EDITORIAL REVIEW

Advances in Telemedicine

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For more than a decade, telemedicine has offered promise for creating functional clinical exchanges between physicians and healthcare providers working in resource-scarce settings and professionals with specialty expertise that can provide advice. As bandwidth improved and the use of the Internet became increasingly universal, telemedicine programs have advanced, as have the hopes for successful use of this technology.

In reality, however, telemedicine programs have struggled to provide real-time assistance, particularly for urgent medical decision-making in resource-limited environments. This especially is true across international borders, where language, cultural, and time zone constraints have limited the utility of telemedicine. Failure of many well-intentioned telemedicine programs often were thought to be related to unreliable internet access and limitations on the rapid transmittal of graphical data. But, even programs with well-prepared users and reliable access have failed, such as those on cruise ships, oil rigs, or wilderness outposts. A common problem that has been under-emphasized is the lack of sustained desire by the end user to access higher level services on a consistent basis. Many telemedicine programs started with great interest in enhanced clinical connectivity, but rapidly became a novelty, used only by a few technology-savvy participants.

In their description of the telemedicine program for deployed soldiers, McManus *et al* describe a highly successful telemedicine program called Army Knowledge Online to provide limited specialty access for healthcare providers in Iraq, Kuwait, and Afghanistan. They describe the experience of 2,337 consultations, primarily in non-urgent clinical situations such as dermatology and infectious diseases, and much less in specialties requiring urgent decision making, such as cardiology, burn trauma, and neurology.

The success of this program can provide a series of attributes that can be used by other organizations to build successful telemedicine programs, including: (1) access to specific specialists in less available specialties, like dermatology or infectious diseases; (2) no significant language or cultural gaps (all were English speakers); (3) non-emergent consultations (two-thirds of the consultations were for dermatology); and (4) images that could be transmitted, and could be interpreted by consultants.

This paper provides a review of a telemedicine program that works well for both the user and consultant, and serves as a model for a practical, usable, cost effective telemedicine system with applications in both military and civilian settings.