality
Alzheimer's disease	Feeding tube	Assisted oral feeding	Aspiration pneumonia
Elderly adults	Feeding Tube	Careful hand feeding	Nutritional status

Long Term care residents	Gastrostomy Tube	Comfort feeding	Pressure ulcers
Eating difficulties in dementia	Percutaneous endoscopic gastrostomy	Oral feeding	Quality of life
Dysphagia in dementia	Enteral Nutrition	Non-tube feeding	Tube-related complications
Severe cognitive impairment			Functional status
			Hospitalization

Search Terms : (advanced dementia OR severe dementia OR Alzheimer's disease OR severe cognitive impairment OR eating difficulties in dementia) AND (enteral tube feeding OR PEG tube OR percutaneous endoscopic gastrostomy OR feeding tube OR gastrostomy OR tube feeding OR enteral nutrition) AND (hand feeding OR oral feeding OR assisted feeding OR comfort feeding) AND (survival OR mortality OR aspiration pneumonia OR pressure ulcer OR quality of life OR nutritional status OR hospitalization)

Pub Med

Filters: Publication date: 2015- 2026, English language, Humans, Aged 65+, Meta-analysis, Systematic Review, Randomized Controlled Trial, Medline

Results: About 12

Selected: 2 articles

Cochrane Library

Filters: Cochrane Reviews, Trials, Publication date: 2015- 2026, Order by relevancy

Results: 3 review and 22 Trials

Selected: 1 article

Google Scholar

Filters: Publication date: Since 2015, Review articles, sorted by relevance

Results: 194

Selected: 1 article

- Initial PubMed searches using broad terms returned over 200 results, many of which addressed general enteral nutrition or dysphagia management rather than the specific comparison of tube feeding versus hand feeding in advanced dementia. After narrowing the search terms to focus on studies that directly compared enteral tube feeding with oral or hand feeding in advanced dementia populations and adding outcome specific terms such as aspiration pneumonia, pressure ulcers, survival, quality of life, the results were narrowed to the most relevant articles. Priority was given to the highest-level evidence available such as systematic reviews and meta-analyses, the most recent publications, and studies conducted in or most applicable to long-term care populations similar to the patient in this clinical scenario. Additionally, the article 4 was found through an additional targeted search and included as an exception because it remains the current AGS position statement specifically addressing feeding tubes in advanced dementia. Although published in 2014, the AGS has not yet published its replacement, and its recommendations remain consistent with newer evidence. Thus, four articles were selected that best addressed the PICO question.

Article 1: Enteral tube feeding for people with severe dementia

Davies N, Barrado-Martín Y, Vickerstaff V, et al. Enteral tube feeding for people with severe dementia. *Cochrane Database Syst Rev*. 2021;8(8):CD013503. Published 2021 Aug 13. doi:10.1002/14651858.CD013503.pub2

Abstract

Background: The balance of benefits and harms associated with enteral tube feeding for people with severe dementia is not clear. An increasing number of guidelines highlight the lack of evidenced benefit and potential risks of enteral tube feeding. In some areas of the world, the use of enteral tube feeding is decreasing, and in other areas it is increasing.

Objectives: To assess the effectiveness and safety of enteral tube feeding for people with severe dementia who develop problems with eating and swallowing or who have reduced food and fluid intake.

Search methods: We searched ALOIS, the Cochrane Dementia and Cognitive Improvement Group's register, MEDLINE, Embase, four other databases and two trials registers on 14 April 2021.

Selection criteria: We included randomised controlled trials (RCTs), or controlled non-randomised studies. Our population of interest was adults of any age with a diagnosis of primary degenerative dementia of any cause, with severe cognitive and functional impairment, and poor nutritional intake. Eligible studies evaluated the effectiveness and complications of

enteral tube feeding via a nasogastric or gastrostomy tube, or via jejunal post-pyloric feeding, in comparison with standard care or enhanced standard care, such as an intervention to promote oral intake. Our primary outcomes were survival time, quality of life, and pressure ulcers.

Data collection and analysis: Three review authors screened citations and two review authors assessed full texts of potentially eligible studies against inclusion criteria. One review author extracted data, which were then checked independently by a second review author. We used the 'Risk Of Bias In Non-randomised Studies of Interventions' (ROBINS-I) tool to assess the risk of bias in the included studies. Risk of confounding was assessed against a pre-agreed list of key potential confounding variables. Our primary outcomes were survival time, quality of life, and pressure ulcers. Results were not suitable for meta-analysis, so we presented them narratively. We presented results separately for studies of percutaneous endoscopic gastrostomy (PEG) feeding, nasogastric tube feeding and studies using mixed or unspecified enteral tube feeding methods. We used GRADE methods to assess the overall certainty of the evidence related to each outcome for each study.

Main results: We found no eligible RCTs. We included fourteen controlled, non-randomised studies. All the included studies compared outcomes between groups of people who had been assigned to enteral tube feeding or oral feeding by prior decision of a healthcare professional. Some studies controlled for a range of confounding factors, but there were high or very high risks of bias due to confounding in all studies, and high or critical risks of selection bias in some studies.

Four studies with 36,816 participants assessed the effect of PEG feeding on survival time. None found any evidence of effects on survival time (low-certainty evidence).

Three of four studies using mixed or unspecified enteral tube feeding methods in 310 participants (227 enteral tube feeding, 83 no enteral tube feeding) found them to be associated with longer survival time. The fourth study (1386 participants: 135 enteral tube feeding, 1251 no enteral tube feeding) found no evidence of an effect. The certainty of this body of evidence is very low.

One study of PEG feeding (4421 participants: 1585 PEG, 2836 no enteral tube feeding) found PEG feeding increased the risk of pressure ulcers (moderate-certainty evidence). Two of three studies reported an increase in the number of pressure ulcers in those receiving mixed or unspecified enteral tube feeding (234 participants: 88 enteral tube feeding, 146 no enteral tube feeding). The third study found no effect (very-low certainty evidence). Two studies of nasogastric tube feeding did not report data on survival time or pressure ulcers. None of the included studies assessed quality of life.

Only one study, using mixed methods of enteral tube feeding, reported on pain and comfort, finding no difference between groups. In the same study, a higher proportion of carers reported very heavy burden in the enteral tube feeding group compared to no enteral tube feeding. Two studies assessed the effect of nasogastric tube feeding on mortality (236 participants: 144 nasogastric group, 92 no enteral tube feeding). One study of 67 participants (14 nasogastric, 53 no enteral tube feeding) found nasogastric feeding was associated with increased mortality risk.

The second study found no difference in mortality between groups. The certainty of this evidence is very low. Results on mortality for those using PEG or mixed methods of enteral tube feeding were mixed and the certainty of evidence was very low. There was some evidence from two studies for enteral tube feeding improving nutritional parameters, but this was very low-certainty evidence. Five studies reported a variety of harm-related outcomes with inconsistent results. The balance of evidence suggested increased risk of pneumonia with enteral tube feeding. None of the included studies assessed behavioural and psychological symptoms of dementia.

Authors' conclusions: We found no evidence that tube feeding improves survival; improves quality of life; reduces pain; reduces mortality; decreases behavioural and psychological symptoms of dementia; leads to better nourishment; improves family or carer outcomes such as depression, anxiety, carer burden, or satisfaction with care; and no indication of harm. We found some evidence that there is a clinically significant risk of pressure ulcers from enteral tube feeding. Future research should focus on better reporting and matching of control and intervention groups, and clearly defined interventions, measuring all the outcomes referred to here.

- This article is a Cochrane systematic review of 14 controlled non-randomized studies comparing enteral tube feeding with continued oral feeding in people with severe dementia. I selected this article because it is the most recent Cochrane review directly addressing my PICO question and represents the highest level of evidence available, as no randomized controlled trials have been completed. It evaluates the main PICO outcomes, including survival, nutritional status, quality of life, and aspiration pneumonia and pressure ulcers. The review also used GRADE and ROBINS-I methodology to assess the certainty of evidence and risk of bias.

Foreign Policy note: 8 of the 14 studies included in this systematic review were conducted outside the United States. Cultural beliefs about artificial feeding, family involvement in medical decisions, healthcare access, and long-term care practices may differ between countries and could affect the use and outcomes of tube feeding. Although cultural beliefs, healthcare access, and long-term care practices may differ between countries, this review was included because it represents the highest level of available evidence and includes six US-based studies. Its findings should still be applied cautiously to US long-term care residents.

Key Points

- Enteral tube feeding did not provide a clear survival benefit. 4 large studies involving 36,816 participants found no evidence that PEG feeding improved survival compared with continued oral feeding. However, the certainty of this evidence was low because all included studies were observational.
- Tube feeding did not prevent aspiration pneumonia. The overall evidence suggested that tube feeding may increase pneumonia risk. In one study, aspiration pneumonia occurred

in 58.1% of tube-fed patients compared with 25% of orally fed patients. However, this study did not adjust for differences between the groups.

- PEG feeding increased the risk of pressure ulcers. A large study involving 4,421 participants found that patients receiving PEG feeding were more likely to develop new pressure ulcers. This was the strongest finding in the review and was supported by moderate-certainty evidence.
- Tube feeding did not consistently improve nutrition, and important outcomes were not studied. Some studies reported improvements in laboratory values, but BMI did not improve, and the evidence was of very low certainty. No included studies evaluated quality of life or hospitalizations. The lack of randomized trials and the high risk of confounding limit the strength of the conclusions.

Article 2: The Efficacy and Safety of Tube Feeding in Advanced Dementia Patients: A Systemic Review and Meta-Analysis Study

Lee YF, Hsu TW, Liang CS, et al. The Efficacy and Safety of Tube Feeding in Advanced Dementia Patients: A Systemic Review and Meta-Analysis Study. *J Am Med Dir Assoc*. 2021;22(2):357-363. doi:10.1016/j.jamda.2020.06.035

Abstract

Objectives: The current study aimed to conduct a systematic review and meta-analysis to explore the efficacy and safety of tube feeding in patients with advanced dementia.

Design: Systematic review and meta-analysis.

Setting and participants: PubMed, Medline, Embase, and Cochrane Library were searched from inception until March 7, 2020, to obtain relevant studies.

Intervention: Feeding with nasogastric tube or percutaneous endoscopic gastrostomy (PEG).

Measures: We evaluated the associations of tube feeding and the risk of mortality, period of survival days, tube-related complications, and nutritional status. Data from original studies were synthesized by using a random-effects model. Each selected article was assessed for bias using the Newcastle-Ottawa Scale. A narrative synthesis and pooled analyses are reported.

Results: Twelve trials were eligible, involving 1805 patients with tube feeding (mean age: 82.8 years; 71.3% female) and 3861 without tube feeding (mean age: 82.7; 68.7% female). For mortality rate, patients with advanced dementia with tube feeding are associated with significantly higher mortality rate [$k = 8$; odds ratio (OR) 1.79; 95% confidence interval (CI) 1.04-3.07; $P = .03$]. Initially, no association was found for the risk of pneumonia and pressure sore between groups. However, sensitivity analysis showed patients with advanced dementia with PEG tube feeding have significantly higher risk of pneumonia (OR 3.56; 95% CI 2.32-5.44;

$P < .001$) and pressure sore (OR 2.25; 95% CI 1.92-2.63; $P < .001$). Finally, no association was found for the survival period and nutritional status between groups.

Conclusions and implications: This meta-analysis indicates that tube feeding is associated with increased mortality rate and possible tube-related complications, but not improves with prolonging survival days and nutritional status. Shared decision-making routinely before insertion of a tube between caregivers and physicians is recommended.

- This article is a systematic review and meta-analysis of 12 observational studies involving 5,666 patients with advanced dementia. It pooled data comparing patients who received enteral tube feeding with those who did not receive tube feeding. I selected this article because it provides the strongest quantitative evidence directly addressing my PICO question. Unlike the Cochrane review, which could not conduct a meta-analysis due to study differences, this article calculated pooled estimates for mortality, pneumonia, pressure ulcers, survival time, and nutritional status. It was particularly useful for determining whether tube feeding improves survival and nutrition while identifying its potential harms.

Key Finding:

- Tube feeding was not associated with improved survival. Across 8 observational studies, tube feeding was associated with higher mortality odds (OR 1.79, 95% CI 1.04 - 3.07). A PEG-specific subgroup analysis also found higher mortality odds with PEG feeding (OR 2.38, 95% CI 1.08 - 5.23). However, patients receiving feeding tubes may have been more medically complex, so these findings cannot establish that tube feeding directly caused increased mortality.
- PEG feeding did not prevent pneumonia or pressure ulcers. After heterogeneous outlier studies were removed, PEG feeding was associated with increased risks of pneumonia (OR 3.56) and pressure ulcers (OR 2.25). The authors explained that tube feeding may contribute to aspiration through gastric reflux and may increase pressure-ulcer risk through incontinence, immobility, and restraint use.
- Tube feeding did not meaningfully improve survival duration or nutritional status. The pooled difference in survival was only -5.59 days and was not statistically significant. Tube feeding also did not improve albumin, hemoglobin, or cholesterol levels, suggesting that it does not reliably reverse the nutritional decline associated with advanced dementia.
- The findings must be interpreted cautiously. All included studies were observational, and substantial differences existed across patient populations, feeding methods, dementia definitions, and follow-up periods. Quality of life and hospitalization outcomes were not evaluated, leaving important parts of the PICO question unanswered.

Article 3: Rethinking Tube Feeding in Palliative Care: Impact on Pneumonia, Depression, and Mortality in Patients With Dysphagia and Life-Limiting Illness

Hanners Gutierrez J, Klein K, Bimali M, Sanders J. Rethinking tube feeding in palliative care: Impact on pneumonia, depression, and mortality in patients with dysphagia and life-limiting illness. *PLoS One*. 2025;20(10):e0333895. Published 2025 Oct 7.
doi:10.1371/journal.pone.0333895

Abstract

Introduction: Tube feeding continues to be recommended for nutrition when a patient has dysphagia amid life-limiting illness. Tube feeding is frequently claimed to be a safer alternative to oral feeding. Oral feeding, including careful hand feeding, has emerged as a viable and evidence-based alternative for patients who desire nutrition at the end of life but have trouble swallowing. There is a critical need to determine the best option for a feeding route at the end of life. This novel, pilot, prospective study was conducted to contribute toward that need. This is the first study of its kind.

Aims: Researchers aimed to investigate the impact of feeding route (oral or tube) on patient outcomes, contributing to scientific knowledge as related to nutritional decision-making when patients are critically or terminally ill, desiring nutrition, and diagnosed with dysphagia.

Methods: Participants (N = 65) were admitted to a tertiary center, diagnosed with dysphagia and life-limiting illness, and treated by Palliative or Family Medicine. Data were collected as related to demographic (age, sex, race, ethnicity) and clinical statistics (mortality risk/severity of illness, primary diagnoses, patient outcomes [pneumonia, depression, and mortality], and feeding route [oral and tube]). Logistic regression modeling (unadjusted and adjusted by mortality risk and age) and propensity score matching were used to analyze data.

Results: Results indicated a greater likelihood of negative clinical outcomes as related to tube versus oral feeding. Findings challenge default use of tube feeding as a safer alternative for nutrition. Specifically, results revealed tube feeding to be significantly ($p < 0.001$) associated with increased risk of pneumonia (adjusted OR = 19.28, $p < 0.01$) and significantly ($p < 0.001$) associated with depression (adjusted OR = 17.25, $p < 0.01$), with mortality also trending higher (adjusted OR = 2.78, $p = 0.147$). Moreover, a composite outcome analysis (pneumonia, depression, or mortality) revealed impressively greater odds of an adverse event occurring due to tube versus oral feeding (adjusted OR = 55.64, $p < 0.01$), underscoring the need to consider further research and a possible paradigm shift in nutritional decision-making for palliative care patients. The propensity score analysis yielded balanced, matched groups ($n = 30$), 15 participants who were oral-fed and 15 who were tube-fed. Results also revealed significantly higher rates of pneumonia ($p < 0.001$) and depression ($p = 0.035$) in participants who received tube versus oral feeding. Again, mortality trended higher but significant results were not achieved.

Clinical implications: These results have substantial clinical implications. Results support reconsidering routine tube feeding in favor of individualized, patient-centered approaches that

prioritize quality of life and informed decision-making. This pilot study contributes to ongoing discussions about evidence-based palliative care and has the potential to influence guidelines on feeding practices for terminally-ill patients.

- This article is a prospective observational pilot study that used logistic regression and propensity score matching to compare patients receiving tube feeding with those receiving oral feeding. I selected this article because it is the most recent U.S.-based prospective study directly comparing clinical outcomes between tube and oral feeding. It evaluated pneumonia and mortality, which are important outcomes in my PICO question, and provides current evidence that supports the findings of the systematic reviews. The study population included patients with dysphagia, life-limiting illnesses, and multiple comorbidities, making it relevant to my medically complex patient with advanced dementia. Although the study was not limited to patients with dementia, it provides valuable evidence regarding the potential benefits and harms of tube feeding in seriously ill patients.

Key Findings

- Pneumonia occurred substantially more often among tube-fed patients. Pneumonia developed in 79% of tube-fed patients compared with 12% of orally fed patients. After adjusting for age and mortality risk, tube feeding remained associated with increased pneumonia odds (adjusted OR 19.28). Similar results remained after propensity matching. However, the study measured pneumonia overall and did not confirm that every case resulted from aspiration.
- Tube feeding was associated with more depression, but quality of life was not directly measured. Depression occurred in 50% of tube-fed patients compared with 9.8% of orally fed patients. Although this suggests a possible effect on emotional well-being, depression was identified primarily through medical-record coding and should not be considered equivalent to overall quality of life or comfort.
- **Tube feeding did not demonstrate a survival benefit.** Mortality was higher among tube-fed patients, but the association was no longer statistically significant after adjusting for age and mortality risk (adjusted OR 2.78, 95% CI 0.71–11.7). Therefore, the study cannot conclude that tube feeding increased mortality, but it also provides no evidence that tube feeding prolonged survival.
- **Generalizability to the PICO patient is limited.** The study included only 65 patients from one hospital, and the propensity-matched analysis included 30 patients. Participants had several different life-limiting illnesses rather than advanced dementia alone, and the wide confidence intervals show considerable uncertainty. The findings support cautious decision-making but should carry less weight than the larger dementia-specific reviews.

Article 4: American Geriatrics Society feeding tubes in advanced dementia position statement

American Geriatrics Society Ethics Committee and Clinical Practice and Models of Care Committee. American Geriatrics Society feeding tubes in advanced dementia position statement. *J Am Geriatr Soc.* 2014;62(8):1590-1593. doi:10.1111/jgs.12924

Abstract

When eating difficulties arise, feeding tubes are not recommended for older adults with advanced dementia. Careful hand feeding should be offered because hand feeding has been shown to be as good as tube feeding for the outcomes of death, aspiration pneumonia, functional status, and comfort. Moreover, tube feeding is associated with agitation, greater use of physical and chemical restraints, healthcare use due to tube-related complications, and development of new pressure ulcers. Efforts to enhance oral feeding by altering the environment and creating patient-centered approaches to feeding should be part of usual care for older adults with advanced dementia. Tube feeding is a medical therapy that an individual's surrogate decision-maker can decline or accept in accordance with advance directives, previously stated wishes, or what it is thought the individual would want. It is the responsibility of all members of the healthcare team caring for residents in long-term care settings to understand any previously expressed wishes of the individuals (through review of advance directives and with surrogate caregivers) regarding tube feeding and to incorporate these wishes into the care plan. Institutions such as hospitals, nursing homes, and other care settings should promote choice, endorse shared and informed decision-making, and honor preferences regarding tube feeding. They should not impose obligations or exert pressure on individuals or providers to institute tube feeding.

- This article is a clinical practice position statement developed by the American Geriatrics Society Ethics Committee and Clinical Practice and Models of Care Committee. It is not a primary research study but provides recommendations based on the available observational evidence and expert consensus. I selected this article because it directly addresses feeding-tube use in older adults with advanced dementia and provides clear guidance supporting careful hand feeding over tube feeding. It is especially relevant to my clinical scenario because it addresses survival, aspiration pneumonia, comfort, tube-related complications, and shared decision-making with surrogate caregivers. Although published in 2014, it was included because the AGS has not published a replacement position statement. The AGS Ethics Committee reports that it is developing a new statement addressing advance directives and feeding tubes in patients with dementia.

Key Findings:

- The AGS recommends careful hand feeding instead of feeding tubes for older adults with advanced dementia. Hand feeding provides outcomes comparable to tube feeding for survival, aspiration pneumonia, functional status, and comfort. Tube feeding is also associated with agitation, restraints, tube-related complications, and new pressure ulcers.
- Eating difficulties are an expected part of advanced dementia. The statement discusses evidence showing that approximately 85% of people with advanced dementia develop eating problems and that six-month mortality approaches 50% after these difficulties begin. Therefore, declining intake usually reflects disease progression rather than a separate condition that tube feeding can correct.
- Before considering tube placement, healthcare providers should evaluate reversible causes of poor intake and improve the feeding environment. Continued oral feeding may also provide comfort, pleasure, and social interaction.
- Feeding tubes are medical treatments that patients or their surrogates may accept or decline based on the patient's previously expressed wishes and goals of care. Facilities should provide families with clear information and avoid pressuring them to initiate tube feeding. A limitation is that the AGS recommendations are based primarily on expert consensus and observational evidence because no randomized controlled trials have compared tube feeding with careful hand feeding in advanced dementia.

What is the clinical “bottom line” derived from these articles in answer to your question?

The evidence does not support using enteral tube feeding instead of careful hand feeding for older adults with advanced dementia. Tube feeding did not improve survival, nutritional status, comfort, or quality of life. It also did not prevent aspiration pneumonia or pressure ulcers and may increase the risk of pneumonia, pressure ulcers, agitation, restraint use, and tube-related complications. There was not enough evidence to determine its effect on hospitalizations. Most studies were observational, so the results may have been affected by differences in how sick the patients were.

For this 83 year old resident with advanced Alzheimer's dementia, continued careful hand feeding is the preferred approach. The healthcare team should check for reversible causes of poor intake, provide assistance during meals, improve the feeding environment, and focus on comfort. The family should understand that difficulty eating is an expected part of advanced dementia and that PEG placement is unlikely to prevent aspiration or prolong life. This recommendation can be applied to underserved urban populations, but careful hand feeding may be difficult in facilities with limited staffing or reduced access to speech-language pathology and palliative care. Language barriers, limited health literacy, financial concerns, mistrust of the healthcare system, and cultural beliefs that feeding represents love and care may also affect family decisions.

Therefore, recommending careful hand feeding is not enough by itself. The healthcare team must make sure the patient receives adequate feeding support and that the family receives clear, culturally respectful education in their preferred language. The final decision should reflect the patient's previously expressed wishes, cultural values, and goals of care.