It’s Friday at 5:30 p.m. Monday is a holiday. You have just admitted a 75-year-old woman with dysarthria and dysphagia from a lateral medullary stroke. A swallowing study will not be available for more than 72 hours. What should you do about feeding her?

This common scenario, and the even more pragmatic questions of how and when to feed patients with previous stroke regardless of their swallowing function, represents a fundamental yet relatively understudied aspect of stroke care. The importance of these everyday issues is manifest in the numbers: More than 700,000 persons in the United States have a stroke each year, and this number is projected to increase to more than 1.25 million by 2050. Of the more than 90% of persons who survive the acute event, as many as 50% will have at least transient difficulty in swallowing. Knowing which patients with previous stroke should be fed, when to feed them, and how to deliver the feedings are key questions for which the recent noteworthy Feed Or Ordinary Diet (FOOD) trials provide some answers.

**WHAT DID THE FOOD TRIALS SHOW?**

The FOOD trials are a series of clinical trials designed to answer the following 3 questions about feeding after stroke: 1) Does routine oral supplementation in patients with stroke and no swallowing difficulties improve clinical outcomes? 2) Does early initiation of enteral tube feeding in patients with stroke and dysphagia improve clinical outcomes more than avoiding enteral tube feeding for at least 7 days? and 3) Does percutaneous endoscopic gastrostomy (PEG) tube feeding of patients with stroke and dysphagia improve outcomes more than nasogastric tube feeding?

The trials were international multicenter studies that shared common randomization, data management, and follow-up systems. In the first trial, investigators randomly assigned 4023 patients with previous stroke who could swallow to receive either oral protein energy supplementation or a usual diet. Patients were eligible regardless of nutritional status, and supplementation continued until hospital discharge. The second and third trials enrolled dysphagia stroke survivors (n = 859 and 321, respectively). Patients were enrolled in the second trial if the clinician was uncertain about when to start tube feeding and in the third trial if the clinician wanted to start tube feeding but was uncertain about whether to use nasogastric or PEG tube feeding. Patients could be enrolled in both the second and third trials. Primary outcomes in all 3 trials were all-cause mortality and a composite outcome of mortality and poor functional outcome at 6 months.

As large pragmatic studies, the FOOD trials were designed to address fundamental questions at minimal cost. Unfortunately, the trials under-recruited and therefore did not provide definitive answers about when and how to feed patients who had dysphagic stroke. All 3 trials were “negative,” in that no intervention was associated with a statistically significant reduction in mortality or an improved functional outcome. Nonetheless, these trials are the largest well-designed randomized, controlled trials that address feeding in patients after stroke, and much can be learned from their results.

**HOW DO THE FOOD TRIALS ADVANCE KNOWLEDGE?**

The first trial provides the most conclusive answer: Routine oral supplementation of a normal diet in stroke survivors who can swallow is not associated with improved 6-month outcomes. Although the trial was stopped early, it is unlikely that a type 2 error is affecting the results, with the authors estimating that at least 20,000 patients would have to be enrolled to detect a 1% to 2% benefit for routine supplementation. Two interesting reasons for this lack of benefit are that very few participants (8%) were undernourished and that oral supplements might contribute to hyperglycemia, which has been independently linked to worse outcomes in patients with stroke.

The interpretations of the second and third trials are somewhat hampered by the under-recruitment, although the authors state that the CIs are precise enough to conclude that “a clinically significant hazard from early tube feeding . . . [and] a clinically significant benefit from PEG rather than nasogastric tube feeding is highly unlikely.” The second trial found no statistically significant survival benefit for initiating feeding before 7 days, with a 12% (95% CI, −2% to 24%) relative risk reduction of mortality at 6 months in the early feeding group. Perhaps the study would have detected a statistically significant survival benefit if recruitment targets were met. However, when the authors analyzed death or poor functional outcome as a composite end point, the relative risk reduction for the early feeding group was only 1% (CI, −5% to 8%). A most sobering fact was that 80% of the patients in the trial either were dead or were severely disabled at 6 months.

The question of how best to feed patients with dysarthria is partially answered by the finding that feeding through a PEG tube was not associated with any survival benefit (mortality rate, 49%) compared with nasogastric tube feeding (mortality rate, 48%). Of note, participants in the third trial were more likely to be living in an institution and were more likely to have a PEG tube in place at 6 months than those in the second trial. This finding suggests that the second and third trials recruited stroke survivors with different stroke characteristics and prognoses, and, thus, comparisons between the 2 groups should be made cautiously if at all. Of interest, early tube feeding and nasogastric tube feeding were not associated with an increased risk for aspiration pneumonia, which might be
clinically suspected, but both were associated with a 2- to 3-fold increase in gastrointestinal bleeding risk.

**WHAT SHOULD BE DONE FOR STROKE SURVIVORS?**

Although these trials were smaller than originally designed, they provide practical information that can guide decisions about feeding stroke survivors. First, routine oral supplementation probably does not improve outcomes in many patients with acute stroke. Whether oral supplementation may be beneficial, specifically in undernourished patients after stroke, is not known, although Milne and colleagues’ meta-analysis in this issue (6) suggests that oral supplementation may be associated with reduced mortality in general in hospitalized patients who are undernourished. Second, early tube feeding does not seem to benefit and, in fact, may harm patients. Thus, clinicians can feel comfortable in initially hydrating a patient who has had a stroke, observing swallowing function for at least several days, and taking the time to thoughtfully discuss issues of tube feeding with the patient and family. These trials also are reassuring in that only 28% of patients who received nasogastric tube feeding in the second trial later required a PEG tube; therefore, providing nutrition through a nasogastric tube does not inevitably lead to long-term supplementation through a PEG tube. The PEG tubes should, therefore, be reserved for patients with previous stroke who cannot swallow safely after 2 to 3 weeks of nasogastric feeding. In this group of patients, PEG tubes are not only safer but also may be associated with decreased mortality compared with long-term nasogastric feeding (7, 8).

Finally, how do these trials help us with the scenario that opened this discussion? Rest assured: You can hydrate the patient with intravenous isotonic fluids and wait for the swallowing study on Tuesday to help guide discussion of future feeding issues.

**References**