

Successful Implementation of a Telemedicine-Based Counseling Program for High-Risk Patients With Breast Cancer

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Abstract

An interactive audio and video telemedicine feasibility program was established to provide counseling on breast cancer risk-reducing strategies for underserved, high-risk Alaskan native women through a collaboration among the Alaska Native Medical Center, the Mayo Clinic Breast Clinic, Mayo's Center for Innovation, and the Alaska Federal Health Care Access Network. The telemedicine model included a navigator to facilitate patient encounters (referrals, electronic records, and scheduling) and a subscription billing contract. Between January 1 and December 31, 2011, 60 consultations were provided to the Alaska Native Medical Center. A survey of a sample of 15 women demonstrated overall patient satisfaction of 98% pertaining to the experience, technology, and medical consultation. The referring physician satisfaction, from 11 visit surveys and 8 referring physicians, revealed 99% satisfaction with the service. In this telemedicine pilot study, we demonstrated the feasibility of a telemedicine program to provide integrated specialty care that resulted in a positive effect on patient satisfaction. This program has a sustainable business model, thus creating a new modality for health care delivery.

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Integrating specialty and subspecialty care into primary care practices has been shown to reduce the overall cost and burden to patients, physicians, and payers.^{1,2} However, such integration is a challenge for populations living in remote areas, especially in cases of infrequently used services, such as counseling on breast cancer risk-reducing strategies for underserved, high-risk American Indian and Alaskan native people in Alaska.

PROVIDING CANCER CARE IN RURAL LOCATIONS

Owing to barriers such as lack of access to hospitals because of long distances, shortage of primary care physicians and specialists,^{3,4} a high turnover rate of health care professionals,^{4,5} and long waiting periods,^{3,6} the health care model in rural Alaska consists of village medical clinics that are linked to larger regional medical centers staffed by health care professionals. Cancer is the second leading cause of death among Alaskan natives older than 45 years⁷; however, the aforementioned barriers preclude access to appropriate counseling services for high-risk

patients, screening tests, follow-up and referral for abnormal test results, and compliance with recommended treatment.⁸ These cancer health care disparities have led to increasing recognition of the critical role of patient navigators (health care workers who provide telehealth interaction support and patient guidance) in promoting access to and compliance with quality care⁹; however, lack of subspecialty access remains an unmet need.

TELEHEALTH SERVICE DELIVERY SOLUTION

A feasibility pilot study of synchronous (live audio/video) consultations with the Alaska Native Medical Center (ANMC) and the Mayo Clinic Breast Clinic (MCBC) was initiated in 2011. We aimed to assess the logistics of a secure telemedicine connection and the sustainability of a practice and business model.

The groups and organizations involved in this integrated telemedicine pilot included the MCBC breast health physician (providing site), the ANMC (referring site), Mayo's Center for Innovation, and the Alaska Federal Health Care Access

Network. The breast health physician is an internist with expertise in benign and malignant breast disease who provides consultative care and an individualized management plan to patients at increased risk for breast cancer. The ANMC provides comprehensive medical services to American Indians and Alaskan natives, is Alaska's only level II trauma center, and is the main hub of medical care supporting regional clinics throughout Alaska. The Center for Innovation employs a team of designers, project managers, and administrative staff to design and enable innovative models of care internally and externally to Mayo Clinic. The Alaska Federal Health Care Access Network is managed by the Alaska Native Tribal Health Consortium and provided the telehealth platform to share health care data through firewalls and across organizations and to ensure secure transmission of Health Insurance Portability

and Accountability Act information. This technology supported the clinical workflow of patient medical information between the ANMC and Mayo Clinic.¹⁰

LOGISTICS

The high-risk breast consultation is initiated by a referring health care professional at the referring site. The breast health specialist at the providing site provides counseling and an individualized management plan and makes recommendations for tests or consultations, if required, in breast imaging, pathology, oncology, surgery, genetics, and psychology, all of which are available in Anchorage.

Telemedicine Process

The Figure depicts the telemedicine process. Essential considerations include identification

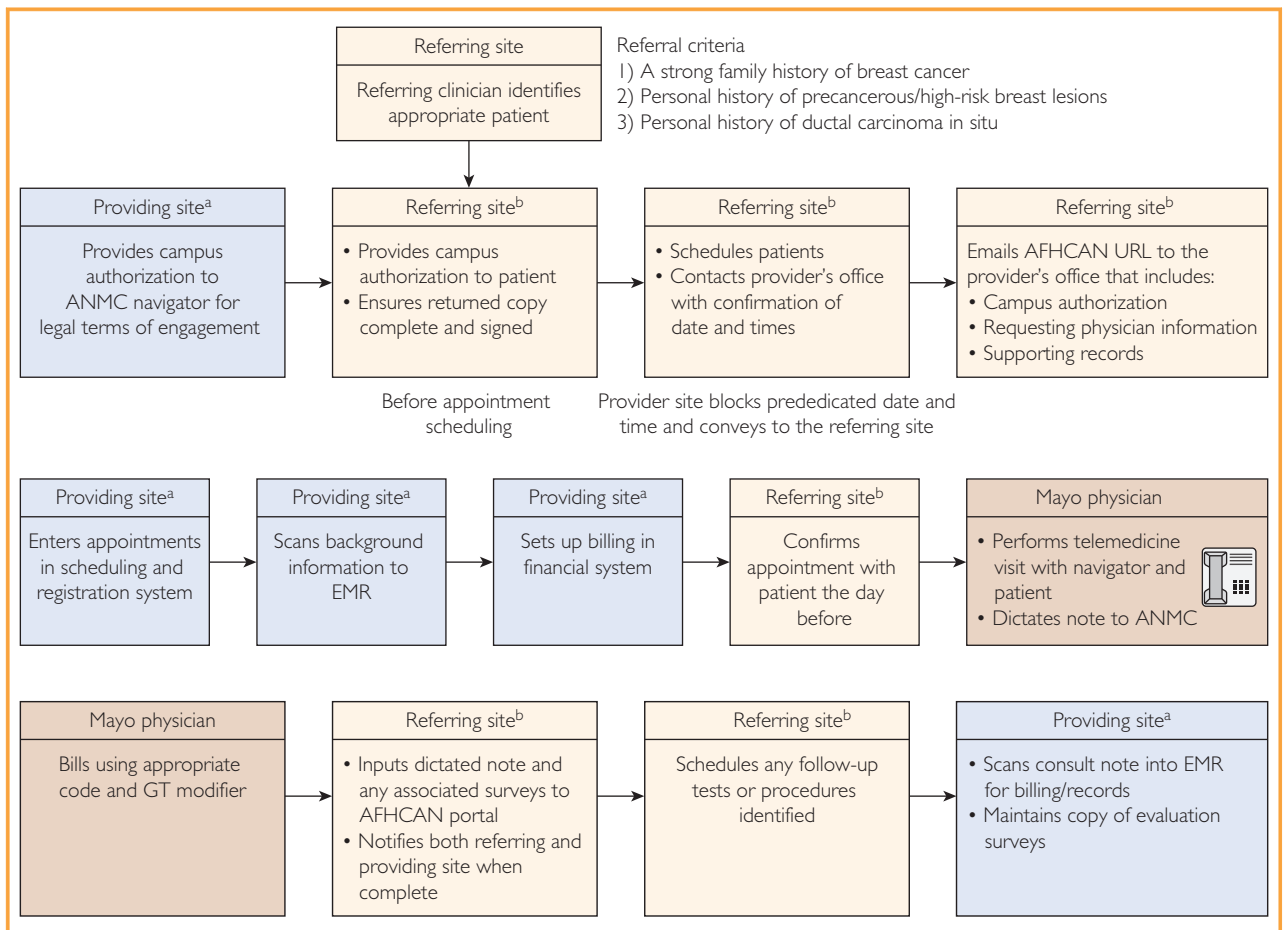


FIGURE. Telemedicine process. ^aProviding site telehealth coordinator role. ^bReferring site navigator role. AFHCAN = Alaska Federal Health Care Access Network; ANMC = Alaska Native Medical Center; EMR = electronic medical record; GT modifier = a billing code showing that the professional service was delivered via an interactive audio and video telecommunication system.

and understanding of the initial referral criteria to meet the needs of the patient and the referring provider. The use of a navigator (referring site) and a telehealth coordinator (providing site) are essential for successful execution of the service owing to the individual site's unique needs and workflows. The navigator in this telemedicine model was an employee of the ANMC and was required to follow the confidentiality policy of the hospital. This was a clinical administrative role in the Department of Surgery as an appointment coordinator and did not require a medical background. The navigator received on-the-job training with the breast health physician for this telehealth program.

In some cases, the navigator coordinated the patient's travel needs and logistics. The calendar template for telehealth consultations was designed with 3 patients (30- to 45-minute consultation slots) every 2 weeks set up as a block of time. The navigator is available in the telemedicine room to facilitate the telemedicine connection and to provide electronic support in the case of dropped calls to the providing site, to provide the patient with printed educational materials, and to ensure a smooth process of patient movement between appointments.

Billing/Subscription Model/Licensing/Credentialing

So as not to violate the Stark Law and unfair practices, the fee structure for this model of care must be at fair market value to not entice referrals based on preferential treatment. Initially, this program was set up using a standard fee-for-service designation with a GT modifier (used for Medicare, etc, to denote "via interactive audio and video telecommunications system").¹ This is applicable in most situations in which a consultation has occurred from a remote providing site. For the feasibility program, however, a subscription model/contract was put in place in which the referring site would become the third-party payer and be able to bill as desired to the patient population. This, thereby, eliminated the providing site's requirement for specific patient insurance information, making it more transparent to the patient. A special subscription model registration form was designed. In addition, modifications to the providing site's billing system to triage these patients through the finance organization were put in place.

Since the billing is not direct to a patient, insurer, or Medicaid/Medicare but instead is under contract to a referring organization, typical reimbursement codes are not required but are provided as a convenience. The cost per consultation time is equivalent to the standard face-to-face visit charged by the providing institution. It is at the discretion of the referring organization whether to submit the billings to a patient's payer or to absorb the cost, which can be justified owing to a decrease in overall burden of care (minimization of travel, etc, normally paid by the Indian Health Service or the institution) or potential downstream processes revenue. Downstream revenue from additional required tests or procedures are typically in a higher margin category than are consultative services. To aid in the transition of care, the providing specialty physician became licensed in the State of Alaska and became credentialed at the hospital, as requested by the referring site bylaws to allow the same authority as an on-site physician regarding ordering tests and procedures and providing additional care.

Technology Used

In early 2011, we installed a desktop telecommunication system (EX60; Cisco Systems Inc) that was set up in close proximity to the specialty physician's place of work in a designated "telemedicine room." The list price of a comparable unit is approximately \$12,000. The new telecommunication system's image allows for the patient to see the physician as lifelike in size as possible, which is important to provide the "experience of the physician behind the desk" view to the patient. Additional features include presentation sharing, document sharing, and self-view features that allow each site to ensure that an appropriate image is being shared. This system incorporates a direct-dial connection and is based on universal standards that allow for connectivity to a variety of systems from mobile solutions to personal computers and professional-grade products.

A personal computing-based Voice over Internet Protocol application with enhancements, including high-definition applicability, was assessed. However, the quality of the experience (audio and video) still highly depends on the selected camera, network infrastructure, computer, microphone, and speakers used by both sites. To ensure adequate resolution,

especially when using presentations, videos, or document sharing, the professional-grade product was determined to be best for this “base” system and improved the experience at both sites. Most applications today are secure, using some form of encryption. The minimum requirements for Mayo Clinic include using an Advanced Encryption Standard algorithm with a crypto key length of at least 128 bits. Skype (as an example of a Voice over Internet Protocol solution) standardly uses 256-bit encryption. In the future, as more decentralization is desired, trade-offs of features vs need will continue to be considered for evaluation.

Counseling and Communication

Communication and developing relationships between the providing site staff and the referring site staff is critical to establishing trust and confidence in who and what is being provided. Education and mode of communication can be accentuated by use of the electronic environment and the ability to share and view personalized risk assessment models and computerized medical graphics and video. The goal is to engage the patient and simulate the experience of a face-to-face visit. The clear synchronized movement to audio is important to the patient’s perception of quality. The setting in the room at the providing site needs to portray a professional environment. Displaying a logo picture associated with the providing site that is visible on the wall behind the physician helps maintain the relationship with the providing site.

CLINICAL VOLUME

Of the 60 unique consultations between January 1 and December 31, 2011, there were 2 no-shows (3.3%), a rate equivalent to that seen in the MCBC with the face-to-face consultations.

PAYMENT POTENTIAL OF THE TARGET MARKET

Direct patient billing was not performed; the justification of service costs to the clinic or institution is based on savings accrued by avoiding the costs that would have been incurred by traveling to a center for specialty care. For the providing site, the charge is approximately equivalent to the reimbursement for a face-to-face patient encounter.

PATIENT AND REFERRING PHYSICIAN SATISFACTION

A program evaluation was conducted by a random sampling of patients selected by the navigator (N=60), of whom 15 (25%) completed the survey. Ninety-eight percent reported good or excellent satisfaction with the service (Table 1). Disruption in service during the call (dropped calls) was a concern. Systems compatibility and bandwidth are critical for uninterrupted interaction, visibility of the physicians, and optimal use of online graphic educational materials and documents. Initial experience with a video conference room system was suboptimal given the distance between the video screen and the microphone, making the conversation less personable. This visual perception is an important part of the “face-to-face telemedicine” experience.

A random sample of 8 referring physicians were surveyed (representing 11 visits), with 98% reporting good and excellent satisfaction with the quality of the consultation and addressing patient questions and concerns.

DISCUSSION

This pilot study demonstrates the feasibility of designing and sustaining a telemedicine program for women at high risk for breast cancer in Alaska. To our knowledge, this is the first program involving direct patient-to-physician (face-to-face) telemedicine interaction

TABLE 1. Patient Satisfaction Data

Question	Rating scale (N=15)					Total %
	100%= Excellent/ yes	90%= good	50%= Neutral/ maybe	10%= Poor/ fair	0%= no	
How would you rate the overall experience of your telemedicine consultation?	12	3	0	0	0	99
Were you satisfied with the telemedicine consultation?	15	0	0	0	0	100
Was it easy to see and hear the specialist?	14	0	0	0	1	93
Would you use this telemedicine service again?	15	0	0	0	0	100
Would you recommend this telemedicine consultation service to others?	14	0	1	0	0	97
Were all your questions answered?	15	0	0	0	0	100
Overall						98

with the assistance of a navigator demonstrating improved access especially for patients in rural areas. Preliminary data are indicative of a high level of patient and referring physician satisfaction, with no security breaches and a very low no-show rate. Eliminating the expenses associated with travel is an obvious advantage.

Selected issues identified through this program included time to implementation, technology support, logistics associated with dual-site appointment coordination due to time zone differences, and recruitment and retention of a dedicated navigator and telehealth coordinator (Table 2). Availability of dedicated resources, open communication, and a concise project plan that both teams support are also important to implementing and sustaining a successful program. Selecting compatible systems that support the bandwidth and personal health data proves to be critical to the overall experience. Patient and physician satisfaction regarding care is greatly improved when the technology does not become the inhibitor.

Implementation of the optimal reimbursement model is critical. In this pilot study, normal fee-for-service payments were not used. Models (such as implemented in this case) suggest that local downstream services, or integration of the specialist reducing overall costs of care, may outweigh the standard fee-for-service approach. Not addressed, however, are the staffing costs associated with the dual-site logistics of record transfers, scheduling, registration, rooming, technology support, and billing. The referring and providing sites require a navigator and a telehealth coordinator, respectively, to coordinate and facilitate the integration of a telehealth program. Further work must be done because these tasks are not optimized today by the use of technology or processes, partially due to the lack of industry

standards in place for integration of health record systems or interfacing portals. Integration of specialty care is clearly the right thing for the patient and the payer, but with twice the infrastructure and one fee, today it must be sustainable through either downstream services, grants, or other sources, such as institutional philanthropy.

In the future, appropriate reimbursement models may eliminate duplication of services, and expanding licensing and credentialing based on a US-wide telemedicine license could enhance services across state lines. For telemedicine to be sustainable and successful, business models need to be supported via government reimbursement and lifting of licensure barriers that discourage telehealth models of health care delivery.

Possible future programs include expansion to additional remote locations closer to the patient's home, integration into workflows of collaborating clinics, and piloting models that can use mid-level providers. This will require and facilitate an additional understanding of the business models and variations that may be expected from a variety of sites due to size, location, and specialty care needs to ensure that the processes and billing models are flexible enough to meet the needs of the referring and providing sites.

CONCLUSION

This pilot program successfully demonstrated the feasibility of establishing a sustainable telemedicine service to the underserved rural population in Alaska. Elements critical to the success of this program were the interinstitutional collaboration, the availability of dependable technology, and a patient navigator. In addition, preliminary data suggest a high level of patient and physician satisfaction. Going forward, future telemedicine programs should assess financial impact, patient satisfaction, and outcomes. Such information will contribute to continued innovations in telehealth care delivery in a cost-effective manner.

ACKNOWLEDGMENTS

We thank Margaret Sherman, MS, RN, Lisa Butrum, AA, and Roxanne Benson for their administrative support; Amy Abernethy, MD, and Arif Kamal, MD, from Duke University for sharing their expertise and for reviewing the

TABLE 2. Factors to Consider When Implementing a Telemedicine Program

Time to implementation
Technology matching and support
Logistics associated with dual-site coordination and implementation (transfer of medical records, maintaining 2 medical records of documentation of care)
Reimbursement and payment model
Cost implication of coordination and downloading patient records
Scheduling of appointments
Licensing and credentialing
Recruitment of a dedicated navigator and telehealth coordinator

manuscript; and Gladdie Hebl, BS, from Mayo Clinic Grant and Publication Support Services for her editorial assistance.

Abbreviations and Acronyms: ANMC = Alaska Native Medical Center; MCBC = Mayo Clinic Breast Clinic

Grant Support: The Spirit of E.A.G.L.E.S. Community Networks Program (NCI U01 CA114609) provided funding for the initial pilot program.

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