Use of Telemedicine Technology to Conduct Clinical Medicine and Health Promotion Classes at a Remote Location

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A realtime Telemedicine pilot project is ongoing between Naval Hospital Camp Pendleton, and 52 Area Naval Brach Medical Clinic, located 17 miles away at the Infantry Training School (ITS) on base. The population includes all Active Duty Marines stationed at ITS and presenting to the medical clinic for evaluation. The system utilizes a Pictel System 4000 videoconferencing unit and Codec digitizer, with 28 inch color monitor at both ends. A real time image is projected at 384 Kbps. (384,000 bits per second), the slowest speed at which clinical health care interaction is ethical and effective. Overheads were projected on a Cannon RE-650 Video Visualizer. To date 52 Active Duty Marines were evaluated by nine specialists (Table 1) for a total of 63 diagnoses (Table 2). Patients, referring providers and specialists completed a satisfaction questionnaire. The majority of both patients and providers rated the quality of moving images, volume and ease of use of the control panel as good or excellent. Two specialties (Dermatology and Radiology) rated the quality for diagnosis as poor. The majority of consulted physicians were satisfied with their Telediagnosis and patient disposition. A majority of consulted physicians noted the Telemedicine system had either no effect on, or slightly shortened the length of the patient encounter. Active Duty members seen via Telemedicine however, returned to their unit an average of six hours earlier than those seen at the hospital through the traditional referral system.

Results of the Use of Telemedicine Technology to Conduct Health Promotion Classes at Remote Site

A series of tobacco cessation classes were conducted from January 17 through March 1, 1995. A group of seven students, three at the remote clinic site and four at the hospital primary site, teleconferenced with two tobacco cessation facilitators who were co-located with the Naval Hospital students. One facilitator ran the classes and the other was responsible for controlling cameras and volume with a keypad. Three sessions were conducted. The student drop-out rate of 85% by the end of the course was consistent with previous tobacco cessation courses held at this facility and with drop out rates in the general population. A satisfaction survey of both students and

facilitator was taken. Results indicated a difficulty in establishing cohesiveness in and between sessions by the facilitator and in bonding between and within the student groups. Difficulty in maintaining a focus was reported by the remote site.

It is hypothesized that: 1) cohesiveness would improve as facilitators became more comfortable with the technology; and 2) student bonding would improve by giving the students control of the key pad, thus controlling the cameras and volume on either end. Number two hypothesis was tested with a group of mental health patients in an interactive group situation. The students maintained the control board and reported no problems interacting during the session.

Table 1

Specialty	Patient Encounters
Dermatology	(4)
General Medicine	(5)
Neurology	(1)
Obstetrics	(1)
Podiatry	(5)
Pulmonary	(8)
Psychiatry	(7)
Sports Medicine/Orthopedics	(20)
Surgery	(1)
*Radiology	(21)

*Plain film evaluation over Telemedicine by Radiology Department

TABLE 2

Diagnosis by Order of Frequency	Frequency
Lower extremity strain/sprain	12
Asthma	8
Adjustment disorder	7
Stress fracture (foot)	5
Stress fracture (tibia)	4
Depression	4
Bronchitis	3
Suicidal disorder	3
Fracture phalanx (hand)	3
Herpes genitals	2
Fracture metacarpal (hand)	2
Internal derangement (knee)	2
Appendicitis	1
Routine obstetrical visit	1
Diverticulitis	1
Gastritis	1
Seizure disorder	1
Epidermal inclusion cyst	1
Viral exanthem	1
Stress fracture (femur)	1

	63 total

TELEMEDICINE SYSTEM EVALUATION

OPTIONAL: (Name: _____ Rate/Rank: _____ Position: _____)

1. Please indicate your primary function:

1. Referring physician
2. Consulting physician
3. Marine Corps staff recommending patients for the telemedicine project
4. Trainer providing classes
5. Other (Describe) _____

2. I have used the telemedicine system

1. One time (this is my first time)
2. Two times
3. Three times
4. Four times
5. More than four times

3. Were you formally trained on the use of the equipment?

1. Yes
2. No

4. If you were not formally trained, did you find the equipment easy to use?

1. Yes
2. No

5. The sound quality was

1. Excellent
2. Good
3. Poor
4. No Comment/ Not used

6. The clarity of the picture was

1. Excellent
2. Good
3. Poor
4. No Comment/ Not used

TELEMEDICINE SYSTEM EVALUATION

7. Your ability to identify participants was

1. Excellent
2. Good
3. Poor
4. No Comment/ Not used

8. The ease of use of the control panel was

1. Excellent
2. Good
3. Poor
4. No Comment/ Not used

9. The ease of use of camera controls (pan, zoom) was

1. Excellent
2. Good
3. Poor
4. No Comment/ Not used

10. Your ability to identify who was speaking (far end) was

1. Excellent
2. Good
3. Poor
4. No Comment/ Not used

11. The quality of moving images (far end) was

1. Excellent
2. Good
3. Poor
4. No Comment/ Not used

12. The clarity of still camera graphics was

1. Excellent
2. Good
3. Poor
4. No Comment/ Not used

TELEMEDICINE SYSTEM EVALUATION

13. The ease of use of the graphics camera and ability to transmit graphics was

1. Excellent
2. Good
3. Poor
4. No Comment/ Not used

14. As you see it, what are the primary benefits of the telemedicine system (check as many as necessary)

1. Improved interaction
2. No benefit
3. More effective communication and decision making
4. Cost and time savings
5. More people brought into the loop
6. Other _____

15. Regarding your interaction with the telemedicine system, would you say that

1. The telemedicine system significantly shortened the length of the patient encounter and saved a considerable amount of my time
2. The telemedicine system slightly shortened the length of the patient encounter and saved a small amount of my time
3. The telemedicine system neither shortened nor lengthened the patient encounter and I worked at my usual pace
4. The telemedicine system slightly extended the length of the patient encounter and required slightly more of my time
5. The telemedicine system considerably lengthened the patient encounter and required much more of my time

16. What are the primary drawbacks to the telemedicine system?

1. Equipment problems
2. Perceived loss of privacy
3. Lack of training or familiarity with equipment
4. Other _____

17. What is your overall impression of patient dispositions via teleradiology?

1. Satisfactory
2. Minor reservations
3. Major reservations
4. Not satisfactory

TELEMEDICINE SYSTEM EVALUATION

18. Is your overall impression of the telemedicine system

1. Positive
2. Neutral
3. Negative

19. Do you have any other comments about the telemedicine concept, capabilities, training, ease of use, etc.?

Thank you for your participation !