

Running head: NURSING ASSISTANCE WITH TELEPHONE CONSULTS

United States Army-Baylor University
Graduate Program in Healthcare Administration

Effects of Using Licensed Practical Nurses
to Assist with Telephone Consultation Management

A Graduate Management Project Submitted to the Faculty of
Baylor University in Partial Fulfillment for the Degree of
Masters in Health Care Administration

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Statement of Ethical Conduct in Research

The author declares no conflicts of interest or financial interests in any product or service mentioned in this article, including grants, employment, stock holdings, gift, or honoraria. The researcher considered the ethical rights of the staff member participants. The study protected the confidentiality of individual survey responses throughout the study. Additionally, no individually identifiable patient data was used for this study. Only summary data was used and permission for the use of that data was obtained from the respective authorities. The study was approved by a facility expedited Institutional Review Board Process.

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Abstract

The purpose of this project was to examine the effects of using Licensed Practical Nurses to assist providers with telephone consults at one of Dwight David Eisenhower Army Medical Center's primary care clinics. The study compared means of pre- and post-implementation provider overall job satisfaction, provider satisfaction with the telephone consult process, average daily hours providers spent on telephone consults, and the length of time to complete patient generated telephone consults. Average completion time of consults was the only statistically significant dependent variable as shown by $t(167.84) = 3.68, p < .01$ (two-tailed), $r_{pb} = .27$. Overall, the study provides justification for cautiously pursuing nursing assistance with telephone consultation management despite this study's weakness with provider sample size.

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Using LPNs to Assist in Telephone Consultation Management

The executive staff of Dwight David Eisenhower Army Medical Center (DDEAMC), Fort Gordon, Georgia, faces the continual and similar challenge of all hospital systems today, namely, finding innovative ways to provide consistent, high quality, patient-centered care in the midst of escalating health care costs with access being an integral component of quality care. The Institute of Medicine (IOM) Report *Crossing the Quality Chasm* provided six aims for improvement of the United States (U.S.) health care system and recommended all healthcare organizations actively pursue those aims. Those aims call for health care that is safe, effective, patient-centered, timely, efficient, and equitable (IOM, 2001). In addition to the IOM, there are many other groups, such as the Leapfrog Group, championing the need for improvements to the current methods of health care delivery.

This project examined the use of innovation with existing resources in pursuit of improving those six aims in the delivery of primary care at DDEAMC by quantifying the results from a clinical business practice change at one of DDEAMC's primary care clinics – Troop Medical Clinic (TMC) 4. The Officer in Charge (OIC) of TMC 4 recommended the use of Licensed Practical Nurses (LPNs) to assist providers with their telephone consultation management. The project analyzed the effectiveness of this business process change. At the project onset, providers were completing telephone consults without assistance. The desired outcome was to free up time for the providers, which could be used to increase access by expanding templates and increase provider satisfaction, while providing a more timely responses to telephone consults. This change has the potential to increase staff and patient satisfaction as well as improve the safety,

effectiveness, and efficiency of patient care delivered via the telephone consultation process. TMC 4, a relatively small clinic, is well suited to pilot this change of business practice. Any resulting success might be applied more widespread at DDEAMC with even greater potential impact, especially in larger clinics with high volumes of telephone consults and the greatest difficulty keeping up with demand for access, such as the Family Medicine and Internal Medicine Clinics.

Conditions that Prompted the Study

Telephone consults are communication contacts between a provider and a patient. A provider includes physicians, physician assistants, and family nurse practitioners. Telephone consults are generated primarily one of two ways: 1. by the provider 2. by the patient. When a provider generates a telephone consult, it is usually done as a method to notify patients of diagnostic test results. The other method, generated by the patient, begins with the patient calling the main hospital telephone number. The telephone system prompts the patient to either make an appointment or leave a message for their provider. When the patients selects the latter prompt, the system asks the patient to leave a message which is then digitally recorded. It is similar to an answering machine or voice mail. Then, a clerk listens to the recorded patient message and transcribes it into the computerized ambulatory chart. The computerized charting system is the Department of Defense (DoD) global electronic medical record system Armed Forces Health Longitudinal Technology Application (AHLTA), previously known as Composite Health Care System II (CHCS II). In AHLTA, each message is a separate telephone consult, where the physician can view the message content. Other patient generated telephone

consults occur when the patient calls the clinic clerk directly, who in turn enters the consult into AHLTA.

A frequent problem is insufficient information in the message, and thus in AHLTA, to know what the patient requires. The TMC 4 OIC estimates that nearly half the patient generated telephone consults recorded in CHCS II require clarification (J. Cornali, personal communication, September 9, 2005). Therefore, the doctor sometimes is required to call the patient twice. The first time is to find out what the patient needs, and then the second time to notify the patient of the outcome. Providers across DDEAMC have reported being engaged in lengthy calls involving information gathering, which can be done by an assistant.

DDEAMC's central appointment clerks handle all of the digital voice recorded messages. According to two of the clerks, the digital message is of adequate quality to clearly hear the message. However, problems arise when there is insufficient information on the message because either the system dropped the patient call before the patient completed the message or because the patient has left minimal information. The clerks report entering the content of the message to best of their ability based on what is on the recorded message. Sometimes, there is not enough information to enter a consult at all. On occasion, it is evident that patients believe they are leaving a message on the personal voicemail of the provider thinking the provider will listen to the message and know who the message is from. For example, a message might say, "Hello, this is Mary. I need to ask you about the medicine you gave me last week." In these cases, the calls are not entered into the system at all (C. Lowe and D. Thorpe, personal communication, March 1, 2006). Central appointment staff clerks enter telephone consult data into AHLTA

Monday through Friday. Any messages left on weekends or after hours are entered into AHLTA on the next business day. The telephone consults are visible to providers in AHLTA as soon as the clerk enters the information. Providers then have three working days to complete the telephone consults according to the Department of Defense Instruction 6040.42 Medical Encounter and Coding at Military Treatment Facilities (June 10, 2004), which states that all outpatient encounters must be completed and coded within 3 business days.

According to the OIC of TMC 4, the idea of using nurses to assist providers with telephone consults arose from a provider colleague, who reported tremendous success and satisfaction when utilizing Registered Nurses (RNs) to assist with telephone consults at another Army Medical Treatment Facility (MTF). The process there allows that colleague to schedule and see more patients per day. The OIC of TMC 4 thought that by using existing staff LPNs, she might be able to create similar success. She felt she had sufficient resources and the right environment at TMC 4 to test the idea, which could later be implemented in the larger and busier primary care clinics (J. Cornali, personal communication, September 9, 2005).

TMC 4 serves a small, stable, exclusively active duty military beneficiary population. As of September 2005, the number of enrolled beneficiaries in CHCS to TMC 4 was 5,184. The active duty military population served by TMC 4 is all permanent party military service members. Military students or trainees who are assigned temporarily to Fort Gordon are not enrolled at TMC 4. Prior to project implementation, access levels at TMC 4 were exceeding demand levels as evidenced by a few open appointments that went unused nearly every day. During the month of September 2005,

TMC 4 had a total of 2,013 available appointments of which 1,759 were booked. That left 254 open or unused appointments, which equates to a 12.6% open rate. Additionally, the volume of telephone consults is relatively small at TMC 4 compared to other primary care clinics at DDEAMC. In September 2005, TMC 4 had a total of 171 telephone consults, whereas the Family Medicine Clinic had 2,283 telephone consults according to AHLTA data.

In addition to a stable beneficiary population, the staff at TMC 4 is small and relatively stable as well. All of the licensed nurses and providers with the exception of the OIC are civilian staff members not subject to military deployments, which is a large factor in many other clinical operations at DDEAMC. Regarding licensed personnel, TMC 4 employs three LPNs and a total of seven providers including the OIC. The provider breakdown is as follows: one family nurse practitioner, three physicians, and three physician assistants. The demographics of the staff members involved in the project allowed for a more rapid start-up and easier management of the project as well as higher potential to follow through with the statistical analysis of data in order to quantify the project effects. In addition to the favorable demographics, no additional hiring actions or equipment purchases were necessary to implement and test this change of business practice. According to the OIC, the three LPNs employed there appeared underutilized. Additionally, they spend much of their time engaged in tasks not requiring a licensed nurse, such as chaperoning exams and assisting with minor procedures. Meanwhile, TMC 4 providers spent a significant amount of time daily managing telephone consults without assistance (J. Cornali, personal communication, September 9, 2005). Anecdotal

comments by providers across the hospital indicated that providers are generally dissatisfied with the current method of handling the volume of telephone consults.

There are many potential benefits for DDEAMC to use support staff to help free up provider time spent on telephone consults, without eliminating the valuable service of telephone consults. While access is not a problem at TMC 4, it is an issue in many other clinical areas at DDEAMC. The time made available could be used to increase appointment access, thus allowing the facility to schedule more patients per day. Not only could this change of practice help meet demand, but the increased workload and productivity may be translated into increased revenue and allow for justification of staffing levels, since the current methodologies for both incorporate the amount of facility workload. For the past couple years, the organization has received funding from the Southeast Regional Medical Command (SERMC) partially based on workload. However, for fiscal year 2007 and beyond, the Army Medical Command is planning to fund all MTFs increasingly based on productivity using the SERMC funding model. Therefore, it is in the best interest of the organization to optimize existing human resources for the purpose of increasing productivity in order to better align the organization with the current funding methodology.

In addition to increasing access, the extra time could be spent on training as well. Medical training is one the three pillars of the DDEAMC mission. The other two pillars are healthcare delivery and military readiness. The frequent deployments and taskings associated with today's fast-paced military operational tempo have made it increasingly difficult for DDEAMC staff physicians to meet the demands of direct patient care in addition to meeting the teaching requirements for the Graduate Medical Education

(GME) process. Currently, there are five physician intern and residency training programs at DDEAMC in addition to six other graduate-level professional programs.

Statement of the Problem or Question

The practice of using telephone consults is a valuable service. Telephone consult with providers has been shown to increase access and patient satisfaction and thus does not seem at risk of becoming obsolete anytime soon. Despite the value, many providers across the organization seem dissatisfied with the current method of managing patient generated telephone consults due to the time it consumes. TMC 4 had the necessary resources to implement the change of practice using existing LPNs to assist providers with telephone consultation management. The primary research question to be answered by this project was to determine how much, if any, provider time is freed up by the use of LPNs to assist them in telephone consultation management. The secondary research questions were to determine how much impact, if any, the change of business practice had on provider satisfaction levels, both overall job satisfaction and satisfaction with the telephone consult process. Staff satisfaction is always relevant to recruitment and retention, but is especially so in times of supply shortages. The final research question asked what effect did LPNs assisting with telephone consults have on the average length of time to complete a telephone consult.

Literature Review

Telephone consults can be a useful method of delivering healthcare and can sometimes prevent the need for the patient to come to the facility for an appointment. Telephone consults can be used to discuss test results, facilitate health promotional interventions, deliver advice, triage, and assist in routine management of chronic

disorders. Jiwa and Mathers (2003) found that telephone triage for “same day” appointments can reduce demand for face to face appointments by up to 39%. A similar study done in a military medical facility found consistent results. The effects of 24-hour telephone access to a medical officer for a military active duty population demonstrated that 38% of callers were given advice for home care, while 50% of the callers were seen by the medical officer for an after-hours clinic visit (Flynn, 1998). An additional benefit to telephone consults may be decreased utilization of emergency departments (ED), which are often overcrowded. Delichatsios, Callahan, and Charlson (as cited in Car and Sheikh, 2003) found that one-third of people who successfully consulted a provider via telephone would have otherwise gone to an ED. Public attitudes toward telephone consultation with a provider are consistently favorable with high levels of satisfaction. Benefits include decreased waiting, reduced travel time and costs, and possible increased frequency of contact (Car & Sheikh, 2003).

Also in support of telephone consults is Great Britain’s head of the National Primary Care Development Team, John Oldham. Oldham (2002) states that one of the team’s objectives is improving access and a key element is shaping demand, which telephone consultations can help accomplish. The Delphi Beneficiary Council for TRICARE, the Military Health System’s managed care organization, conducted a nationwide telephone survey asking beneficiaries about a variety of telephone support questions. One survey item asked respondents which source they used to obtain general medical treatment advice over the past 12 months. The most frequently cited answer (20%) other than “None of the Above” was “Local clinic via phone call or message call-back service, seeking advice from a physician, nurse, or other healthcare provider”. Web

sources were the next most common source at 17%. When asked about the quality of advice given by a local clinic provider via phone call, 95% stated yes, they were satisfied as compared to an 88% satisfaction level with web sources and a 90% satisfaction with a phone call to the TRICARE advice line. Finally, when asked about the outcome of the medical advice given, 28% stated their concerns were addressed via the phone call and did not seek medical care. 51% made a routine appointment, 5% sought immediate medical attention, and 15% did not respond to the question (Tricare, 2004).

Despite the benefits listed above, a case study evaluating physician office productivity for a hospital system physician-owned primary care group documented specific problems with telephone consults. The author states that many patient complaints were received from several practices regarding their inability to get through on the telephone. Also noted were complaints of not getting through to a person and the lack of response or too lengthy of response time by the physician and nursing staff to return their phone calls. The biggest problems from the office perspective were the excessive volume of calls per day and the inability of doctors and nurses to follow-up with patient calls. The author described a vicious cycle in which delayed responses to medical questions, test result requests, prescription refills, and referral assistance led to even more phone calls. The author, writing on behalf of a consultant group called to assist with the problems, noted telephone staff at some practices appeared to take excessive time in answering each call, thus adding to the backlog. After analyzing the complete process, the consultants made the following recommendations: 1) streamline the processing of referrals and prescription refills to one day to eliminate repetitive calls 2) develop a script for persons answering the phones to avoid wasted time 3) develop a training program to

coach telephone staff to expedite calls 4) introduce a better process for patient telephone follow-up messages 5) create Internet access for patients to request prescriptions, referrals, and scheduling requests and 6) add telephone lines where needed (McCarthy, 2002).

In addition to the above cited potential problems, healthcare delivered via telephone consults is somewhat controversial among physicians. Providing healthcare via the telephone increases the potential risk of missing a serious condition or misdiagnosing a condition by the inability to perform a physical exam. Other concerns include not being able to use touch as a communication tool and the relative anonymity (Car and Sheikh, 2003). Furthermore, while clinicians recognize that some telephone consults eliminate the need for an appointment, there is concern that a large number of patients who call will end up coming in for an appointment anyway. Therefore, they consume more time per patient than if they would have just originally been scheduled an appointment in the first place. McKinstry (2002) performed a small randomized control study with his colleagues and found that approximately half the patients who called could be managed by telephone alone. In that study, all contacts were timed, which showed only small gains in total time saved by providing telephone consults. There was also a concern that the process of telephone consulting significantly decreases opportunistic health promotion such as monitoring of blood pressure (McKinstry, 2002).

To fuel the controversy of telephone consults, some physicians may hesitate to offer telephone consultation services due to difficulty with reimbursement and liability. There is a disincentive to give advice over the phone when the patient can come in for a visit, which is much more likely to be reimbursable. The American College of Physicians

(2003) in a public policy paper finds the current reimbursement system antiquated and calls for government and private insurers alike to recognize the value of telephone care, especially since providers place themselves at full legal risk with the dispensing of care via the telephone. The paper emphasized that physicians are spending a considerable portion of their workday including after-office hours providing uncompensated care. Also included in the paper are guidelines for reimbursement of telephone care. The American Medical Association Current Procedural Technology case management telephone service code (999361-999373) should be selected according to the level of service rendered with the charge based on time, intensity, and complexity of the call (American College of Physicians, 2003).

In the American Medical Association's text *cpt 2006, Current Procedural Terminology 2006*, The Evaluation and Management (E&M) Codes for telephone consults fall under the category of Case Management Services, subcategory Telephone Calls. Physician case management is described as the process in which a physician is responsible for direct care of a patient, and for coordinating and controlling access to health services or for initiating and/or supervising other health care services needed by the patient. Under the category Telephone Calls, the code 99371 describes what qualifies as a reimbursable telephone call. It states the following:

Telephone call by a physician to patient or for consultation or medical management or for coordinating medical management with other health care professionals (eg, nurses, therapists, social workers, nutritionists, physicians, pharmacists); simple or brief (eg, to report on tests and/or laboratory results, to

clarify or alter previous instructions, to integrate new information from other health professionals into the medical treatment plan, or to adjust therapy) (p.30)

The next E&M code, 99372, for telephone consults describes a more complex phone call.

The description for this type of phone call reads as follows:

Intermediate (eg, to provide advice to an established patient on a new problem, to initiate therapy that can be handled by telephone, to discuss test results in detail, to coordinate medical management of a new problem in an established patient, to discuss and evaluate new information and details, or to initiate new plan of care) (p.30)

The final and most intensive E&M code for reimbursable physician phone call describes the call as the following:

Complex or lengthy (eg, lengthy counseling session with anxious or distraught patient, detailed or prolonged discussion with family members regarding seriously ill patient, lengthy communication necessary to coordinate complex services of several different health professionals working on different aspects of the total patient care plan) (p. 30)

As for the military use of telephone consults, the topic was raised at the March 2005 Uniform Biostatistical Utility quarterly meeting, where it was decided that Allied Health providers may use telephone consults as a normal component of clinical work (PASBA, 2005). The guidance for military use of telephone consults has been clarified and published in the April 2005 Military Health System (MHS) Coding Guidelines.

It reads as follows:

3.6 Telephone Calls 99371-99373

Telephone calls reflect an interaction between a privileged provider and a patient. The documentation must contain evidence of medical decision making by a licensed provider who is directly responsible for the management of care for the patient. Telephone calls will not be coded for provider-provider coordination, leaving messages on answering machines or speaking with a Commander regarding an Active Duty member. Administrative services (e.g. scheduling, billing and communication of non-clinical information) should not be coded. These encounters are reviewed for appropriate clinical documentation by Service audits. Privileged providers, including residents beyond post graduate year one (PGY1), may choose from the three E&M codes for telephone calls (i.e., 99371, 99372, and 99373.). (p. 8)

The simple RVU values currently assigned to the telephone consult codes by the Military Health System are as follows: 99371 = .23, 99372 = .59, 99373 = 1.17 (PASBA, 2006).

Regarding the use of LPNs to assist with telephone consults, their assistance is limited by their scope of practice determined by state law and facility policy. In a study commissioned by the U.S. Department of Health and Human Services (2004) which evaluated the supply, demand, and utilization of LPNs, the researchers acknowledged that little research is available on the utilization of LPNs. Among the many points of consideration, the researchers recommended that employers examine how the work of licensed nurses could be allocated safely and allow LPNs to practice their range of skills.

The scope of practice for LPNs in this project is limited to that determined by state law as well as the medical staff and leadership at DDEAMC. In the drafted TMC 4 Standard Operating Procedure (SOP) *Nursing Support for Answering Telephone Consults*, the nursing staff can assist providers with responding to telephone consults that meet the following criteria: (1) notify the patient of medication refill, (2) notify the patient that the provider request them to schedule an appointment and transfer them to be booked, (3) notify the patient of referral/consult sent to Tricare, (4) notify the patient to report to the laboratory or radiology, and (5) if the patient asks additional questions that the nurse cannot answer, a new telephone consult is generated. The nursing staff cannot perform the following: (1) provide laboratory results, abnormal or normal; (2) inform the patient of a new medication or a change to their current medication regime; or (3) inform the patient of no clinical finding. Under the draft SOP, telephone consults remain the provider's responsibility and all telephone consults must be completed within three working days. Additionally, certified nursing assistants are not authorized under the draft SOP to assist providers in answering telephone consults.

With this new SOP and process change, the TMC leadership anticipated an increase in employee job satisfaction, particularly that of the providers. According to Stephen P. Robbins (2003), the term job satisfaction can often be used interchangeably with employee attitude since it refers to an individual's general attitude toward his or her job. Job satisfaction is usually measured one of two ways: 1. a single global rating 2. a summation score. The single global rating score asks an individual one question, such as "All things considered, how satisfied are you with your job?" and the person responds using a bipolar adjective rating scale. The summation score is a more sophisticated

approach that measures an individual's response to a variety of key job facets such as nature of the work, supervision, present pay, promotion opportunities, relations with co-workers, and more. Comparisons of the global rating score and summation approach indicate the single global question is just as effective as the summation approach. Perhaps this is due to the fact that the construct "job satisfaction" is so inherently broad that the single question captures its essence (Robbins, 2003).

Job satisfaction is often used as a dependent variable with the belief that satisfied employees are more productive than dissatisfied employees, though there is much evidence which questions that assumed causal relationship. However, researchers with strong humanistic values argue that satisfaction is a legitimate objective, as it is negatively related to absenteeism and turnover (Robbins, 2003). Attitude surveys are also important to managers because employee behaviors are based on perception, not necessarily reality. Robbins (2003) gives the example that an employee who quits a job because of the perception of being underpaid, despite objective data to show that the person is not underpaid, is just as much gone as if the person had actually been underpaid. In healthcare, as with any service organization, management must be keen to employee satisfaction, since it is positively correlated with customer satisfaction. Satisfied employees are generally friendly and responsive, which are qualities that build customer satisfaction and loyalty. Another aspect affected by employee satisfaction that, in particular, can positively influence the quality of healthcare is organizational citizenship behavior (OCB). Satisfied employees might be more prone to going above and beyond the call of duty because they want to reciprocate their own positive experiences (Robbins, 2003).

Most of the literature on provider satisfaction focuses on either job satisfaction or career satisfaction. Stoddard, Hargraves, Reed, and Vratil (2001) cite physician satisfaction as being positively correlated with quality of health care measures, such as prescribing patterns, patient compliance, and patient satisfaction as well being used as a quality indicator for HMO rankings. Physician career satisfaction studies often focus on clinical autonomy, income effects, reduced autonomy, and financial incentives. Stoddard et al. conducted a study to determine the degree to which professional autonomy, compensation, and managed care are determinants of career satisfactions among U.S. primary care and specialty physicians. In their study, the strongest determinants of career satisfaction for physicians included being able to obtain medically necessary services for patients, have adequate time to spend with patients, have the freedom to make clinical decisions, maintain ongoing relationships with patients, work in an environment where it is possible to provide high-quality care, make clinical decisions without the potential of negatively affecting income, and maintain adequate communication with other physicians. Overall, professional autonomy had the most consistent and significant effects on physician satisfaction (Stoddard et al., 2001).

In another physician satisfaction study, McMurray, Williams, Schwartz, Douglas, Van Kirk, Konrad, Gerrity, Bigby, and Linzer (1997) developed a current and comprehensive model of physician satisfaction. Their study incorporated the 1988 Large Group Practice Physician Satisfaction study, which used open ended questions to ask about satisfaction and dissatisfaction and involved 8,000 physicians (half were primary care physicians). McMurray et al. (1997) analyzed a sample of those responses and then compared the results with current small focus groups, such as women physicians and

minority physicians, to elicit contemporary data on concerns such as productivity, cost-containment, and the impact of variation in case mix. The analysis on the Large Group Practice sample responses found that physicians cited day-to-day practice issues, relationships with patients and colleagues, and positive administrative issues as frequent sources of satisfaction. Conversely, physicians were dissatisfied with stress-related aspects of day-to-day practice, such as workload and patient volume. Overall, McMurray et al. (1997) found that relationships and day-to-day practice issues are still key components of physician satisfaction, while different components may be more or less relevant to specific subgroups.

Another study on physician satisfaction literature confirmed these sources of satisfaction and dissatisfaction. It identified seven domains in the literature describing physician satisfaction with jobs or careers: (1) autonomy, (2) relationships with colleagues, (3) relationships with staff, (4) relationships with patients, (5) pay, (6) resources, and (7) status. Text examination from focus groups further revealed the salience of two specific factors: day-to-day administration and a “hassle factor” from economic and regulatory forces external to the practice organization (Konrad, Williams, Linzer, McMurray, Pathman, Gerrity, Schwartz, Scheckler, Van Kirk, Rhodes, & Douglas, 1999).

While the focus of this study was on provider satisfaction, nursing satisfaction must be considered since nursing is the integral component of the process change. According to Smith and Hood (2005), frequently cited reasons for staff turnover include stress and unfulfilled expectations concerning scheduling, pay, and supervision. Smith and Hood focused their study on other key factors such as management style, the

organization's emphasis on quality, and job characteristics. Their findings indicated that practice setting is a critical consideration for developing satisfaction with nursing practice, and ultimately, for improving organizational commitment, lessening job tension, and decreasing turnover. They recommend organizations emphasize quality through continuous process improvement, encourage creative freedom, balance authority with responsibility, and provide fair, accurate performance assessments (Smith & Hood, 2005).

Purpose

The purpose of this graduate management project was to examine a pilot change of business practice using LPNs to assist providers in telephone consultation at TMC 4. The project quantified the effects of the independent variable, using LPNs to assist with telephone consults, on provider time available, provider satisfaction, and timeliness of telephone consultation management.

Methods and Procedures

Variables

The first dependent variable was the average time per day spent by individual providers on telephone consults measured in hours per day. The second dependent variable was the average overall provider satisfaction level on a seven point bipolar adjective rating scale. The third dependent variable was the average provider satisfaction level specific to the telephone consult process also utilizing a seven point bipolar adjective rating scale. The fourth and final dependent variable tested was the length of time to close or complete the telephone consult measured in hours. The final dependent variable was considered a measure of efficiency of care as well as quality of care with

regard to patient safety, with hope that providers could return the patient calls in a more timely manner with assistance from the LPNs, especially when a patient calls for advice related to symptoms.

Hypotheses

Null Hypothesis: There is no difference in any of the dependent variables before and after the implementation of LPNs to assist providers in telephone consultation management.

Alternate Hypotheses:

Ha1: Using LPNs to assist providers in telephone consultation management will significantly free up provider time.

Ha2: Using LPNs to assist providers in telephone consultation management will significantly increase provider overall job satisfaction levels.

Ha3: Using LPNs to assist providers in telephone consultation management will significantly increase provider satisfaction levels specifically with the telephone consult process.

Ha4: Using LPNs to assist providers in telephone consultation management will significantly decrease the average length of time to complete telephone consults.

Statistics

The project utilized a repeated measures design comparing the before and after effects of using LPNs to assist in telephone consultation management. The significance criterion was set at $\alpha = .05$. The study focused on the use of a provider survey administered just prior to the change of practice implementation and again three months after the implementation as well as data collected from AHLTA during that same period

of time. These time periods are referred to in the study as pre- and post-implementation or pre- and post-intervention. Descriptive statistics to compute the mean and standard deviation of the dependent variables pre- and post-implementation were used. Then, an analysis utilizing inferential statistics was completed to determine if any changes in the mean scores were statistically significant.

The mean scores on survey items were compared using dependent samples *t*-test, also known as the paired *t*-test or correlated groups *t*-test. This test is appropriate when the means of a group are computed before and after an intervention and when the two groups are related or the same. For this study, the same group of providers was surveyed pre- and post-intervention. The nature and magnitude of the *t* statistical result was determined by computing the point biserial correlation coefficient (r_{pb}), which is appropriate when the independent variable is dichotomous and the dependent variable is measured on an interval or ratio scale (Polit, 1996). For this study, the intervention is the independent variable. It is dichotomous and was coded as 1 = pre-intervention and 2 = post-intervention. For further coding information, please refer to Appendix D.

The fourth and final dependent variable, the average length of time to close or complete the telephone consult comparison test utilized the independent samples *t*-test, which is used to compare the means, pre- and post-intervention, when the two samples or groups are not related. In this case, the first sample of patient generated telephone consults is not related to the post-intervention sample. As with the other dependent variables, the nature and magnitude of the *t* statistical result will be determined by computing the point biserial correlation coefficient (r_{pb}), which is appropriate for both dependent and independent samples (Polit, 1996).

The study was limited to the staff and the beneficiaries at TMC 4 on Fort Gordon, Georgia. All seven TMC 4 providers were included in the study. Additionally, the business practice change of using LPNs to assist with telephone consults included all 3 LPNs employed at TMC 4. For this project, the researcher was not involved in determining the scope of assistance the LPNs could provide in telephone consultation management. That determination was made by appropriate organizational leaders and medical staff. The researcher included in the literature review a detailed description of the LPN scope of responsibilities in the management of telephone consultation.

A survey instrument (Appendix A) was developed to collect information about provider time spent on telephone consults, satisfaction levels, and attitudes toward the business practice change. Satisfaction levels and attitudes were obtained utilizing a seven point bipolar adjective rating scales versus five point scales to increase sensitivity of the response measurements given the small sample size of providers. In addition, a similar survey instrument (Appendix B) was developed to obtain attitudes from the nursing staff involved in the project. However, inferential statistics were not conducted on the nurse surveys due to the inadequate sample size. To obtain data for the average daily time spent on telephone consults, the survey instrument utilized a “fill in the blank” question asking for the average daily hours and minutes spent on telephone consults, which was then converted into an hourly measure with two decimal places.

Validity and Reliability

Validity of the survey item addressing overall job satisfaction was established by literature. As mentioned above in the literature review section, organizational behaviorist Robbins (2003) notes in his textbook that literature comparisons of the global rating score

and summation approach indicate that the single global question is just as effective as the summation approach, perhaps since the construct “job satisfaction” is so inherently broad that the single question captures its essence. Just as job satisfaction is measured by the summation approach through examining specific factors that might contribute to job satisfaction, the survey item addressing satisfaction, specifically with the telephone consult process, was an attempt to obtain measures of attitude particular to that aspect of provider duties. The researcher acknowledges that the size of the groups are small, thus there is an increase chance for a Type II error, which occurs when a false null hypotheses is incorrectly accepted (Polit, 1996). The researcher attempted to minimize the likelihood of a Type II error by including 100% of the clinic provider staff into the study.

Data for the timeliness of telephone consult completion was obtained from AHLTA by the researcher reviewing individually each telephone consult during the collection period. Currently, there are no programmed reports which contain both the start time and disposition time of the telephone consults, though the data is available by looking at the individual telephone consult. To establish validity with the AHLTA data, all patient generated telephone consults during the pre- and post-implementation data collection periods were gathered for all of the TMC 4 providers in an attempt to make the samples as representative as possible. Additionally, a four week period for pre- and post-implementation AHLTA data collection was selected rather than a shorter time frame, such as a week, to increase sample size and validity.

Since only AHLTA data for telephone consults was used for the study, it was further examined in order to establish reliability by determining what percentage of telephone consults were contained in AHLTA. The provider has the option of entering a

telephone consult into the first version of the DoD electronic medical record, Composite Health Care System (CHCS) legacy, which does not contain the essence of the phone conversation, nor the completion time. All AHLTA telephone consults are transferred into the CHCS legacy system, but not vice versa. A simple comparison was made to determine how many telephone consults were in CHCS legacy that were not in AHLTA. All telephone consults for TMC 4, both patient and provider generated, were compared. During the pre-implementation data collection phase, 167 of 174 (95.98%) telephone consults were in AHLTA. During the post-implementation data collection phase, 194 of 196 (98.98%) telephone consults were in AHLTA. When a provider needs to generate a telephone consult, it is quicker to generate one in CHCS legacy than in AHLTA because there is less information recorded. Thus, the few telephone consults that were in CHCS legacy and not in AHLTA are thought to be provider generated (lab result notification) and should not affect the patient-initiated telephone consult samples used in this study.

An additional attempt to strengthen the validity of both the survey items and the AHLTA data collection methods was made through the project design, which included a waiting period to allow the staff to fully adjust to the business process change. Therefore, the effects of any change may have appeared and matured, providing a more accurate assessment of the delta. Finally, in an effort to reduce any “Hawthorne effect”, where the staff is aware of the study’s desired outcomes and works to achieve the desired end state, the providers were not made aware of the intention of the study to determine the effect on number of hours to complete a telephone consultation. However, the OIC was notified of this element of the study just prior to the post-implementation survey, which was believed not to affect the study’s outcome for this dependent variable.

Ethical Considerations

For this study, the ethical rights of the participants were considered. No individual patient identifiers were included in the study. Regarding staff participation, a cover sheet (Appendix C) was used in accordance with the verbal recommendation made by DDEAMC's Department of Clinical Investigation staff. It informed the survey participants about the purpose of the survey and the fact that completion of the survey meant they were giving their implied consent to participate in the project. The cover sheet was used for both the pre-implementation survey administration as well as the post-implementation survey administration. Names were asked on the provider survey and not the nurse survey in order to match provider responses for time spent on telephone consults with factors such as empanelment size and volume of telephone consults. The cover sheet also addressed the fact that names were for the researcher's use only and individual responses would not be made public. The survey and cover letter were included in the project proposal and the project was approved without comment by an expedited facility Institutional Review Board (IRB) process.

Procedures

The first surveys were administered on November 14, 2005. The researcher physically visited the TMC to administer and collect the surveys the same day. This short survey took less than five minutes per person to complete. One nurse and one provider were absent. The missing provider survey was administered and collected the same week when the researcher made a return visit to the clinic. The nurse, however, was still on leave and a blank survey was left for that person. A response was not received. The collected surveys during this time comprise the pre-implementation survey data.

To collect the pre-implementation data from AHLTA for timeliness of telephone consult response, the researcher collected data from all patient generated telephone consults for TMC 4 providers during the survey week and the previous three weeks, for a total of four weeks –October 23 through November 19, 2005.

The clinic did not actually start the process of using LPNs to assist with telephone consults until the week starting on November 28, 2005. According to the OIC, the process of change proceeded slowly, but gradually was implemented.

The post-implementation surveys were administered again in the same manner to the providers and nurses on March 2, 2006, the 14th week of implementation. One provider was absent and that survey was administered and collected the following week. In addition, the same nurse not available for the pre-implementation survey was absent for the post-implementation survey administration on March 2, 2006.

The post-implementation data from AHLTA was collected in a similar manner as the pre-implementation data. All patient generated telephone consult data were collected for TMC 4 providers during the survey week and the previous three weeks, for a total of four weeks – February 5, 2006 through March 4, 2006, representing the 11th through the 14th week of implementation.

Once all raw data was collected, it was coded (see Appendix D) and entered into a spreadsheet. After being re-checked for accuracy, the data was then entered into Statistical Package for the Social Sciences (SPSS) Version 11.0 to facilitate statistical analysis. Separate data files were constructed for the surveys and the AHLTA data files.

Results

Descriptive Statistics

Descriptive statistics for the survey items are contained in Table 1. Regarding overall job satisfaction, there was no change from pre- to post-implementation due to what appears to be a “ceiling effect” on the seven point bipolar adjective rating scale with seven being *very satisfied*. While the net effect was no difference, two providers reported a one point increase in satisfaction, two providers reported a one point decrease in satisfaction, and three providers reported no change in satisfaction. All responses to this question were either 6 or 7 with one 5 response in each sample.

Table 1

Provider Survey Responses at TMC 4

Item	Pre-Implementation		Post-Implementation	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Overall job satisfaction ^a	6.14	.69	6.14	.69
Satisfaction with T-Con process ^a	4.43	1.62	5.29	1.25
Attitude toward process change ^b	6.57	.79	6.71	.49
Daily hours spent on T-Cons	.71	.30	.51	.18

Note. N = 7; T-Con = telephone consult; ^a This item scored on 7 point bipolar adjective rating scale where 7 = very satisfied; ^b This item scored on 7 point Likert scale where 7 = strongly agree.

One of the increases was probably due to appointment template scheduling since one of the recently hired employees commented on the pre-implementation survey that the person desired a full schedule, otherwise they would rate overall job satisfaction a

seven. When the post-implementation survey was administered, the scores from the first survey were neither discussed nor shown to the providers to minimize response bias. The intent was for them to answer the questions in relation to how they were feeling at the present time. The average length of employment at this clinic was 13.14 months when the project started with a range from 2 to 38 months.

Similar to the overall job satisfaction survey item, there appears to be a ceiling effect in the responses to survey question five, which used a seven point Likert scale to ask providers about their attitude toward the process change of using LPNs to assist with telephone consults. Specifically, the survey item stated, “using licensed practical nurses to assist with provider consults management is a good idea”, when it should have specified provider *telephone* consults management. Since the previous question addressed telephone consults and the providers were aware that this project would examine the effects of using LPNs to assist with telephone consults, the providers probably interpreted the question as it should have been worded. The high scores in response to this survey item are consistent with the anecdotal comments made by providers, which underscores their dissatisfaction with the current process of completing telephone consults without assistance. Any assistance with telephone consults is most likely viewed as positive. Without another question or survey item to address LPN assistance versus another type of assistance, such as RN assistance, it is not possible to determine whether the providers thought an RN would provide better assistance due to the limitation of the survey instrument. However, there was an overall increase in satisfaction with the telephone consult process after the implementation of LPN assistance, despite its very limited scope. Furthermore, there was a noted decrease in average number of daily hours

providers reported spending on telephone consults after the implementation of LPNs to assist in telephone consults. Though the pre- and post-implementation provider time spent on telephone consults was low overall, Table 2 displays further information regarding provider telephone consult demographics. The table also illustrates the relation of demographics to the volume of telephone consult workload at TMC 4.

The results of the nurse survey showed high levels of overall job satisfaction before and after the process change, as well as a favorable attitude toward the use of LPNs to assist with telephone consults as evidenced by means of 6 or higher, $n = 2$. Additionally, the nurse who did not complete a survey displayed a positive attitude toward the change in a conversation with the researcher.

Next, the actual telephone consults were further examined to determine other descriptive factors, such as the most common reasons why patients called TMC 4 providers (see Table 3). The reasons appear consistent in both samples and any variation is thought to be either random or a seasonal fluctuation. Also, since an actual conversation must take place between a provider and a patient in order to code it for Relative Value Units (RVUs), the frequency with which a provider spoke to the patient was examined. However, it was difficult at times to distinguish from the chart documentation, whether the patient was contacted over the phone or not. For example, occasionally a telephone consult was generated that appeared to have been resolved when the patient came in for an appointment a day or so later. Therefore, the only definitive descriptive statistic determined for patient contact was the frequency with which the telephone consult was dealt with by a message left by the provider, which definitely would not be coded for RVUs and represents a certain amount of workload that would

not be reimbursable. While DDEAMC currently does not bill for any telephone consults, the RVUs produced are relevant for workload calculations. The total number of telephone consults, whether patient or provider generated, that were handled by leaving a message was 47 of 167 telephone consults (28.14 %), which is consistent with the post-implementation amount, 55 of 194 telephone consults (28.35 %). The frequency of positive phone contact by the provider with the patient, subject to the researcher's interpretation of the documentation, was 56.29% of the time pre-implementation and 58.25% of the time post-implementation. The remainder of the telephone consults documented that the provider was unable to make contact with the patient or there was insufficient documentation to determine whether telephone contact was made with the patient.

The final hypotheses examines the length of time in hours it took to complete a telephone consult starting from when the telephone consult was entered into AHLTA until its time of disposition, which is the called the completion time in AHLTA. While the before and after sample sizes were similar, the descriptive statistics revealed a considerable standard deviation for both samples (see Table 4). Therefore, in order to obtain more representative samples, all observations in excess of two standard deviations greater than the mean were removed from both samples. These observations often represented telephone consults where the provider may have attempted multiple phone calls over several days to contact the patient before closing out or dispositioning the telephone consult in AHLTA. A total of six outliers from the pre-implementation sample and eight outliers from the post-implementation sample were removed. The descriptive statistics for the samples with outliers removed are also contained in Table 4.

Table 2

Provider Demographics at TMC 4

Months in clinic	Pre-Implementation				Post-Implementation			
	Panel Size ^a	Patient T-Con	Total T-Con	Daily Hours	Panel Size ^b	Patient T-Con	Total T-Con	Daily Hours
2	0	5	18	.25	730	14	36	.40
2	130	9	13	.50	256	2	10	.50
4	459	12	13	1.00	733	17	20	.75
6	802	11	22	.75	727	13	24	.33
16	1314	27	45	.50	1258	26	48	.33
24	847	45	47	1.00	953	49	50	.75
38	713	14	16	1.00	613	7	8	.50
	1029*				15*			
Total	5294	123	174		5285	128	196	

Note. ^a As of November 8, 2005; ^b As of March 5, 2006; * Number of additional patients assigned to TMC 4 pending Primary Care Manager reassignment; Pre-Implementation duration from 23 October 2005 through November 19 2005; Post-Implementation duration from 05 February 2006 through 04 March 2006; Months in Clinic = the length of time employed in TMC 4 at pre-implementation; Pt. T-Con = the number of patient generated telephone consults over the 4 week sample time; Total T-Con = the total number of patient generated plus physician generated telephone consults over the 4 week sample time; Daily Hours = the number of reported average daily hours spent on telephone consults.

Table 3

Reasons for Patient Generated Telephone Consults at TMC 4

Reason	Pre-Implementation		Post-Implementation	
	Frequency	Percent	Frequency	Percent
Obtain test results	44	35.8	39	30.5
Request a medication refill	32	26.0	37	28.9
Symptoms/Advice	14	11.4	19	14.8
Consult/Referral Assistance	12	9.8	11	8.6
Profile Issues	8	6.5	4	3.1
Request a diagnostic test	4	3.3	6	4.7
Other	8	6.5	12	9.4
Total	123	100.0	128	100.0

Note. Pre-Implementation time is 4 weeks duration from 23 October 2005 through November 19 2005;

Post-Implementation time is 4 weeks duration from 05 February 2006 through 04 March 2006.

Table 4

Patient Generated Telephone Consult Completion Times

	Pre-Implementation			Post-Implementation		
	n	<i>M</i>	<i>SD</i>	n	<i>M</i>	<i>SD</i>
All Observations	123	34.67	53.05	128	20.28	33.33
Outliers removed*	117	25.45	32.79	120	13.04	16.09

Note. * All observations greater than the mean plus 2 standard deviations were removed.

Inferential Statistics

Inferential statistics were computed for each of the alternative hypotheses. Provider survey item comparisons were tested for statistical significance with the dependent samples t-test. To test the hypotheses on timeliness of completing the telephone consults, the independent samples t-test was used. Then, point biserial correlations were computed to test the strength and magnitude of the relationships for all hypotheses using the following formula: $r_{pb} = \sqrt{t^2 \div (t^2 + df)}$ (Polit, 1996).

The inferential statistical results are contained in Table 5. Using the selected alpha level of .05, the survey items two-tailed critical value for $t(6) = 2.447$, $p < .05$ (or 95% confidence level). In order for the studied relationships to be statistically significant, the absolute value for t must be greater than the critical value. The study failed to reject the null hypothesis for all survey items. There was no statistically significant difference in overall job satisfaction or satisfaction with the telephone consult process when comparing

provider survey responses before and after the implementation of using LPNs to assist providers with telephone consults.

Table 5

Provider Survey Inferential Statistics

Survey Items	<i>t</i>	<i>p</i>	<i>r</i> _{pb}
Overall satisfaction	0.00	1.00	.00
T-con process satisfaction	1.28	.25	.46
Average daily hours	2.41	.05	.70

Note. N = 7 for both pre-implementation and post-implementation samples

However, the reported average daily hours spent on telephone consults, as responded on the provider survey, was marginally significant at $p = .05$, indicating the providers spent less time on the phone after the intervention. This dependent variable also had the strongest relationship with the process change as evidenced by the point biserial correlation coefficient result of .70, indicating that the implementation of LPNs to assist with telephone consults accounts for 49% of the variation in the daily time spent on telephone consults, when comparing the average time spent on telephone consults pre- and post-implementation responses.

Inferential statistics done on the fourth and final dependent variable, length of time in hours to complete a telephone consult did reveal a statistically significant difference when pre- and post-implementation samples were compared. An independent samples t-test was computed using SPSS. The Levene's test for equality of variances indicated statistical significance. Therefore, the t-test result not assuming equal variances

was utilized. The test result $t(167.84) = 3.68$ exceeded the two-tailed critical value for $t(167.84) = 2.57, p < .01$ (or 99 % confidence level), which is even more significant than the selected alpha level of .05. To determine the magnitude of the relationship between these two variables, a point biserial correlation coefficient was computed. While the t-test was statistically significant, the correlation result was $r_{pb} = .27$, indicating a moderately low relationship between the implementation of LPNs assisting providers with telephone consults and the average length of time to complete a telephone consult. The absolute value of r_{pb} can range from 0, indicating no relationship, to 1.00, indicating a perfect relationship (Polit, 1996).

Discussion

This study failed to reject the null hypotheses related to provider overall job satisfaction and satisfaction with the telephone consult process indicating there was no statistically significant difference in either dependent variable after the implementation of LPNs to assist with telephone consults. As mentioned earlier, overall job satisfaction may have been affected by a perceived ceiling effect where the variable was near maximum before the implementation of the project.

While there clearly was no difference in the mean for overall job satisfaction, there was a slight increase in the mean for provider satisfaction level with the telephone consult process. Polit (1996) suggest that a power analysis be done to minimize the chance of committing a Type I error, which occurs when the researcher erroneously accepts the null hypothesis. A desired power analysis result is generally .80 or greater. A power analysis completed for this dependent variable yielded a very low result of .07, indicating a weak relationship. For this study, the null is assumed to be correctly

accepted. However, anecdotal verbal comments from some providers at TMC 4 indicate an increased satisfaction with the telephone consult process after the implementation of LPN assistance. The discrepancy may be related to the LPN scope of practice as well as the TMC not having a consistent daily process, in which the nurses were expected to help providers with telephone consults. One provider noted it was a good idea, but the narrow scope of assistance the LPN can provide and the time that it takes to find someone made success of the business practice change limited. That provider stated that since each provider does not have an assigned nurse to work with on a daily basis, it often takes just as long to find a nurse to assist with a telephone consult, as it does to pick up the phone and make the call themselves. The only way to definitively conclude whether the process change with LPNs can increase this dimension of job satisfaction is to repeat the study in a much larger sample size.

Of all the survey items, the only dependent variable which might be significantly correlated with the implementation of LPNs assisting providers with telephone consults is the average daily number of hours spent on telephone consults. One of the primary goals of the process change was to free up more time for providers in order to optimize provider human resources. However, this relationship is strongly cautioned as the power analysis for the survey item average daily hours spent on telephone consults was quite low at .13, which represents the odds of confirming that there is an actual difference between the two samples. Again, a desired power analysis result is .80 or greater (Polit, 1996). In addition, the average daily hours spent on telephone consults was gathered by asking a single question on a survey, which may lack appropriate criterion-related validity. An attempt to establish criterion-related validity for this item was unsuccessful.

The project design was to have the providers keep a log of the time spent on the phone during the same week that the survey was administered. Insufficient data was collected to correlate log times to the survey times. Therefore, the researcher is unable to control for possible response bias related to accurate recall.

The only test which definitively rejected the null hypothesis was the inferential statistics done on the timeliness of completing telephone consults. A power analysis was done for both the pre-implementation sample as well as the post-implementation sample since the two sample sizes differed slightly. The power result for the pre-implementation sample with outliers removed ($n = 117$) was .85. The post-implementation sample power analysis was similarly robust at .88 ($n = 120$). In both cases, the sample size was sufficiently large to minimize sampling error. While these results are promising, the study may not have been able to completely overcome a Hawthorne effect bias related to the providers knowing that a study examining telephone consults was being done in their work area, specifically to test what effect the LPNs had while assisting the providers. While the details of all the variables were not explicitly discussed with providers, it is possible that providers gave more timely attention to the completion of telephone consults after the implementation of the study.

Conversely, the results may have been even stronger if the difficulty with contacting the patient could be improved or resolved. One of the most frequent frustrations cited specifically by TMC 4 providers was the inaccuracies of the patient demographics contained in the electronic medical record, especially in regard to military service unit information and correct contact information. Often, the service member would have changed work areas or lived in a dormitory style building without a good

contact number. This problem was further exacerbated by the process of collecting the patient messages. Since the telephone consults are often taken from a digitally recorded message, the clerk entering the information was limited to the information left on the message. Therefore, it is imperative that any clerks checking a patient into any clinic verify the patient's demographic information in order to keep contact information as accurate as possible for future use.

Conclusion

This study provides support for the supposition that the length of time it takes for providers to respond to telephone consult request is reduced with the implementation of nursing assistance. More timely responses to patient telephone calls can be interpreted as better quality of care as well as safer and more efficient care. It is expected that faster response times to patient calls would, over time, increase patient satisfaction. While there is a DoD survey tool used to assess on-going patient satisfaction with ambulatory visits, it does not address telephone consults. The researcher believes that as customer service satisfaction improves with timely telephone consults, more beneficiaries would utilize the process resulting in an even higher volume of telephone calls. If staff could effectively manage the increase in volume and if the results were consistent with the literature in reducing the need for clinic visits, the facility could benefit with increased levels of access, a frequent measure of quality. As of March 9, 2006, DDEAMC had 1,093 beneficiaries enrolled to civilian primary care managers (PCMs) rather than DDEAMC PCMs (P. Braswell, personal communications, March 20, 2006). However, a better understanding of the full effects of more timely responses to telephone consults would require additional time, larger and more diverse samples, and data analysis on other

measures such as access levels and patient satisfaction levels, all of which is outside the scope of this project. At present, the results of this study are relevant to similar size clinics and similar beneficiary demographics. In order to make any inferences as to how nursing assistance with provider to patient telephone consults would help other primary care clinics, the process would have to be studied in a larger clinic, that also treats active duty family members and retirees, such as the Family Medicine Clinic.

The study's primary limitation was the small sample number of provider staff at TMC 4 studied. The study could not provide statistically significant evidence that the implementation of LPN assistance with telephone consults would free up provider time or increase provider satisfaction. However, anecdotal comments related to the dissatisfaction with the telephone consult process prior to the study, as well as positive feedback from TMC 4 providers and nursing staff before and after the study, suggests that nursing assistance with provider telephone consult management is worth pursuing. The study noted very high scores on the provider and nurse survey before and after, indicating that pertinent clinic staff believe nursing assistance with telephone consults is a good idea. The study also showed a slight increase in provider satisfaction with the telephone consult process at TMC 4. If tested on a larger sample size in the facility's larger clinics, the researcher believes that both variables would show desired outcomes with statistical significance. However, the limitations of the LPN scope of practice might be the biggest threat to success in implementing nursing assistance to providers for telephone consultation management.

Recommendation

Telephone consults are an integral part of healthcare delivery today, as well as in the foreseeable future. Eliminating telephone consults between providers and patients will only add to the burden of meeting access requirements in the military health system. DDEAMC leadership should not discount provider sentiment regarding telephone consults, especially during times of provider shortages, as evidenced by some recent difficulty in filling physician vacancies. Rather, hospital leadership should pursue exploring methods to ease the administrative burden of telephone consults. This includes the use of nursing assistance, but management should strongly consider proceeding down this avenue using RNs in order to overcome the scope of practice barriers with LPNs. Additionally, the clinic must set specific guidelines and expectations of what the nurse responsibilities are for the telephone consults. To rely on providers to routinely find a nurse and ask for assistance with telephone consults appears to offset time savings for providers, as well as add to the frustration level of providers.

It should be noted that LPN assistance could also supplement RN assistance with telephone consults. Nurses participating in this study viewed their expanded role as positive and one even commented she could do more. This sentiment may be related to the nursing staff's own perception of being underutilized and a need to feel greater value from the organization, which is consistent with organizational behavior literature. Clinic leadership must look at the utilization levels of current nursing staff and determine what can be done to maximize their use before considering additional hiring actions. In the busier clinics where nurses may be already stretched thin, it may be more difficult to accomplish this change of business practice without additional hiring actions. However, a

word of caution directed at hospital leadership would be to reconsider the process of telephone consults whereby a message is left by the patient, before considering hiring actions to assist with clarifying telephone messages. The insufficient information in the message is a source of frustration for all involved in the process. Additionally, literature consistently demonstrates that customers prefer to speak to a person when calling for service, rather than leave a message and wait for up to 3 working days for a response. One must also consider that customer satisfaction is often used as a measure of quality just as it is in the Military Health System to compare facilities.

Military Health System leadership and the Army Medical Command leadership are already exploring the use of electronic mail between providers and patients in order to better facilitate communication and ease the burden of telephone consults (Department of the Army, 2005). This may be especially effective since a large portion of telephone consults in this study were for administrative purposes or resulted in providers being unable to make positive phone contact with the patient. None of which qualify as RVU-earning telephone consults according the UBU coding guidelines for military facilities described previously in the literature review section. Couchman, Forjuoh, and Rascoe (as cited in Ling Leong, Gingrich, Lewis, Manuger, & George, 2005) found that when patients e-mail their physicians, the primary purposes are for prescription refills, non-urgent consultations, and obtainment of laboratory test results. These purposes are consistent with the reasons patients called their physicians in this study. Ling Leong et al. also cite several studies which found that the large majority of patients were favorable to the idea of e-mailing their physicians. Finally, the comparison study by Ling Leong et al.

found that physicians using e-mail consistently rated their satisfaction higher than the control group which used standard telephone communication to answer patient messages.

Appendix A - Provider Survey

Thank you for completing this brief survey. Your name is required to match responses to information regarding empanelment size, telephone consultation volume, and appointment access.

Name:

Work Location:

Please CIRCLE your response

1. Gender (Male) (Female)

2. Type of provider (Physician) (Physician Assistant) (Nurse Practitioner)

3. All things considered, how satisfied are you with your job currently?

1	2	3	4	5	6	7
Very Dissatisfied			Neither Satisfied Nor Dissatisfied			Very Satisfied

4. Specifically, how satisfied are you with the current *process* of telephone consults?

1	2	3	4	5	6	7
Very Dissatisfied			Neither Satisfied Nor Dissatisfied			Very Satisfied

5. Using licensed practical nurses to assist with provider consults management is a good idea.

1	2	3	4	5	6	7
Strongly Disagree			Neither Agree Nor Disagree			Strongly Agree

Please FILL IN THE BLANK

6. On average, how many hours and minutes per day do you spend on telephone consults per day?

_____ Hours and _____ Minutes

7. How many years and months have you been employed in this clinic/work location?

_____ Years and _____ Months

Your cooperation with this survey is greatly appreciated. Individual comments regarding telephone consultation management may be written on the reverse side of this paper.

Appendix B - Nurse Survey

Thank you for completing this brief survey.

Work Location:

Please CIRCLE your response

1. All things considered, how satisfied are you with your job currently?

1	2	3	4	5	6	7
Very			Neither			Very
Dissatisfied			Satisfied Nor			Satisfied
			Dissatisfied			

2. Specifically, how satisfied are you with the current *process* of telephone consults?

1	2	3	4	5	6	7
Very			Neither			Very
Dissatisfied			Satisfied Nor			Satisfied
			Dissatisfied			

3. Using licensed practical nurses to assist with provider consults management is a good idea.

1	2	3	4	5	6	7
Strongly			Neither			Strongly
Disagree			Agree Nor			Agree
			Disagree			

Please FILL IN THE BLANK

4. On average, how many hours and minutes per day do you spend on telephone consults per day?

_____ Hours and _____ Minutes

Your cooperation with this survey is greatly appreciated. Individual comments regarding telephone consultation management may be written below or on the reverse side of this paper.

Appendix C - Survey Cover Letter

Thank you for taking the time to complete this voluntary survey. Your responses are very important. The surveys will be used as part of a study to determine the effects of using LPNs to assist the providers with telephone consults. By completing the survey, you are giving your implied consent to participate in the management study. If your name is requested on the survey, it is only for the researcher's use. Individual responses will not be made public.

Appendix D –Code Sheet

Provider Survey

ITEM No.	VARIABLES	DESCRIPTION	SPSS DATA CODES	TYPE OF DATA
1	Gender	Subject's gender or sex	1= Male 0= Female	Categorical
2	Type of Provider	Subject's professional background and qualification	1=Physician 2=Physician Assistant 3=Nurse Practitioner	Categorical
3	Overall job satisfaction	Subject's overall job satisfaction (attitude) based on 5 point bipolar adjective scale	1=Very Dissatisfied 4=Neither Satisfied nor Dissatisfied 7=Very Satisfied	Interval
4	Satisfaction with Telephone Consultation	Subject's job satisfaction with doing telephone consults	1=Very Dissatisfied 4=Neither Satisfied nor Dissatisfied 7=Very Satisfied	Interval
5	Opinion of using LPNs to assist with Telephone Consults	Subject's level of agreement that using LPNs to assist with Telephone Consults is a good idea -- 5 point Likert scale	1=Strongly Disagree 4=Neither Agree nor Disagree 7=Strongly Agree	Interval
6	Time Spent on Telephone Consults	Average Time in Hours per Day Spent doing Telephone Consults	0 to <i>n</i>	Ratio
7	Time Spent in Clinic	Number of Months employed in clinic/work area (not how long with the organization)	0 to <i>n</i>	Ratio

Nurse Survey

ITEM No.	VARIABLES	DESCRIPTION	SPSS DATA CODES	TYPE OF DATA
1	Overall job satisfaction	Subject's overall job satisfaction (attitude) based on 5 point bipolar adjective scale	1=Very Dissatisfied 4=Neither Satisfied nor Dissatisfied 7=Very Satisfied	Interval
2	Opinion of using LPNs to assist with Telephone Consults	Subject's level of agreement that using LPNs to assist with Telephone Consults is a good idea -- 5 point Likert scale	1=Strongly Disagree 4=Neither Agree nor Disagree 7=Strongly Agree	Interval
3	Satisfaction with Telephone Consultation	Subject's job satisfaction with doing telephone consults	1=Very Dissatisfied 4=Neither Satisfied nor Dissatisfied 7=Very Satisfied	Interval
4	Time Spent on Telephone Consults	Average Time in Minutes per Day Spent doing Telephone Consults	0 to n	Ratio

Other Data Gathered

SOURCE	VARIABLES	DESCRIPTION	SPSS DATA CODES	TYPE OF DATA
CHCS	Empanelment Size	Size of Provider's Beneficiary Empanelment	0 to n	Ratio
AHLTA	Daily Volume of Telephone Consults	Average Daily Number of Telephone Consults	0 to n	Ratio
AHLTA	Patient Contact	Ability of the provider to contact the patient for the telephone consult	1 = positive contact 2 = message left 3 = unable to contact	Categorical

References

- American College of Physicians. (2003). *The changing face of ambulatory medicine – reimbursing physicians for telephone care*. Philadelphia: American College of Physicians; 2003: Public Policy Paper.
- American Medical Association. (2005). *Cpt 2006 current procedural terminology professional edition*. Chicago, IL: American Medical Association.
- Department of the Army (2005, May 11). *Medical record administration and health care documentation*, MEDCOM Supplement 1 to AR 40-66.
- Department of Defense. (2004, June 10). *Instruction: medical encounter and coding at military treatment facilities*, Number 6040.42. Retrieved March 20, 2006 from <http://www.pasba.amedd.army.mil/Quality/Resources/Inst604042.pdf>
- Department of Defense. (2005). *Military Health System coding guidance: professional services and specialty coding guidelines, version 1.0, Unified Biostatistical Utility*. Retrieved September 27, 2005, from http://www.tricare.osd.mil/org/pae/ubu/downloads/UBU_Coding_Guide_V13_3Jan05.doc
- Car, J., & Sheikh, A. (2003). Telephone consultations. *British Medical Journal*, 326, 966-999.
- Cornali, J. (2005). *TMC #4 Standard operating procedure: nursing support for answering telephone consults* (draft).
- Flynn, D. M. (1998, October). Telephone triage as a strategy to ensure 24-hour access to medical care after the closure of supporting medical activity. *Military Medicine*. Retrieved March 17, 2006 from http://www.findarticles.com/p/articles/mi_qa3912/is_199810/ai_n8818621/print

- Institute of Medicine (2001). *Crossing the quality chasm: a new health system for the 21st century*. Committee on Quality Health Care in America, Institute of Medicine. Washington, DC: National Academy Press
- Jiwa, M. & Mathers, N. (2003). Telephone consultations are routinely used. *British Medical Journal*, 327, 345.
- Konrad, T. R., Williams, E. S., Linzer, M., McMurray, J., Pathman, D. E., Gerrity, M., Schwartz, M. D., Scheckler, W. E., Van Kirk, J., Rhodes, E., & Douglas, J. (1999). Measuring job satisfaction in a changing workplace and a challenging environment. *Medical Care*, 37(11), 1174-1182.
- Ling Loeng, S., Gingrich, D., Lewis, P. R., Mauger, D. T., & George, J. H. (2005). Enhancing doctor-patient communication using email: a pilot study. *Journal of the American Board of Family Practice*, 18(3), 180-188.
- McCarthy, E. L. (2002). Physician office productivity improvement through operations analysis and process redesign. *Journal of Ambulatory Care Management*, 25(4), 37-52.
- McKinstry, Brian H. (2002, September 8). Telephone consultations may improve access, but do they save time? *British Medical Journal Rapid Responses*. Retrieved September 27, 2005, from <http://bmj.bmjjournals.com/cgi./eletters/325/7363/547>
- McMurray, J. E., Williams, E., Schwartz, M. D., Douglas, J., Van Kirk, J., Konrad, R., Gerrity, M., Bigby, J. A., & Linzer, M. (1997). Physician job satisfaction, developing a model using qualitative data. *Journal of General Internal Medicine*, 12, 711-714.
- Oldham, J. (2002). Telephone use in primary care. *British Medical Journal*, 325, 547.

- Patient Administration Systems and Biostatistics Activity. (2005). *Telephone Consults in Allied Health*. Information Paper. Retrieved September 27, 2005, from <http://www.pasba.amedd.army.mil/Quality/Resources/TelConsultsAHM0503.doc>
- Patient Administration Systems and Biostatistics Activity. (2006). Military Health System relative value worktables calendar year 2006, retrieved March 21, 2006 from http://www.pasba.amedd.army.mil/analysis/CY06_RVU.xls
- Polit, Denise F. (1996). *Data analysis and statistics for nursing research*. Prentice-Hall Canada, Inc, Toronto.
- Robbins, S. P. (2003). *Organizational Behavior*. Upper Saddle River, NJ: Pearson Education, Inc.
- Seago, J. A., Spetz, J., Chapman, S., Dyer, W., & Grumbach, K., Center for California Health Workforce Studies, University of California, San Francisco. (2004). *Supply, demand, and use of licensed practical nurses*. Department of Health and Human Services, Health Resources and Service Administration, Bureau of Health Professions.
- Smith, H. L. & Hood, J. N. (2005). Creating a favorable practice environment for nurses. *Journal of Nursing Administration*, 35(12), 525-532.
- Stoddard, J. J., Hargraves, J. L., & Reed, M. (2001). Managed care, professional autonomy, and income; effects on physician career satisfaction. *Journal of General Internal Medicine*, 16, 675-684.
- Tricare. (2004). [Tricare telephonic customer support survey results]. Unpublished results. Retrieved March 17, 2006 from <http://tricare.osd.mil/research/benetele/results.cfm>

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14. ABSTRACT The purpose of this project was to examine the effects of using Licensed Practical Nurses to assist providers with telephone consults at one of Dwight David Eisenhower Army Medical Center's primary care clinics. The study compared means of pre- and post-implementation provider overall job satisfaction, provider satisfaction with the telephone consult process, average daily hours providers spent on telephone consults, and the length of time to complete patient generated telephone consults. Average completion time of consults was the only statistically significant dependent variable as shown by $t(167.84) = 3.68, p < .01$ (two-tailed), $rpb = .27$. Overall, the study provides justification for cautiously pursuing nursing assistance with telephone consultation management despite this study's weakness with provider sample size.						
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