

Using Telemedicine in the Provision of Dermatology

Lanis Hicks¹, Keith Boles¹, Stan Hudson¹, Richard Madsen², Barry Kling³, Joe Tracy⁴, Joyce Mitchell⁵, Weldon Webb⁶

¹Department of Health Management and Informatics, ²Department of Statistics and BioStatistics Group, ³Associate Dean for External Affairs, ⁴Director of Telehealth, ⁵Associate Dean for Information Services, ⁶Associate Vice Chancellor for Health Affairs, University of Missouri
hicksl@health.missouri.edu

This study examines the extent to which patient characteristics are associated with the use of telemedicine in a single medical specialty—dermatology. Numerous studies¹⁻⁴ have found teledermatology to be as effective as a face-to-face visit in diagnosing conditions in 75 to 85 percent of cases; there are still certain conditions for which telemedicine is not adequate or appropriate. Clinically, these previous studies also indicate that teledermatology is a feasible alternative in cases where circumstances, such as geography, do not allow for convenient face-to-face consultation with a dermatologist.

In addition to clinical efficacy, patient and provider satisfaction and acceptance are critical. Past research⁵⁻⁶ has demonstrated that the majority of teledermatology patients were very pleased, with satisfaction levels ranging from 75 to 100 percent. In a 1997 survey⁷, all participants strongly agreed that telemedicine was of value to them and their community. Furthermore, research⁸ involving nursing home residents found that 80 percent of residents preferred to receive all of their specialty care via telemedicine, whereas 83 percent specifically preferred teledermatology to traveling to their dermatologist's office.

This is a case study of all patients seen by a single dermatologist associated with the telemedicine hub facility from January 1, 1997, to March 31, 1999. To avoid potential confounding impacts from physician characteristics, the study was limited to patients of a single dermatologist and utilized data collected

from 10 outreach clinic sites. Thus, the physician, at least theoretically, had three different sites at which to see each patient—at the hub clinic, at the outreach clinic, or via telemedicine. The first two options involve travel by either the patient or the physician; the third option involves the least amount of travel for both parties.

The following is a list of the hypotheses examined, including a brief rationale:

- *Hypothesis 1.* Telemedicine will increase the demand for dermatological (and other) health services. This is primarily due to the improved convenience for the patient and increased ease of referral from the remote site.
- *Hypothesis 2.* The use of telemedicine is more acceptable to younger individuals. This assumes that younger individuals have had greater exposure to technologies, resulting in greater acceptance and less difficulty interacting with the physician via television.
- *Hypothesis 3.* The use of telemedicine would be greater for males. This assumes that the higher workforce participation rate of males creates a higher relative value of time for the employed individual.
- *Hypothesis 4.* The source of payment will affect the use of teledermatology. This assumes that the source of payment is highly correlated with other characteristics of the population and the health care system that would influence the use of telemedicine.

- *Hypothesis 5.* The clinical diagnosis of the patient would be related to the use of teledermatology services, with certain diagnoses being less appropriate than others for diagnosis and treatment via telemedicine.

The next two issues were explored as conjectures rather than hypotheses, because the data gathered did not allow for statistical testing.

- *Conjecture 6.* Patients would be highly satisfied with the services received through teledermatology, reflecting the increased convenience and lower costs associated with using telemedicine.
- *Conjecture 7.* The quality of health care would increase. This is largely due to the increased access and satisfaction with dermatology services via telemedicine.

On the basis of data obtained from the administrative database, there does not appear to be any significant difference between the demographic characteristics (age and gender) of telemedicine patients and nontelemedicine patients in this case study of dermatology. Access to dermatology services appeared to be improved in counties where telemedicine services were provided, and increased utilization occurred among both patients using telemedicine and those using face-to-face visits in these outreach counties.

Responses from users of teledermatology to questions regarding access to care varied somewhat by gender. Males were more likely than females to indicate that they would not receive health care (30.1 to 23.9 percent); males also were more likely than females to indicate that they would receive health care in their own community (16.1 to 13.5 percent). Females, on the other hand, were more likely than males to seek care at an out-of-town site (62.6 to 53.8 percent).

To the important question, “How would you have handled your health problem without telemedicine?,” 26.2 percent of respondents indicated they would not have received health care at that point. Another 14.5 percent indicated they would have received health care services in their local community; the remaining 59.3 percent would have traveled out of town to receive the necessary services. For the individuals indicating that they would not have received care at that point, it is reasonable to assume that the quality of health care, and possibly quality of life, would have been diminished in the absence of telemedicine. For the individuals who would have received care in the local community, the consequences are not as clear. Those individuals had been referred to a specialist not available in the local community but had chosen to seek care from the local generalist rather than traveling to see a specialist. As a result, the lack of access to specialty care could have had a detrimental impact on the health of the individuals. There are both clinical and economic consequences for the individuals who would have gone out of town to receive care. Quality of care should not have been compromised, since specialty services are received in both cases. However, utilization of care and, consequently, treatment might be delayed, since the necessary services are less conveniently located.

When asked how far they would have had to travel one way for the specialty care, the average distance was 70.5 miles. Using the Internal Revenue Service reimbursable rate of \$0.31 per mile, the average round-trip cost per patient was \$43.71, resulting in a total mileage cost of \$6,643.92 for the 152 individuals who are forced to travel to see a specialist. Furthermore, if the trip to the specialist involved an employed individual, additional time off from work would be required; if the individual required assistance from another individual, then that second individual’s time also was

spent traveling to the hub. These and many other indirect costs and inconveniences associated with traveling between communities could easily be incurred.

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