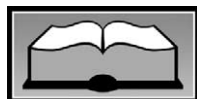


Current Research



Continuing Education Questionnaire, page 1313
Meets Learning Need Codes 4190, 5040, 5100, and 5210

Use of Thickened Liquids in Skilled Nursing Facilities

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ABSTRACT

Objective Long-term care residents are routinely provided with thickened liquids for the management of dysphagia. The objective of this study was to identify the prevalence of thickened liquid use in skilled nursing facilities.

Design Facility-wide data were provided by staff at 252 randomly selected skilled nursing facilities owned by 11 multifacility providers. The sample represented 25,470 residents and approximately 20% of all freestanding skilled nursing facilities nationwide.

Main Outcomes Measures Data regarding prevalence of thickened liquid use and facility characteristics were collected during May 2002.

Statistical Analysis Descriptive statistics included national and regional averages and national percentile distributions.

Results A mean of 8.3% (range 0% to 28%) of residents were receiving thickened liquids, with considerable variation between Centers for Medicare and Medicaid Services regions. Of those receiving thickened liquids, on average 60% received "nectar/syrup" thick, 33% received "honey" thick, and 6% received "pudding/spoon" thick, although the frequencies with which each thickness was prescribed varied widely between facilities (range 0% to 100%). Thickened water was provided to residents in 91.6% of facilities. Nationally, registered dietitian staffing levels were lower on average than speech language pathologist staffing levels.

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Conclusions Thickened liquids are provided to a significant segment of the skilled nursing facility resident population. In the absence of outcomes-based practice standards to guide administrative decisions related to the provision of thickened liquids, dietetics professionals may find regional and national norms helpful for quality assurance processes and to inform resource management decisions in clinical staffing and foodservice.

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Skilled nursing facilities (SNFs) routinely provide care for residents with dysphagia resulting from a variety of etiologies, including stroke, neurologic disease, muscle disease, head and neck surgery/radiation, and dementia (1). Thirty percent to 90% of nursing home residents are estimated to have a problem eating or drinking (2-5); however, data regarding the overall prevalence of dysphagia are limited (6). Persons with dysphagia are thought to be at significantly increased risk for dehydration and aspiration pneumonia (1,6-8), and thickened liquids are often provided to help people safely drink adequate amounts of fluids (7).

Both registered dietitians (RDs) and speech-language pathologists (SLPs) are members of the interdisciplinary team providing care to nursing home residents with dysphagia. The role of RDs is to complete comprehensive nutritional assessments and to develop plans of care to meet residents' nutrition needs (9). This assessment and care planning is done in conjunction with SLPs. Swallowing ability is assessed by SLPs using a variety of tools, which may include a bedside swallowing assessment or a modified barium swallow, resulting in a treatment plan that specifies appropriate food and fluid consistencies (1,10). Ongoing assessments of residents with dysphagia by RDs are critical to monitor nutritional and hydration status and to identify a change in condition that should trigger a reassessment by an SLP (9).

Beyond the activities of the individual members of the care team, facilities have policies that potentially affect both care delivery and cost of care for persons with dysphagia. For example, liquids can be either purchased prethickened or can be thickened at the point of service (10,11), and in some facilities residents receiving thickened liquids are allowed to consume thin water between

meals to promote fluid intake (12,13). Further, clinical staffing levels can vary considerably among facilities.

For many years SNFs have been providing thickened liquids to residents with dysphagia without knowing the scope of the affected resident population. For dietitians responsible for clinical care, knowledge of the percentage of residents typically receiving thickened liquids may provide a useful reference for quality assurance and improvement processes. In the acute care setting, knowledge of the number of patients with special food needs and alterations in gastrointestinal status has been useful for health care resource management, including estimation of staffing needs (14). Dietetics professionals working in foodservice management may find regional or national norms helpful as they strive to implement the most efficient and appropriate process for delivering thickened liquids to residents who require them and to forecast facility costs for provision of thickened liquids. Therefore, the objective of this study was to determine national and regional norms for the number of residents receiving thickened liquids.

METHODS

Eleven multifacility long-term care providers collected data on prevalence of thickened liquid use and other variables in their SNFs during May 2002. These 11 providers own/operate approximately 40% of the total freestanding (ie, not hospital-based) SNFs operated by multifacility providers, which translates to approximately 20% of all freestanding SNFs nationwide (15). Data were collected on a facility-wide basis; no information was collected on individual residents. The Institutional Review Board at Florida International University approved this protocol.

To avoid bias and ensure that all types of facilities would be included in the study, random number tables were used to select 10% of each provider's facilities for evaluation. Corporate RDs were responsible for coordinating data collection from their own company. Staff from each SNF collected data on a standardized recording sheet. When facility information was directly accessible to the corporate RDs (eg, data from the minimum data set and staffing data), part of the data were collected at the corporate office. Facility staff were asked to provide the following current facility data: number of residents receiving thickened liquids, thickness type (ie, nectar/syrup thick, honey thick, pudding/spoon thick, or other), census and capacity, county and state where located, number of residents with each payment source (ie, Medicare, Medicaid, or private pay), average monthly admissions, hours of SLP staffing per week, hours of RD staffing per week, hours per month RD and SLP discuss resident assessments, percent of residents receiving thickened liquids assessed by modified barium swallow, and number of residents at various levels of dependence on assistance for eating (minimum data set section 2.0 section G.h.).

Data were analyzed using SPSS for Windows (version 11.0, 2001, Chicago, IL). Except for the barium swallow data, the data represented as percentages were calculated by dividing the number of residents indicated on the data collection instrument by the current census of the facility; for example, percent of residents receiving thickened liquids. The population of the county location of each

facility was determined from the US Census Bureau Web site (16). Data were sorted by the 10 regions of the Centers for Medicare and Medicaid Services (CMS) to look for regional differences.

RESULTS

Data were collected from a total of 252 facilities across 41 states, representing 28,882 beds and 25,470 residents. The number of facilities surveyed by each provider (6, 9, 10, 10, 25, 25, 27, 28, 29, 35, and 48) varied based on the total number of facilities operated by that provider. Random selection resulted in each provider surveying facilities from three to 20 different states (mean 10 states). Facilities ranged in census from 26 to 262 residents (mean 101 ± 36.5 , median 100, mode 117) and were full to $88\% \pm 10.4\%$ of capacity on average.

Facility means for thickened liquid use are shown by CMS region in Table 1. All 10 CMS regions were represented in this study, although by random chance. Region 10 was represented by only six nursing facilities and Region 1 by only 11 facilities (Table 1). Because New York state laws prevent out-of-state ownership of nursing homes and Region 2 encompasses only one other state, New Jersey, only six facilities were represented in Region 2. The smaller number of facilities from these regions limits our ability to make comparisons with these regions.

Considering only those regions for which there were data from 20 or more facilities, the average number of residents on thickened liquids varied as much as twofold (Table 1). There were also some regions in which utilization of pudding/spoon thick liquids were much lower (1.5%) or much higher (13.0%) than the overall average. The frequencies with which the various thicknesses were prescribed varied widely between facilities (range 0% to 100%) (Table 2). The data-recording sheet asked if there were any residents receiving a thickness other than the three queried, but staff from only one facility indicated an additional thickness (ie, four residents on "T2"). Among regions, the percent of residents on thickened liquids who had been assessed by a modified barium swallow did not vary dramatically.

Surveys indicated that in 91.6% of facilities thickened water was offered to residents receiving thickened liquids (Table 1). Every region except for Region 2, for which we only had data on six facilities, had at least one facility where thickened water was not offered; presumably, in these facilities thin water was offered to residents otherwise receiving their liquids thickened.

Staffing levels varied greatly across facilities (Table 2). SLP staffing was higher on average than RD staffing (12.3 minutes vs 9.4 minutes per patient day, respectively). RD staffing was two to three times higher than SLP staffing in facilities staffing at or below the 25th percentile, indicating that the staffing minimum for RDs was higher. The manner in which these data were coded for statistical analysis probably underestimated the amount of SLP staffing because those facilities with SLP services by referral only were assigned a staffing value of only 1 hour per week.

Table 1. Thickened liquid use by Centers for Medicare and Medicaid Services (CMS) region

CMS region ^a	No. of facilities	Average county pop/ sq mi ^b	% On thickened liquids ^c	% Nectar/syrup ^d	% Honey ^d	% Pudding/spoon thick ^d	Offer thickened water ^e	RD min/wk/ resident ^f	SLP min/wk/ resident ^f	SLP by referral ^g	% Assessed by MBS ^h
Region 1	11 ⁱ	685	10.1±1.7	66.7±5.3	20.5±3.7	8.2±4.0	8/11	11.1±2.2	8.7±3.3	5/11	17.4±5.8
Region 2	6 ^j	2,076	8.0±1.3	66.0±4.4	27.2±5.2	6.8±1.8	6/6	12.4±1.4	13.8±2.4	0/6	29.0±17.8
Region 3	31	1,223	8.7±0.9	59.2±3.7	35.6±3.5	5.2±2.0	29/31	9.0±1.3	14.0±2.1	6/31	38.3±7.0
Region 4	44	849	9.1±0.7	60.6±4.1	33.6±3.9	5.8±1.5	40/44	12.2±1.4	13.8±1.4	8/43	45.3±6.5
Region 5	49	1,023	7.7±0.6	63.0±4.0	31.6±4.0	6.4±2.4	46/49	9.3±0.9	12.9±1.9	16/48	50.4±5.9
Region 6	30	567	6.4±0.7	60.6±5.4	37.8±5.5	1.5±0.9	27/29	4.2±0.6	10.5±1.6	11/28	67.0±8.3
Region 7	30	314	5.4±0.5	46.5±6.2	40.5±6.6	13.0±5.0	26/30	6.6±1.1	7.8±1.6	15/30	42.6±8.9
Region 8	20	606	7.5±0.9	65.1±6.6	28.5±6.2	6.4±3.6	19/20	11.6±2.4	10.8±2.4	7/20	48.8±9.5
Region 9	25	1,160	10.9±0.8	64.8±3.8	32.7±3.5	2.5±1.2	24/25	12.4±1.4	14.9±1.8	3/25	41.5±5.9
Region 10	6 ^j	447	16.3±2.3	67.5±7.3	17.5±3.1	18.4±7.1	5/6	7.2±1.3	17.8±5.8	2/6	9.7±4.9
Overall	252		8.3±0.3	60.1±1.7	33.1±1.7	6.3±0.9	230/251	9.4±0.5	12.3±0.7	73/248	45.1±2.6

^aCMS region refers to the states under the jurisdiction of each of the regional CMS offices. Region 1=Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont. Region 2=New Jersey and New York. Region 3=Delaware; Washington, DC; Maryland; Pennsylvania; Virginia; and West Virginia. Region 4=Alabama, North Carolina, South Carolina, Florida, Georgia, Kentucky, Mississippi, and Tennessee. Region 5=Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. Region 6=Arkansas, Louisiana, New Mexico, Oklahoma, and Texas. Region 7=Iowa, Kansas, Missouri, Nebraska. Region 8=Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. Region 9=Arizona, California, Hawaii, and Nevada. Region 10=Alaska, Idaho, Oregon, and Washington.

^bAverage population (per square mile) of counties where the participating facilities were located.

^cPercentage of facility residents receiving thickened liquids, mean±standard error of the mean.

^dOf the total number of residents in each facility receiving thickened liquids, this is the percent receiving this particular thickness, mean±standard error of the mean.

^eNumber of facilities offering thickened water to residents on thickened liquids over total number of facilities responding.

^fRegistered dietitian (RD) and speech language pathologist (SLP) staffing levels expressed in minutes per week divided by total number of facility residents, mean±standard error of the mean.

^gNumber of facilities in each region that do not have an SLP on staff, but instead refer residents to an SLP outside of the facility.

^hPercentage of residents on thickened liquids who were assessed with a modified barium swallow, mean±standard error of the mean.

ⁱDue to the small number of buildings surveyed in these regions, means may not be representative.

Table 2. Percentile distribution of thickened liquids and skilled nursing facility characteristics

Variable	No. of facilities	Mean±SE ^a	Range	Selected Percentile						
				10th	15th	25th	50th	75th	85th	90th
% Residents receiving thickened liquids ^b	252	8.3±0.3	0-28	3.1	3.7	4.9	7.4	11.1	12.7	13.9
% Nectar/syrup thick ^c	244	60.1±1.7	0-100	23.6	33.3	50.0	66.7	78.4	85.7	88.6
% Honey thick ^c	244	33.1±1.7	0-100	0	10.0	14.3	28.6	45.2	50.0	66.7
% Pudding/spoon thick ^c	244	6.3±0.9	0-100	0	0	0	0	7.6	16.7	21.2
% Evaluated by barium swallow ^d	211	45.0±2.6	0-100	0	0	2	40	80	95	100
SLP minutes per resident per week ^e	245	12.3±0.7	0.3-54.5	0.6	0.8	1.4	11.3	20.1	23.3	25.2
RD minutes per resident per week ^e	244	9.4±0.5	0.3-40.3	2.11	2.5	3.5	7.2	13.8	17.4	20.3
Hours/month RD and SLP discuss residents ^f	233	2.0±0.1	<1-5.0	<1	<1	<1	2	3	4	4
% Admissions per month ^g	249	15.4±0.8	1.2-81.8	4.3	5.2	7.3	11.6	19.2	26.4	33.3
% Medicare ^h	252	18.9±1.0	0-85.7	5.4	6.6	9.4	14.3	20.9	30.6	45.9
% Medicaid ^h	251	56.1±1.6	0-94.4	10.8	19.7	46.4	63.0	73.3	77.7	89.5
% Private pay ^h	251	20.5±1.0	1.5-92.0	5.3	7.0	10.1	16.3	27.0	34.8	42.5
% Of residents dependent on assistance for eating ⁱ	182	23.8±0.8	0-79.3	12.7	14.6	17.4	22.3	28.2	33.8	36.6

^aSE=standard error.

^bPercentage of facility residents receiving thickened liquids.

^cOf the total number of residents in each facility receiving thickened liquids, this is the percent receiving this thickness.

^dPercentage of residents on thickened liquids who were assessed with a modified barium swallow.

^eRegistered dietitian (RD) and speech language pathologist (SLP) staffing levels expressed in minutes per resident per week.

^fHours per month RD and SLP consult regarding residents.

^gNumber of new admissions per month/facility census×100.

^hPercentage of facility residents with each payment source.

ⁱPercent of residents in each facility coded as a 3 (requiring extensive assistance) or a 4 (total dependence) on assistance for eating (minimum data set 2.0 section G.h.).

DISCUSSION

This work provides the first systematic study of the prevalence of thickened liquid use as part of dysphagia management in long-term care facilities—a dietary modification that is likely to significantly affect residents' nutritional and hydration status and quality of life, as well as the cost of nutrition care. This data set provides the first opportunity for long-term-care providers to compare thickened liquid use in their setting to some national and regional averages and percentiles, although it is important to keep in mind that these data were collected only from multifacility providers and may not be representative of all SNFs.

The average number of SNF residents receiving thickened liquids was 8.3%, which is significantly lower than the 30% to 90% of the resident population estimated to have some type of dysphagia (2-5). The significant variation among facilities (range 0% to 28%) and even among regional means (5.4% vs 10.9%) suggests there are many factors that affect the rate of thickened liquid use. Facilities with a large number of residents receiving rehabilitation after a stroke or head trauma would likely have higher than average levels of thickened liquid use, as would facilities providing care to a large number of residents with progressive dementia or neurologic diseases (1,6). The lack of any national evidence-based standard to guide thickened liquid prescriptions (17) may, in part, account for the large amount of variation observed among both individual facilities and CMS regions.

The National Dysphagia Diet suggests labeling conventions of “nectar-like,” “honey-like,” and “spoon-thick” for consistencies of liquids (11). This study was conducted before publication of the National Dysphagia Diet, but we did use thickness labels that overlapped with the National Dysphagia Diet. Unlike the study by Brown and colleagues in 1998 (18), which found a large number of labels in use, staff from only one facility reported a labeling convention other than the three investigated. This suggests that labeling conventions for thickened liquids may have begun to converge, perhaps as both the result of the preliminary work of the National Dysphagia Diet Task Force and the wide availability of prethickened liquids in only a limited number of thicknesses. It is also possible that multifacility providers tend to be consistent with their nomenclature across individual facilities.

It was encouraging that in our study the greatest proportions of residents were reported to be on “nectar/syrup” (60%), and the use of “pudding/spoon thick” liquids was very infrequent (6%). It is known that resident satisfaction decreases as food varies from that which is familiar (19-21), and the thickest beverages are likely to be perceived as the most strange and unpalatable. It is also possible that thicker beverages do not satisfy thirst as well (22). Because our data suggest a large number of residents need only a modest amount of thickening, and there is significant cost involved in providing thickened liquids, it may be in the best interest of both residents and care providers for there to be further research into the potential use of naturally thick beverages, such as buttermilk, eggnog, drinkable yogurts, and fruit nectars for residents prescribed nectar-like liquids.

Long-term-care residents, in general, are at high risk for dehydration because of decreased thirst, decreased

ability to concentrate urine, and the prevalence of treatments and conditions that may promote water loss (23,24). Residents with dysphagia and receiving thickened liquids are likely to be at particular risk for dehydration due to less access to palatable fluids, difficulty swallowing, and dependence on others for activities of daily living (8,25-28). Frequent offering of water between meals and availability of water at bedside is more of a challenge for residents receiving thickened liquids. Nine percent of the facilities surveyed in this study provided thin water to residents. There is limited evidence that it is not necessary to thicken water as long as adequate oral care is provided to residents (12,13,29,30). Before practice standards are established regarding the between-meal provision of water, more well-controlled studies are needed in this area to determine the influence on clinical outcomes, including hydration status, development of aspiration pneumonia, and quality of life.

Given that RDs are responsible for the nutrition care of every resident in a facility, whereas SLPs provide skilled therapy to only a small subset of the total resident population, it is disturbing that RD staffing levels were lower on average than SLP staffing levels. At the current time there are no national standards for RD staffing in long-term care, although in 1999 the Consultant Dietitians in Health Care Facilities, a dietetic practice group of the American Dietetic Association, proposed monthly time estimates for various clinical and management functions (31). This guideline did not identify persons receiving thickened liquids as a group requiring ongoing risk documentation. The fact that some facilities provide care to a large number of residents receiving thickened liquids (in this data set up to 28% of census) coupled with the high risk of dehydration associated with this population (8,25-28), may justify inclusion in clinical staffing calculations and consideration in contract negotiations.

For dietetics professionals with managerial responsibilities, it is important that resources for the provision of the modified liquids are appropriately identified and allocated (7). Budget forecasts for food purchases and labor expenses must consider both the percentage of residents who are affected and the types of products to be used (eg, prethickened vs beverages thickened at point of service). Preparation at point of service and delivery of the correct thickness of liquid to the resident are labor intensive, and it has been shown that accuracy and reliability are compromised compared to providing prethickened beverages (10,25). Ultimately the type of products provided will be influenced by the skill and availability of staff and financial considerations.

CONCLUSIONS

- As part of quality assurance and improvement processes, RDs and SLPs may want to determine the thickened liquid use in their facility for comparison with these national and regional data. When values fall outside of the 25th to 75th percentile range (national data) or differ significantly from their regional averages, staff may choose to investigate to verify that their facility is offering an optimal level of care for their particular resident population.
- The numbers of residents typically receiving thickened

liquids may be taken into consideration during evaluation of staffing adequacy. RDs should have adequate time to regularly assess adequacy of fluid intake, resident satisfaction, and potential need for re-assessment by the SLP.

- The financial resources required to provide thickened liquids to such a significant segment of the resident population justifies an active role for RDs in identifying the most effective and efficient systems by which thickened liquids are procured, prepared, and delivered. These regional and national data may be helpful in budget forecasting for food, labor, and training related to the provision of thickened liquids.

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