

ABSTRACT

The purpose of this study was to determine whether oral health stability was achievable over time for institutionalized elderly who routinely received comprehensive care and to examine the factors associated with stability. Records of 868 dentate nursing home residents, each with a minimum of 24 months continuous care, were analyzed to determine the number of services by type for each time period between periodic examinations. Presenting dental condition, age, gender, functional status, payer source and facility characteristics were tested as explanatory variables. Oral health status was considered *stable* when a resident had a "good checkup" (needing no further treatment), otherwise it was coded as *unstable*. Generalized estimating equations (GEE) were used to analyze predictors of stability over time. Stability over time was achieved in 44% of the study group and negatively associated with male gender, advanced age, and more initial treatment needs. The data show that high levels of initial unmet needs were associated with difficulty achieving oral health stability for institutionalized elderly who routinely received comprehensive care.

KEY WORDS: geriatric dentistry, long-term care, utilization, stability

What predicts oral health stability in a long-term care population?

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Introduction

Research on the oral health status of nursing home residents has been primarily cross-sectional, providing slice-of-time portraits of a population with compelling dental health needs.¹⁻⁶ Gift,⁷ discussing the 1995 U.S. National Nursing Home Survey, reported that only 15 percent of the residents were described as having excellent or very good oral health. Dolan and Atchison⁸ describe frail and functionally dependent elders as having significant dental needs and experiencing greater barriers to receiving dental care than independent elders. Low utilization of dental services by nursing home residents has been attributed to barriers to care, such as dental care costs and transportation to and from the dental office.⁹ Longitudinal studies describing clinically determined dental need and subsequent service utilization in nursing home residents are rare.¹⁰ Health services research reporting utilization and oral health outcomes in nursing home populations is also scarce and limited by small sample size.^{11,12} These knowledge gaps are significant since demographic trends point to greater numbers of those aged 85 and older, the people most likely to require long-term care.¹³ Furthermore, the past three decades have shown a decreasing proportion of edentulous subjects in each subsequent cohort of elderly,^{14,15} a trend that substantially increases the risk for oral disease and the need for services to treat that need.¹⁶⁻¹⁸

Planning for the service needs of an increasingly dentate and growing population of nursing home residents requires the assessment of oral health needs, utilization, and outcomes.^{19,20} To that end, this study was undertaken to establish whether the desirable outcome of oral health stability, defined as requiring only diagnostic or preventive services at periodic examination, could be achieved in nursing home residents and maintained over time in an environment free of some of the common access barriers. Since stability was used as a measure of oral health status, factors reported to be associated with oral health in general, such as age,²¹ functional status,²²⁻²⁴ and payer source²⁵ were included in the analysis as potential explanatory variables. Presenting dental conditions, specifically

number of teeth present at initial examination and number of services required in the initial treatment plan, were also included as potentially predictive variables. In addition, facility factors previously identified as related to oral health status in nursing homes, such as size and proprietary status^{26,27} were also included.

Methods

Sources of data

Dental records on nursing home residents were obtained from Apple Tree Dental (ATD), a nonprofit group dental practice that provides on-site dental services to nursing home residents through the use of mobile dental offices in the

Minneapolis/St. Paul area. Nursing homes that contract for dental services with ATD include for-profit, non-profit and government ownership types and vary in size from small (36-bed) to large (540-bed) facilities. ATD established a computerized clinical dental database upon its inception in 1986. At the time of this study, the database contained 15 years of demographic, diagnostic and treatment data on nearly 17,000 residents in 81 nursing homes. Data are collected continuously for every ATD patient in conjunction with periodic examinations and treatment.

ATD employs a paid professional staff including dentists, dental hygienists and dental assistants. Data are recorded and entered with the assistance of nursing home schedulers, customer service representatives and data entry staff. Dentists, hygienists and assistants record diagnostic and treatment information on standardized forms using standardized codes developed by ATD. This coded information is entered into ATD's database by office staff at the end of each day of service.

Each staff dentist provides examinations and treatment at his or her own set of nursing homes, maintaining an ongoing doctor-patient relationship with each of his or her patients. The scope of comprehensive dental services provided ranges from diagnostic and restorative to surgical and prosthodontic.

Treatment planning practices among ATD's dentists have a high level of consistency because they function with a set of shared goals that include providing only appropriate and necessary care within an interdisciplinary work environment. While each staff dentist is ultimately responsible for individualized treatment plans, patients and families, patient representatives, nursing staff and physicians also play roles in determining final courses of treatment.

The institutionalized elders in this study reside in long-term care facilities where common barriers to dental care such as transportation and cost have been addressed by ATD's on-site delivery system. Comprehensive care is provided at regular intervals and recorded in a clinical database that provides utilization

data that can be used to answer questions about trends over time. Dental data collection begins at the time of admission to the nursing home, when residents or their representatives are asked to complete an Oral Health Plan form in which they: 1) choose Apple Tree Dental, 2) choose any other dentist or 3) refuse oral healthcare services. Selecting Apple Tree Dental serves as consent for periodic examinations, cleaning, X-rays, and emergency care.

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Within 90 days, a comprehensive initial examination and cleaning are provided. Diagnoses of existing oral disease together with proposed dental treatment options are recorded on computer-ready forms. Written treatment plans are provided to residents or mailed to their representatives, consultations are made with physicians and other caregivers, and when applicable pre-treatment estimates are submitted to Medicaid and other third-party payers.

After written consent for treatment has been received, medical consultations completed, and prior authorization for services obtained, a series of on-site dental visits is scheduled to provide the authorized treatment.

The initial treatment plan is comprehensive, including all oral surgery (extractions, alveoplasty, etc.), restorative (amalgams, glass ionomers, crowns, etc.) and prosthodontic (complete and partial removable dentures, relines, etc.) care. At the completion of this phase, a

periodic re-examination schedule is established for the resident. On a regular basis (usually every six months), residents are re-evaluated for new treatment needs.

Dental care data used in this report include patient demographics, tooth count, and all treatments provided by date of service. Tooth count at initial visit and services required in the initial treatment period were used as variables representing the presenting dental condition. The initial treatment plan and subsequent services addressed the backlog of unmet dental need. Collectively these services, aggregated into a single count, served as a proxy for severity. In all subsequent periods, dental treatments were grouped by service type using American Dental Association codes to allow for the determination of stability status and utilization. Cognitive status, although indicated in the written record and considered in treatment planning, was unavailable for analysis from the computerized record.

This research pertains only to ATD patients. No analysis was done on nursing home residents who opted for dental care from other providers or refused care.

Facility characteristics such as ownership status, religious affiliation, and number of beds were obtained from the Directory of Nursing Homes & Alternative Housing for Older People in the Twin Cities Metropolitan Area 1996, compiled by the Metropolitan Area Agency on Aging, St. Paul, Minn.

Functional status of the residents, defined as the level of dependency in activities of daily living (ADLs), was provided for the time frame 1989-1998 by the Minnesota Department of Health.

Study Group

Records included in the analysis were of residents aged 50 or greater, having at least one remaining tooth at the first periodic examination. To be included in the study, a resident had to be a patient of record of Apple Tree Dental for at least 24 months of continuous service utilization between 1989 and 1998.

A series of programs was written by the Director of Information Services at

Table 1. Characteristics of study group (n=868)

Age at initial visit	
Mean (SD)	81.8 (9.7)
Range	51-102
Sex	
Female: number (%)	692 (80%)
Payer source	
Medicaid: number (%)	718 (83%)
Private: number (%)	89 (10%)
Other: number (%)	61 (7%)
Teeth present at initial visit	
Mean (SD)	16.8 (7.9)
Range	1-32
Services provided initial treatment phase	
Mean (SD)	13.2 (10.2)
Range	2-66

Table 2. Characteristics of nursing homes (n=62)

Ownership type	
Proprietary: number (%)	35 (56%)
Not-for-profit: number (%)	27 (44%)
Religious affiliation	
Religious: number (%)	16 (26%)
Non-religious: number (%)	46 (74%)
Size by bed count	
≤100: number (%)	17 (27%)
101-200: number (%)	36 (58%)
201-300: number (%)	4 (7%)
≥301: number (%)	5 (8%)

ATD to select the patients for this investigation based on the study group criteria. In addition, programming was required to calculate and add the time-varying data for each patient to the database. This involved creating period data, bounded by comprehensive examination dates. A period of service provision was defined as starting with a comprehensive dental examination and ending immediately prior to the next comprehensive examination. All services in each period, including the initial examination procedures, constituted service utilization for that period. The resultant data was sent to the Minnesota Department of Health (MDH) to be merged with functional status data routinely collected on nursing home residents. The merged file, minus patient identifying information, was sent to the investigator for analysis.

Table 3. Dependency level and individual dependencies of nursing home residents determined within 180 days of initial dental examination

	Number (n=868)	Percentage
Dependency Level		
High (7-8)	370	43
Medium (4-6)	225	26
Low (0-3)	273	31
Dependency		
Bathing	815	94
Grooming	548	63
Dressing	620	71
Walking	442	51
Transferring	413	48
Toileting	610	70
Bed mobility	362	42
Eating	594	68

Table 4. Characteristics of dental patients classified as stable or non-stable by treatment needed at first periodic examination (n=868)

Characteristic	Stable (n=378)	Non-stable (n=490)	Test Statistic	Probability
Mean age at initial visit (SD)	81.5 (9.9)	81.1 (9.6)	t = -0.62	0.53
Sex				
Female: number (%)	314 (45.4%)	378 (54.6%)	$\chi^2 = 4.6356$ (1 df)	0.03
Male: number (%)	64 (36.4%)	112 (63.6%)		
Payer source				
Medicaid: number (%)	308 (42.9%)	410 (57.1%)	$\chi^2 = 1.4385$ (2 df)	0.49
Private: number (%)	39 (43.8%)	50 (56.2%)		
Other: number (%)	31 (50.8%)	30 (49.2%)		
Mean teeth present at initial visit (SD)	17.2 (8.2)	16.5 (7.6)	t = 1.27	0.21
Mean services initial treatment (SD)	10.7 (8.1)	15.3 (11.1)	t = -7.15	<0.01

Table 5. Functional dependency level within 180 days of initial dental examination for dental patients classified as stable or non-stable by treatment needed at first periodic examination (n=868)

Dependency Level	Stable (n=378)	% Stable	Non-stable (n=490)	% Stable
High (7-11)	165	44.6	205	55.4
Medium (4-6)	103	45.8	122	54.2
Low (1-3)	110	40.3	163	59.7
$\chi^2 = 1.7964$ (2 df) prob = 0.41				

Table 6. Individual functional dependencies within 180 days of initial dental examination for dental patients classified as stable or non-stable by treatment needed at first periodic examination (n=868)

Activity	Stable (%) n=378	Non-stable (%) n=490	χ^2 (1 df)	prob
Bathing			4.0981	0.04
Dependent	362 (44.4)	453 (55.6)		
Not	16 (30.2)	37 (69.8)		
Grooming			6.7833	0.001
Dependent	257 (46.9)	291 (53.1)		
Not	121(37.8)	199 (62.2)		
Dressing			3.8807	0.05
Dependent	283 (45.6)	337 (54.4)		
Not	95 (38.3)	153 (61.7)		
Walking			0.0044	0.95
Dependent	192 (43.4)	250 (56.6)		
Not	186 (43.7)	240 (56.3)		
Transferring			0.1859	0.67
Dependent	183 (44.3)	230 (55.7)		
Not	195 (42.9)	260 (57.1)		
Toileting			0.9060	0.34
Dependent	272 (44.6)	338 (55.4)		
Not	106 (41.1)	152 (58.9)		
Bed mobility			0.7784	0.38
Dependent	164 (45.3)	198 (54.7)		
Not	214 (42.3)	292 (57.7)		
Eating			0.4053	0.52
Dependent	263 (44.3)	331 (55.7)		
Not	115 (42.0)	159 (58.0)		

The final criterion for inclusion of the record for analysis was that the functional status assessment data had to be gathered within 180 days of the initial dental examination. Eight hundred and sixty-eight (868) residents' records met all criteria for final analysis.

Analysis

Initially, all variables were analyzed to determine measures of central tendency and distribution. Refinement of the variables included identifying the need for transformations and grouping into different categories. Stability was defined as needing only diagnostic and preventive services; in this way a measure of stability was created for each individual and each time period by dichotomizing on

whether services *other than* routine preventive and diagnostic services were used. Statistically significant differences between those classified as stable and non-stable were determined by examining the variables with the use of chi-square and t-tests, using 0.05 as the level of significance.

The outcome — stability over time — was modeled using facility and resident characteristics as predictor variables. In this analysis, the outcome measure was binary: each of 3373 treatment periods from 868 resident records was either stable (1) or not stable (0). Logistic regression models were used to model the association of each covariate individually with the log odds of stability while controlling for the remaining vari-

ables. Modeling employed generalized estimating equations (GEE) to handle the correlated nature of repeated measures within each resident assuring consistent estimates and valid standard errors. The probability model, expressed in logit form, that an individual or a treatment period was stable was modeled in the following way:

$$\text{Logit} (\text{Pr}(\text{STABLE}=1)) = B^0 + B^1 \text{AGE} + B^2 \text{SEX} + B^3 \text{TEETH} + B^4 \text{SERVICES} + B^5 \text{BEDS} + B^6 \text{PROFIT} + B^7 \text{RELIGIOUS} + B^8 \text{PAYER} + B^9 \text{GROOMING}$$

AGE= age at initial examination

SEX= male/female

TEETH=number of teeth at initial examination

SERVICES=number of services required in the initial treatment plan

BEDS=number of beds in nursing home

PROFIT= proprietary or non-profit nursing home

RELIGIOUS=religious affiliated nursing home or not

PAYER=private, Medicaid, or other

GROOMING=functional dependency in grooming (yes or no)

SAS version 8.0 was used for all data management and analysis.

Results

Study group characteristics

Baseline characteristics of the 868 subjects and the 62 facilities in which they lived are displayed in the tables that follow. Table 1 shows the following characteristics of dental patients in the study group: age, sex, payer source, teeth present at initial examination, and number of dental services provided prior to the first periodic dental examination. Facility characteristics, including ownership status, religious affiliation, and number of beds, are summarized in Table 2. Table 3 shows the classification of residents by extent of functional dependency, as well as the distribution of functional status by individual dependencies.

Stability status

At the first periodic examination after completion of the initial treatment phase, the stability status of each resident was

determined. Upon examination, if only diagnostic or preventive services were required, then the resident was classified as *stable*. If additional service of any type was required then the resident was classified as *non-stable*. The entire study population was dichotomized using this criterion. The range of values for each variable was examined for the stable and for the non-stable groups. Table 4 summarizes the differences between stable and non-stable groups in resident and facility characteristics examined with χ^2 tests of association and *t*-tests.

Females were statistically significantly more likely than males to be stable at periodic examination 1 ($p=0.03$), as were individuals who required fewer services in the initial treatment phase ($p<0.01$). Individuals classified as non-stable required an average of 15.3 services at periodic examination 1. This average is 43% higher than the 10.7 average number of services for those classified as stable.

Table 5 displays the association of dependency classification (high, medium or low) with the stability status at the first periodic examination. χ^2 tests of association detected no statistically significant difference between stable and non-stable in dependency classification. However, statistically significant differences were observed when individual dependencies were tested, as seen in Table 6. Three dependencies (dressing, grooming, and bathing) achieved statistical significance at $p=0.05$, 0.01, and 0.04, respectively, but were highly correlated with each other. Therefore, only grooming, the dependency with the highest statistical significance, was carried forward as an indicator of functional dependency into subsequent models.

Table 7 summarizes the relationship of facility characteristics (number of beds, religious affiliation and ownership type) to stability status. No statistically significant differences in number of beds or religious affiliation were demonstrable between the stable and non-stable groups. However, stability at first periodic examination was significantly associated with ownership type, with res-

Table 7. Facility characteristics for dental patients classified as stable or non-stable by treatment needed at first periodic examination (n=868)

Facility Characteristic	Stable (%)	Non-stable (%)	Test statistic	prob
Number of beds			$\chi^2 = 0.7257$ (3 df)	0.87
<100	62 (45.9%)	73 (54.7%)		
101-150	188 (42.3%)	257 (57.7%)		
151-250	32(43.8%)	41 (56.2%)		
251 +	96 (44.6%)	119 (55.4%)		
Religious Affiliation			$\chi^2 = 1.6937$ (1 df)	0.19
Yes	85 (39.7%)	129 (60.3%)		
No	293 (44.8%)	361 (55.2%)		
Ownership Type			$\chi^2 = 6.5201$ (1 df)	0.01
Proprietary	212(47.7%)	232 (52.3%)		
Not-for-profit	166 (39.2%)	258 (60.8%)		

Table 8. Estimated odds ratios for probabilities of stability over subsequent time periods for nursing home residents classified as stable/not by treatment needed at initial examination and periodic examinations 1, 2, and 3

	n	Odds Ratio	95% C.I.
Period 0 & 1	868	2.84	2.24, 3.60
Period 1 & 2	852	1.27	1.02, 1.58
Period 2 & 3	608	1.19	1.04, 1.36
Period 0 = initial treatment phase			

idents of proprietary ownership type facilities significantly more likely to be stable than those in not-for-profit facilities ($p=0.01$).

The association of stability status across periods was estimated by the odds ratios of stability status over paired consecutive time periods. The results are shown in Table 8. Stability in a previous period is associated with stability in a subsequent period with declining odds ratios over time. Time periods beyond the fourth period were not examined due to increasing amounts of missing data.

Finally, a model was run with "stability over time" as the outcome, with each treatment period categorized as stable (=1) or non-stable (= 0). Generalized Estimating Equations were used to estimate the model parameters. Resident characteristics and facility characteristics

were included as predictor variables in the model. Resident characteristics included age, sex, number of teeth at initial visit, number of services required for initial treatment, grooming dependency and payer source. Facility factors included number of beds, ownership type and religious affiliation. The results are shown in Table 9. Three predictors were statistically significant predictors for stability over time: age, sex, and number of services required for initial treatment. *Older age* was negatively associated with stability: i.e. for older subjects, there is a decreased likelihood of stability at $p=0.04$. The predicted odds for stability were 1% less for each additional year of age at initial visit, controlling for all other variables. *Female* sex was positively associated with stability over time, statistically significant at

Table 9. A model of stability over 3373 treatment periods categorized as stable/not for nursing home residents receiving dental care from Apple Tree Dental (n=868, maximum of eight periods per resident)

Predictor variable	Stability over time	
	estimate	probability
Age at initial visit	-0.0108	0.04
Sex (male = referent)	0.3379	<0.01
Number of teeth initial visit	-0.0051	0.40
Number of services initial treatment plan	-0.0402	<0.01
Number of beds	0.0001	0.79
Non-profit (proprietary=referent)	-0.0770	0.51
Non-religious (religious=referent)	0.0706	0.60
Payer Private (Other =referent)	-0.3864	0.38
Payer Medicaid (Other =referent)	-0.6143	0.07
Grooming Dependency	0.1692	0.08

$p < 0.01$. The predicted odds for stability over time were 40% higher for females than males, controlling for all other variables. The greater the number of services required in the initial treatment phase, the less likely subjects were to be stable over time. The predicted odds for stability were 2% lower for each additional service required during the initial treatment phase. In all service categories, the group designated as “non-stable” had higher utilization patterns at the beginning and remained higher over time. (Results not shown.) Number of teeth at initial visit, payer source, and grooming dependency were not statistically significant predictors for stability. Facility factors (number of beds, ownership type, and religious affiliation) also did not reach statistical significance.

Discussion

The study group included a higher percentage of females than nursing home national averages (80% vs. 75%) and was slightly younger (81.8 years vs. 82.6).²⁸ Eighty-three percent of the study population had Medicaid, compared to the national average of 59%.²⁹ Comparable statistics for teeth present at initial visit and services provided in the initial treatment phase were not available from other studies.

Currently, there are more nursing homes nationally that are for profit (67%) compared to the homes in this study (56%). The facilities represented

echo the national average facility size of 105 beds.²⁹

In terms of dependency status, approximately three-quarters of current residents nationally require assistance with three or more activities of daily living (ADLs), comparable to the residents in the study population. Compared to current national averages, the study group was less dependent for dressing (71% vs. 87%), but more dependent for eating (68% vs. 47%) and toileting (70% vs. 56%). Both national averages and the study group had 94% bathing dependencies.

An initial step for analysis of the study population was to define an acceptable oral health outcome. *Stability*, as defined by requiring only diagnostic and preventive services at routine examination (the “good check-up”) was selected. This was investigator defined and has not been used in other studies. In addition, attaining the “good check-up” status by the first periodic examination was used to dichotomize the population into stable and non-stable groups. Using the first periodic examination as the cut-point allows the backlog of unmet oral need with which many elderly enter the nursing home to be addressed during the initial treatment period. The first periodic examination then serves as a common starting point for all residents and their service utilization over time.

The resident factors *female gender* and *fewer services in the initial treatment*

phase distinguished between those who were stable at the first periodic examination and those who were not. In general, females use health services including dental services more frequently than do males. Females have more restored teeth and less untreated decay than do males.³⁰ From a periodontal standpoint, females are healthier and usually exhibit better oral hygiene than do men.³⁰ If females enter the nursing home with fewer unmet needs, that would translate into fewer services needed in the initial treatment plan and therefore increase the likelihood of stability.

Dressing, grooming and bathing dependencies were associated with oral health stability at the first periodic examination but dependency status was not useful in predicting oral health stability over time. The use of dependency status as a predictor of oral health stability is probably not sufficiently sensitive to capture predictors of oral self-care. A measure of manual dexterity³¹ or the Physical Self-Maintenance Scale (PSMS)³² as employed by Hawkins²² may be a more powerful predictor than the broader functional status measures used in this study.

Proprietary ownership was the single facility characteristic that distinguished between the stable and non-stable at first periodic examination. Is there something about proprietary facilities that would cause the distinction? Or do residents living in proprietary homes differ from their counterparts living in not-for-profit facilities? The second option seems more likely. Comparing the percentage of beds occupied by medically indigent (Medicaid) residents between proprietary homes and non-profits would be useful to address the question. An initial attempt at establishing the percentage of Medicaid beds within the facilities was made. However, *all* nursing home beds in the State of Minnesota are designated as Medicaid-eligible beds, (whether or not medically indigent occupy them). It could be conjectured that those entering proprietary homes have more financial resources than those entering non-profit facilities. Access to and utilization of dental services are linked with adequate

financial resources. By extension, if proprietary facilities have a higher percentage of individuals with more resources, it might suggest that they previously had better access to dental care.

The criterion of stability, requiring only diagnostic or preventive services at periodic examination, was also applied to each treatment period. Resident and facility factors could then be regressed on stability over time to determine predictive variables. Oral health stability was achieved in 44% of the study group and maintained at that level over time. Female sex and fewer services in the initial treatment plan emerge as being associated with stability over time. These findings agree with the single point findings considering only stability status at first periodic examination. In addition, being younger at first ATD examination was also associated with stability over time. This contrasts with the finding of negligible difference in age between the stable and non-stable groups when considering the single point "stable at first periodic examination." The over-time analysis may be indicating that increasing age increases susceptibility to oral disease processes. However, the impact of age upon variables not included in this analysis need illumination before such a conclusion could be reached.

The nursing home residents whose dental experiences were documented in the records of Apple Tree Dental are unique in that they have been provided care in a system where the typical access barriers to dental care (transportation, cost, etc.) have been reduced or eliminated. Under this program, 44% of those receiving routine care achieved oral health stability and have maintained it over time. This is an important finding, given decades of dismal reports about the poor oral health status of nursing home residents. The extensive backlog of unmet need, evidenced by a resident average of 13 services required on initial examination, is a daunting prospect to clinicians who wish to provide services to this population. As the proportion and absolute number of older individuals increases, managing the oral health needs of an increasingly dentate population will

require the commitment of resources currently unavailable to the general nursing home population. Identifying residents at greatest risk of oral disease within this population may facilitate the targeted use of limited resources.

Limitations

Dental records used in this analysis were from nursing home residents in facilities located primarily in and around the metropolitan area of Minneapolis/St. Paul, Minnesota. The nursing home population in this area will be more homogeneous in ethnic and cultural background than nursing homes located in areas of greater diversity. In addition, restrictions imposed on the subject selection affect generalization. The analysis exclusively looked at the utilization patterns of users of Apple Tree Dental services. Therefore, only those who opted for dental care provided by ATD or had that choice made for them by others were included. The characteristics of non-participants who opted for no care were not considered. The specific requirement of having at least one remaining natural tooth excluded long-term care residents with no remaining teeth. Although there has been a shift to an increasingly dentate population, the 1995 U.S. National Nursing Home Survey noted that almost half (47%) of nursing home residents were totally edentulous.⁷ Utilization patterns of edentulous residents were not addressed in this study. Finally, because an understanding of utilization patterns over time was desired, a time-under-treatment requirement of at least 24 months was imposed. Individuals who require long-term care for periods greater than six months have a different overall profile than individuals who are described as short-stay (less than six months). These long-stay individuals typically have more significant physical and/or cognitive impairment.³³ In summary, the results of this analysis describe a homogeneous, dentate, long-stay resident population that had access to and participated in on-going oral health care.

Conclusion

In this analysis, 44% of those receiving routine care achieved oral health stability and maintained it over time. Younger females with fewer initial service needs were more likely to be stable over time. Once stability was achieved, as evidenced by the "good check-up", it tended to remain that way. Functional status, as measured in this analysis, and facility factors, such as number of beds and ownership type, were not associated with stability over time.

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