

Caring for Health

PHONE SURVEY OF TruSage: Mobile-Assisted Learning PATIENTS

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June, 2005

Abstract

Purpose & Method

To assess the impact of TruSage: Mobile-Assisted Learning calls on:

- 1) healthcare provider utilization, 2) patient satisfaction, 3) motivation, 4) communication and relationships with others. A 4-minute cross-sectional telephone survey was conducted with 103 currently active and TruSage patients in late May, 1999. The sample constituted 34% of all long-term patients since the inception of TruSage 10 years ago.

Summary of Findings

Utilization

Among patients surveyed, 81% reported a reduction in the number of visits to healthcare providers:

- Among those reporting a change, number of visits before the TruSage calls averaged 49.5 a year. After TruSage calls, visits to healthcare providers dropped to 8.3 a year.
- The reduction in visits averaged 41.2 a year, an 83% percent reduction. Across all patients in the survey (including those reporting no change), number of visits dropped 69%.
- The greatest decrease in healthcare provider visits was reported by those who began receiving TruSage calls over 18 months ago. The reduction in visits declines only slightly after 45 months.

Satisfaction

Over 90% of patients in the survey reported high levels of satisfaction with TruSage calls. Patients

agreed that:

- TruSage calls significantly improved patients' lives (95%).
- TruSage will improve healthcare delivery (97%).
- Patients feel supported and connected (99%).
- TruSage calls are tailored to individuals' medical needs (91%).
- Patients' needs were better met (91%).
- Patients' needs as human beings were better met (94%).

Motivation

Over 98% of patients reported that TruSage calls motivated them to take better care of themselves

and improve their health.

Communication

Over 86% of patients in the survey reported that TruSage calls had improved their communication

and relationships with others.

Purpose of the Study

Active and inactive TruSage patients were surveyed on the telephone to address five specific questions regarding patients' utilization of healthcare providers, satisfaction, motivation, communication and relationships with others:

- Did TruSage patients reduced their utilization of healthcare providers (office visits) after receiving TruSage calls?;
- What relationships exist between length of time since initiation of TruSage treatment, and any reductions in visits to healthcare providers?;
- Does receiving TruSage calls influence patients' satisfaction with the healthcare system?;
- Does receiving TruSage calls influence patients' motivation to take care of themselves, and to improve their health?
- Does receiving TruSage calls influence communication and relationships with others?

The TruSage: Mobile-Assisted Learning System

The TruSage System calls patients on a regular basis to a) remind them of the importance of compliance with prescribed care regimens, b) to support, encourage, and motivate improvement of health conditions by setting and attaining realistic goals, and c) to provide convenient access to medical care. When a patient receives a TruSage call at a pre-arranged time and place, they can elect to take the call at that moment, select an alternative schedule, and/or call the TruSage System to access pre-recorded calls. Through recorded and personalized messages tailored to each patient's medical needs, updated and novel calls maintain frequent contacts with patients, focus their adherence to prescribed regimens, and offer engaging information and questions to assist patients with their health status. Designed to assist healthcare providers in managing more than 100 million people who suffer from chronic diseases, each provider can stay in contact with up to 500 patients daily. The TruSage System thus compliments face-to-face interactions within clinical environments with reliable, efficient, and intimate interactions between patients and diverse healthcare providers (e.g., doctors, nurses, counselors, pharmacists, social workers, and case managers).

Research Methodology

A purposive sample of TruSage patients was drawn in May, 1999, to represent both currently active TruSage patients (currently receiving TruSage calls) and inactive TruSage patients (not currently receiving TruSage calls). To insure patient confidentiality and provide informed consent, Dr. Brian Alman, manager of the TruSage system, initiated a telephone conversation

with patients drawn from TruSage patient records. In his conversation with potential respondents, Dr. Alman informed patients about the general purpose of the survey, assured them of the confidentiality of any information they provided, and informed them that their participation in the survey was completely voluntary. Of those contacted, fully 97% expressed a willingness to participate in the survey.

Later a trained interviewer from San Diego State University called the respondent. (In some cases, the respondent called the interviewer directly.) The interviewer repeated assurances of confidentiality and repeated that participation in the survey was wholly voluntary. The interviews required between three to four minutes to complete. Interviewers reported that most respondents were enthusiastic about TruSage and provided many exclamations of enthusiasm for TruSage. A total of 103 interviews were completed, representing 34% of the long-term patient population of TruSage over the last five years. The sample size provides adequate representation for purposes of statistical analysis in a purposive sampling strategy. Survey data such as this is indicative of—but not a replacement for—the kind of information provided by a patient management information system. Data from the questionnaires were entered into a statistical application package for analysis. All data are based on patient recall across varying time periods.

Table 1.

Population of TruSage Participants

	<u>Number</u>	<u>Percent</u>
Total Short-Term and Long-Term TruSage Patients	1,150	100.0%
1995	200	17.4%
1996	300	26.1
1997	300	26.1
1998	200	17.4
1999	150	13.0
Total Short-Term TruSage Patients (Brief interventions of less than 3 months)	850	73.9%
Total Long-Term Patients (Received TruSage calls for 3 or more months)	300	26.1%

Total Patients Currently Receiving TruSage Calls (Percentage based on long-term patient participation)	80	26.7%
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Characteristics of the TruSage: Mobile-Assisted Learning Patient Population

During a 5 year period, Table 1 displays a breakdown of the 1,150 patients who have used the TruSage system. The vast majority of patients (850) were short-term TruSage patients who used TruSage for less than three months, patients whose needs involved relatively short-term demand for TruSage services (e.g., patients undergoing job changes, school phobia, or preparation for chemotherapy.) In addition, prototypes of the current TruSage system could only accommodate a relatively small number of long-term patients at any point in time. This required the TruSage manager to diagnose patient needs and reserve long-term participation for those patients with the most pressing medical conditions. Only one TruSage patient over the last five years (0.09% of total) has asked to be taken off the TruSage system.

The population of study for the present survey is approximately 300 TruSage patients, characterized as long-term patients receiving calls for three or more months. However, some of the currently active patients included in the survey (16.5% of the total sample) have not yet achieved long-term patient status.

Characteristics of the TruSage: Mobile-Assisted Learning Patient Sample

Table 2 provides a breakdown of respondent characteristics in the survey. About 40% of the sample was drawn from the early years of TruSage operations in order to assess—within the confines of survey methodology—the long-term impact of TruSage participation on utilization and satisfaction. The balance of the interviews were distributed over the intervening years, with 22% of respondents drawn from the last six months. Some 31% of respondents were currently receiving TruSage calls.

Two demographic questions were asked of each respondent. The vast majority of respondents fell in the 30 to 60 year age range. The average age of respondents was 47.8 years; median age was 48.5 years. Nearly half the respondents (48%) were currently married whereas 25% were single. Some 23% reported that they were divorced and about 4% said they were widowed.

Table 3 provides a breakdown of respondents (N=32) who were receiving TruSage calls at the time of the survey in late May, 1999. About one third of these currently active TruSage patients had just become TruSage patients and were less able to assess the impact of TruSage participation. At the same time, other currently active patients (24% of all active patients) reported that they had been receiving TruSage calls from one to four years. On average, the typical active TruSage patient in the survey had been receiving calls for 12.9 months. The median number of months was 2.5 months, reflecting the large number of current patients who had just started.

On average, the current TruSage patients received 2.9 calls a week; median number of calls per week was 3.0. In addition to receiving calls from the TruSage system, some 12 of the active patients reported that they called into the TruSage system on their own initiative when they needed to. Such calls occurred less than once a week among these active patients.

Table 4 provides a breakdown of inactive TruSage patients who are no longer receiving TruSage calls (N=71). The vast majority of these inactive TruSage patients (79%) reported that they received TruSage calls for 3-6 months when they were participating in the TruSage system. Less than 2% reported using the system for over 12 months. On average, inactive TruSage patients reported receiving TruSage calls for 5.5 months; median length of participation was 5.0 months. A plurality (44%) reported receiving about three calls a week, while another third reported receiving calls four times a week. On average, inactive TruSage patients reported receiving 3.6 calls a week; median number of calls per week was 3.5.

As noted above, the purposive sampling strategy sought to measure the long-term impact of TruSage calls on healthcare provider visits and satisfaction with the healthcare system. Therefore, some 51% of inactive patients had terminated their participation 37 or more months ago. The balance of inactive patients in the survey were distributed over one to 36 months since participation. On average, the inactive patients in the sample had terminated participation 32.6 months ago. Median months since termination was 37.0, reflecting the large number of inactive patients who had participated over 37 months ago.

Table 2.

Characteristics of TruSage: Mobile-Assisted Learning Patients in Survey

	<u>Number</u>	<u>Percent</u>
Total	103	100.0%
<u>Started receiving calls in...</u>		
1995	42	40.8%
1996	14	13.6
1997	12	11.7
1998	12	11.7
1999	23	22.3
Patients in Survey Currently Receiving TruSage Calls	32	31.1%
Age of Patients in Survey		
Under 30 years	8	7.8%
30-39 years	24	23.3%
40-49 years	22	21.4%
50-59 years	29	28.2%
60-64 years	7	6.8%
65 years old and older	12	11.7%
Declined to state	1	---
Marital Status of Patients in Survey		
Single (never married)	26	25.2%
Married	49	47.6%
Divorced	24	23.3%

Widowed

4

3.9%

Table 3.

Breakdown of Active Patients in the Sample

	<u>Number</u>	<u>Percent</u>
	32	100.0%
 Number of Months Receiving TruSage Calls		
Less than One Month	11	33%
1-2 Months	5	15
3-6 Months	6	18
7-12 Months	3	9
13 months-3 years	3	9
Over 3-4 years	2	6
Over 4 years	3	9
 Ave. Number of Months	 12.9	
Median Number of Months	2.5	
 Number of Calls Received Per Week		
Once a week	2	6.3%
Twice a week	4	12.5
Three times a week	23	71.9
Four times a week	2	6.3
Five times a week	1	3.1
 Ave. Number Per Week	 2.9	
Median Number Per Week	3.0	
 Number of TruSage Calls Initiated By Per Week		
None	20	66.7%
Less than once a week	4	13.3%
Once a week	1	3.3%
Twice a week	3	10.0
Three times a week	1	3.3
Six times a week	1	3.3
Missing	2	

Ave. Number Per Week	0.6
Median Number Per Week	0.0

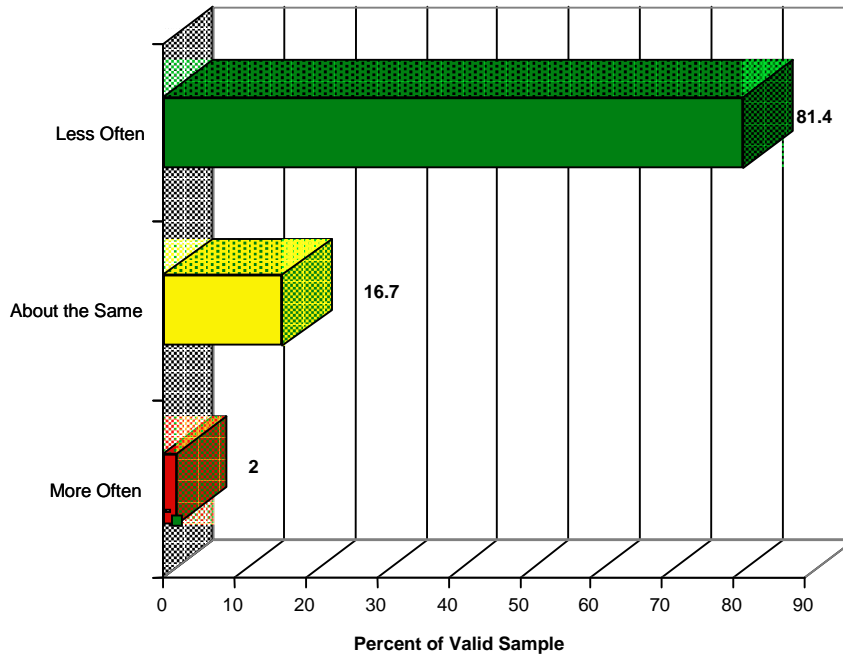
Table 4.

Breakdown of Inactive Patients in the Sample

	<u>Number</u>	<u>Percent</u>
	71	100.0%
 Number of Months Patient Received TruSage Calls		
Less than One Month	1	1.4%
1-2 Months	2	2.8
3-6 Months	56	78.8
7-12 Months	11	15.5
Over 12 Months	1	1.4
 Ave. Number of Months	 5.5	
Median Number of Months	5.0	
 Number of Calls Received Per Week		
Once a week	1	1.4%
Twice a week	7	9.9
Three times a week	31	43.7
Four times a week	23	32.4
Five times a week	8	11.3
Six times a week	1	1.4
 Ave. Number Per Week	 3.6	
Median Number Per Week	3.5	
 Length of Time Since TruSage Calls Were Terminated		
1-12 months	9	12.7%
13-24 months	12	16.9%
25-36 months	14	19.7%
37-48 months	31	43.7%
Over 48 months	5	7.0%

Ave. Number of Months Since Terminating	32.6
Median Number of Months Since Terminating	37.0

Figure 1.
Impact of TruSage Calls
Health Care Provider Utilization



Impact of TruSage: Mobile-Assisted Learning Calls on Healthcare Utilization

Operationalized as the number of patient visits to healthcare providers, what impacts do TruSage calls have on the utilization of healthcare system services? Respondents were asked if they visited their healthcare providers more often, less often, or about the same since receiving TruSage calls. Figure 1 displays the breakdown of the answers from all patients in the survey. A dramatic 81% reported that their visits to healthcare providers had decreased since they began receiving TruSage calls. Further, the impact of TruSage calls on healthcare system utilization is a function of the passage of time. For example, fully 92% of patients who started receiving TruSage calls in 1995 through 1997 reported that their visits to healthcare providers had gone down since receiving TruSage calls. Among patients who started receiving TruSage calls in 1998, only 75% reported that their visits to health care providers had gone down. Of those who started receiving TruSage calls in 1999, only 48% reported a drop in the number of visits to healthcare providers since they started receiving the calls.

Figure 2 graphically displays the impact of TruSage calls on the number of visitations to healthcare providers. Respondents who indicated that they had either increased or decreased their visits to healthcare providers since receiving TruSage calls were asked two follow-up questions:

- Before the TruSage calls, about how often did you visit your healthcare provider's office?
- After the TruSage calls, about how often did you visit your healthcare provider's office?

The data in Figure 3 is based on the 84 respondents (82% of the total sample) who reported an increase or decrease in healthcare provider visits after receiving TruSage calls and who could provide estimates of the number of those visits. Respondents were permitted to answer the two questions above in any form they found meaningful (e.g., once a week, 2-3 times a month, twice a year, etc.). During data reduction, all answers were annualized, meaning that the respondent's answer was converted into a count of the number of visits to healthcare providers over a 12 month period. When respondents gave a range of numbers (e.g., 2-3 times a week), the average of the high and low estimate was entered (e.g., 2.5 times a week or 130 visits a year). The same data reduction strategy was employed for both questions, permitting direct comparison of estimates before and after receiving TruSage calls.

Of the patients reporting a change in healthcare provider visits since participation in TruSage, only two indicated that the number of visits had increased. One patient indicated that the number of visits had increased by 25 a year. However, according to interviewer notes, much of this increase occurred because the patient had decided to take better care of himself/herself and was making heavier use of preventative services from the healthcare system. The other patient who reported an increase was unable to estimate the amount of increase.

On average, TruSage patients reported that they visited a healthcare provider's office 49.5 times a year prior to receiving TruSage calls. After receiving TruSage calls, those same patients reported their visits to healthcare providers dropped to 8.3 a year. Factoring in the 25-visit increase for the one patient and the decrease in visits for the other 83 patients, patients reporting any change said that they had decreased visits to healthcare providers by 41.2 visits a year or 83%. For these patients, that totals 3,464 fewer visits to healthcare providers a year.

The data were further analyzed by adding respondents who reported no change in visitations to the change-in-visitations index. This was accomplished by taking all respondents who reported that their visitations were "about the same" and coding them as zero (no change after receiving TruSage calls). This had the net effect of reducing the average reduction somewhat but provides a better overall measure of the impact of TruSage calls on utilization among all patients. Only two respondents were excluded from this analysis due to their inability to estimate before/after utilization. Of the 101 patients included in the analysis, the average number of visitations to healthcare providers dropped by 34.3 visits a year or 69%. This totals 3,464 fewer visits among the 101 TruSage patients in the survey analysis.

Figure 2.
Health Care Provider Utilization
Before and After TruSage Calls

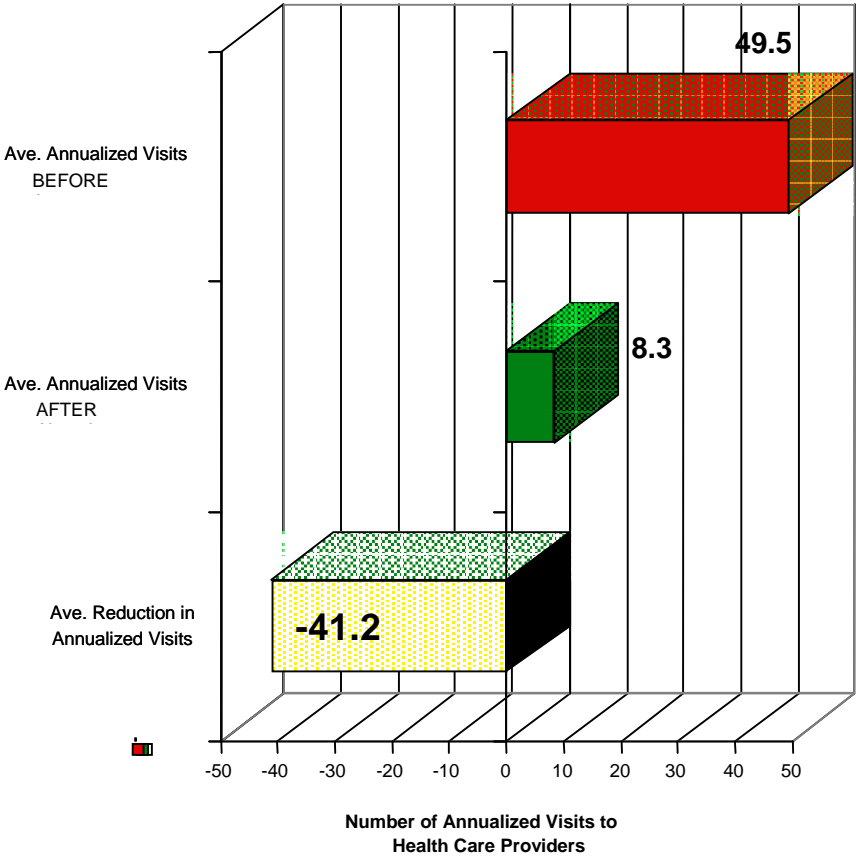


Figure 3.
Perception that Health Care Provider Visits Have
Gone Down Since TruSage Calls

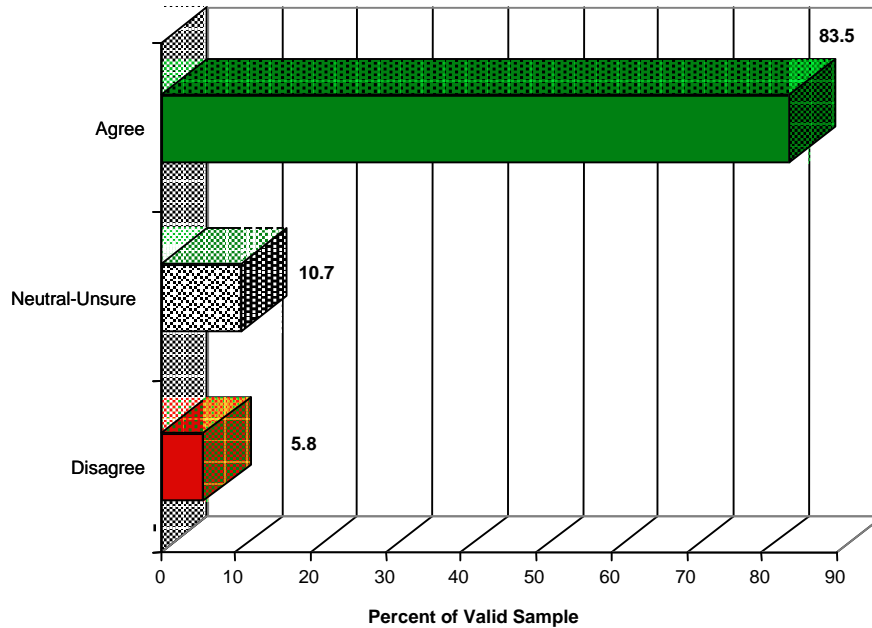


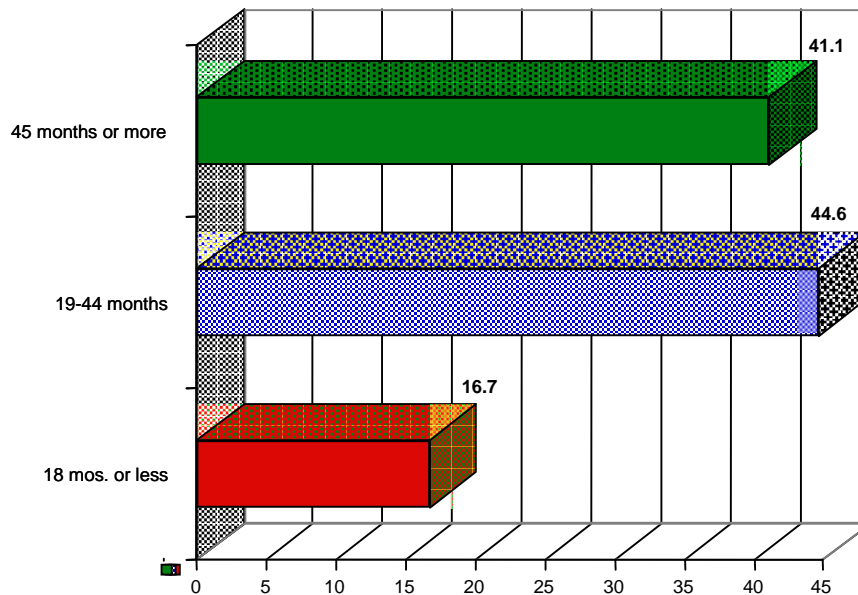
Figure 3 displays a reliability check of the estimates of TruSage impact on healthcare provider visitations. Earlier in the interview, respondents were asked if they agreed or disagreed that:

- Since receiving TruSage calls, it seems like my visits to healthcare providers have decreased.

As shown, some 83.5% of respondents agreed with the statement, which closely matches the 81.4% who later reported that the number of healthcare provider visitations had gone down. The two percentage point difference is negligible.

Figure 4 shows the impact of TruSage calls over an extended period of time, which seem to decline only slightly within a 3 to 4 year period. The sample was divided into three roughly equal numbers, based on length of time since TruSage calls were initiated with the patient. Based on office visits, these three groups were compared with reduced utilization of healthcare services. The optimum reduction in healthcare provider visits occurred in the middle group – those who began receiving TruSage calls 19 to 44 months ago. The smallest reduction in visits occurred among those receiving calls for 18 months or less, patients most recently initiated into the system. Among those who began receiving TruSage calls 45 months or more ago, the drop in utilization was only slightly less than the middle group.

Figure 4.
Reduced Utilization as a Function
Time Since TruSage Calls



Satisfaction with TruSage: Mobile-Assisted Learning and Healthcare System

- Does the TruSage system lead patients to feel dissatisfied with their healthcare services?
- Do frequent phone calls from TruSage make up for the noticeable reduction in office visits reported by TruSage patients?

The answer to both questions is dramatically displayed in Figure 5. Overwhelmingly, TruSage patients reported increased satisfaction with their healthcare while simultaneously reporting a major reduction in face-to-face interactions with healthcare providers:

- Over 91% of TruSage patients reported that their needs as patients are better met since receiving TruSage calls.
- An equal number (91%) reported that the TruSage phone calls are tailored to their individual medical needs.
- Over 94% reported that their needs as human beings are better met since they started receiving TruSage calls.
- Over 95% report that TruSage calls have significantly improved their lives.
- Over 97% agreed with the statement that, overall, TruSage will improve the delivery of healthcare.

- Finally, 99% of patients in the survey agreed that they felt supported and connected when they receive TruSage calls.

The quantitative findings shown in Figure 5 were underscored by the many unsolicited comments from respondents, which the interviewers were instructed to record on the questionnaires. For example, when one patient was asked if TruSage had improved his or her life, the respondent exclaimed, “Without a doubt!”. Another described TruSage as “a great experience” and “wonderful.” When asked if TruSage calls had motivated the patient to take better care of his or herself, one respondent said, “Yes! And I feel 100% better!”. Similarly, another stated “absolutely!” when asked if TruSage improves the delivery of healthcare, while an acquaintance was reported as describing “what a change” in the patient after receiving TruSage calls.

Measures of patient satisfaction with TruSage (and the healthcare system providing them access to TruSage) are extremely important. Clearly, patient satisfaction is critical for maintaining current healthcare plans, just as satisfied patients are less likely to sue for malpractice when they perceive support and empathy from their healthcare providers.

Impact of TruSage: Mobile-Assisted Learning Calls on Motivation

Figure 6 displays the impact of TruSage calls on patient motivation to improve their health and take better care of themselves. Fully 98% agreed that:

- TruSage calls motivate me to improve my health.

Every TruSage patient in the sample agreed that:

- TruSage calls motivate me to take better care of myself.

This data helps to explain the seeming paradox of increased healthcare satisfaction coupled with less face-to-face interaction with healthcare providers. Apparently, TruSage calls facilitate patients taking charge of their own health: Enhanced self-care capabilities promote greater likelihood that behaviors and cognitions contributing to poor health status will be modified (and perhaps eliminated altogether). While the TruSage calls motivate and thereby empower the patient to take charge of improving their own health, they also help the patient to feel “supported and connected” with the healthcare system.

Impact of TruSage: Mobile-Assisted Learning Calls on Communication and Relationships

The TruSage system is a communication innovation and intervention in modern healthcare delivery. As described above TruSage calls substantially reduced healthcare provider visits, yet are associated with high levels of patient satisfaction and motivation. However, the impact of TruSage extends beyond these immediate benefits and helps to explain how TruSage impacts the lives of its patients within social contexts of home, work, and the community.

Figure 7 displays the impact of TruSage calls on the patient’s communication and relationships with others. Fully 86% of TruSage patients agreed that:

- TruSage calls help me improve my communication and relationships with others.

Thus, just as TruSage calls facilitate and amplify supportive communication from healthcare providers, so do TruSage calls help patients develop more effective communication in patients' everyday lives (e.g., with family members, friends, co-workers, and acquaintances). Creating and maintaining healthy relationships contributes in significant ways to both preventing and healing illnesses correlated with symptoms such as stress, depression, anger, and social isolation.

Figure 5.
Satisfaction With Health Care Provider
After TruSage Calls

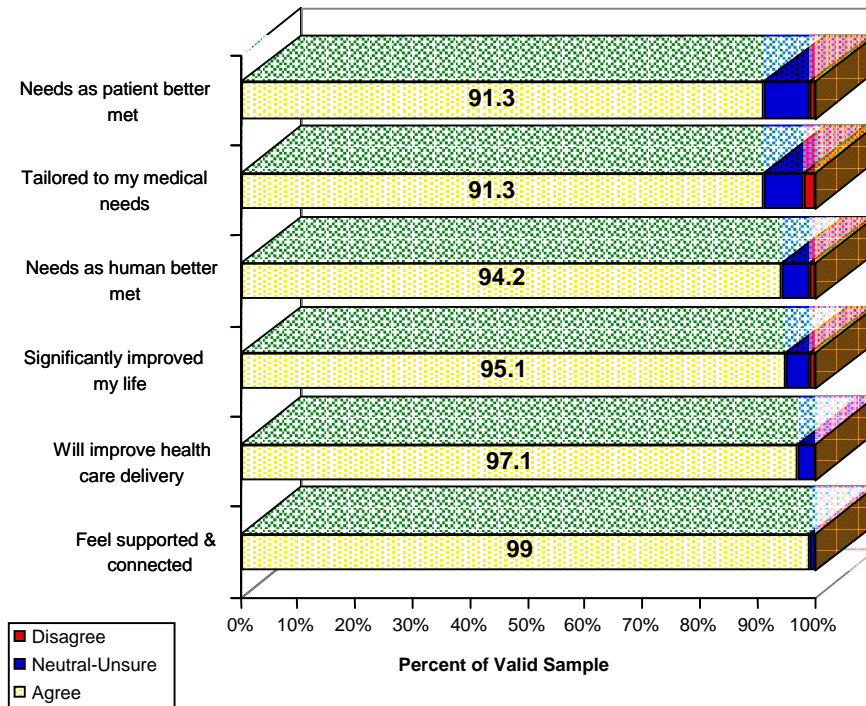


Figure 6.
Impact of TruSage Calls on Patients'

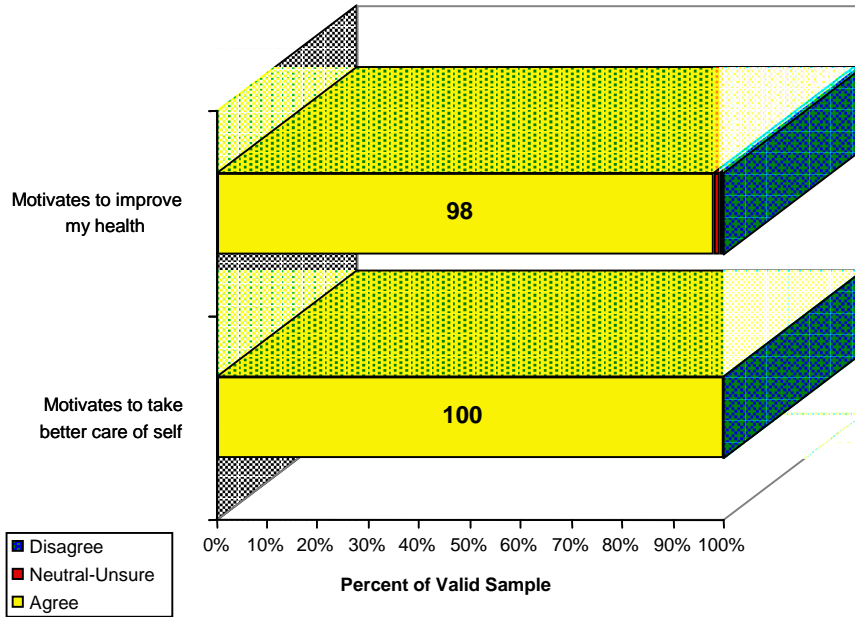
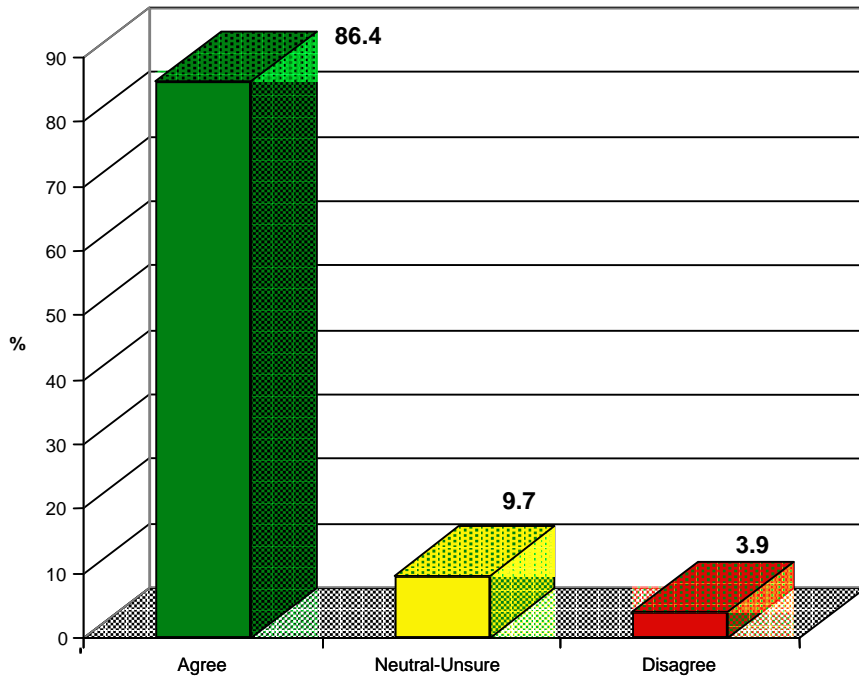


Figure 7.
Impact of TruSage Calls
Communication & Relationships With Others



Limitations

The findings in this report indicate a profound impact of TruSage calls on healthcare visitations, patient satisfaction with healthcare, patient motivation to improve their own health, and patient communication and relationship with others. These data may have a positive valence for the following reasons:

- Most TruSage patients have cordial and long-term relationships with Dr. Brian Alman, who managed the TruSage system.
- Prior to the interviews, Dr. Alman contacted TruSage patients on the telephone to obtain informed consent.
- Most patients in the survey were, or are currently, long-term patients of TruSage; the survey cannot assess healthcare utilization and satisfaction among short-term patients who are no longer using the TruSage system.
- All data are based on patient recall across varying amounts of time. Although reliability checks through multiple measures of key variables indicate that the survey data is reliable, recall data is not as reliable and valid as institutional records of utilization and other behavior-based measures.
- Because all data were collected via cross-sectional design, data involving change over time are less reliable since they are based on recall data.

Survey Recommendations

Several changes in the survey protocol, as a means for systematizing data collection and analysis over time, can reduce some of the limitations identified above:

- Completion of an intake and medical history form (to be completed by the potential patient) at the time of enrollment in the TruSage system. Access to TruSage should be contingent upon completion of the form, including a check for completeness and internal consistency before the access code is issued.
- Provide informed consent and an opportunity to participate in the surveys as part of the intake form. Thus, no interaction with a healthcare provider is required prior to the survey.
- To create a more complete profile of the patient than is provided in the survey findings, link content of intake form to information gleaned from the survey.
- Link utilization data from healthcare providers (whenever possible) to survey and intake data.

Design a tracking system in order to conduct longitudinal surveys at key points in the patient's utilization of the TruSage system, including surveys after use of the TruSage system is terminated. By so doing, TruSage calls could be better understood as behavioral interventions impacting key outcomes of healthcare delivery (e.g., utilization, satisfaction, motivation, communication and relationships). A longitudinal design would also permit analysis of both short-term and long-term patients employing the TruSage system.

Notes

ⁱ **About the LifeStar Research Group:***

Wayne A. Beach, Ph.D. (Principal Investigator, SDSU): Dr. Beach is Professor in the School of Communication at San Diego State University. He is an active leader within “language and social interaction” divisions across national, international, and regional communication associations. His research expertise in conversation analysis has pioneered studies on how family members talk through illness dilemmas, first regarding bulimia and currently throughout terminal cancer. An ongoing investigation of communication and cancer was awarded a research grant from the American Cancer Society (ACS), the first study funded to focus specifically on interaction and psycho-oncology. A pending grant application to the National Institutes of Health/National Cancer Institute, extending the ACS investigation, proposes a collaboration with the San Diego Hospice and Stevens Cancer Center in La Jolla to study communication during terminal cancer care. These inquiries into ordinary human interactions provide innovative approaches to understanding communication in casual and institutional health care contexts. Dr. Beach consults and conducts research within Kaiser Permanente’s Department of Preventive Medicine on provider-patient communication, and the Positive Choice Wellness Clinic, where he is studying interaction while also producing a documentary film on obesity as a communication disorder. He is associated with the Palliative Care Program and psycho-oncological research group within UCSD’s Cancer Center, and directs research within Lifestar Corporation.

David Dozier, Ph.D. (Co-Investigator, SDSU): Dr. Dozier, a specialist in survey design and research, is Professor in the School Communication at San Diego State University. Over the last three years, Dozier has conducted focus group studies and/or probability sampling surveys (N=500 to N=1,100) for six different medical groups and hospitals, research focusing on the evaluation of communication outreach to existing and potential patients, evaluation of community education programs, patient decision making regarding health care choices, and perceptions of health care service providers. Related research examines communication among professionals who establish and maintain relationships between large organizations and their constituent publics (e.g., actual patients, potential patients). He is recipient of the prestigious Pathfinder Award, and he has co-authored the top research methods book in the field of public relations.

School of Communication & San Diego State University (SDSU)

The flagship institution of 32 campuses within the California State University System, the world’s largest educational network, SDSU is a major teaching and research institution located in San Diego, California. The SDSU Research Foundation administers and coordinates approximately \$100 million of grants and contracts yearly.

The School of Communication, an academic unit within the College of Professional Studies and Fine Arts, emphasizes scholarly, creative, and professional aspects of communication studies. Comprised of 30 full time faculty, 100 graduate students, and 1000 undergraduate majors, the School is a unique center for the research and development of integrated, interactive, and intercultural communication for the 21st century.

* For this report, special thanks is given to: Brian Alman, Ph.D., for his assistance in recruiting LifeStar patients; David Dozier, Ph.D. for his survey expertise; Jennifer Ott, M.A., for coordinating and conducting phone surveys; and Amy Zeis, B.A., for her assistance in calling and surveying LifeStar Patients.