

**Project Title:** Technology Exchange for Cancer Health Network (TECH-Net)  
**Principal Investigator:** Waters, Teresa, Ph.D.  
**Organization:** University of Tennessee Health Science Center  
**Mechanism:** RFA: HS04-011: Transforming Health Care Quality through Information Technology (THQIT)  
**Grant Number:** UC1 HS 015437  
**Project Period:** 09/04 – 09/08, Including No-Cost Extension  
**AHRQ Funding Amount:** \$1,429,265  
**Summary Status as of:** September 2008, Conclusion of Grant

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**Strategic Goal:** Develop and disseminate health IT evidence and evidence-based tools to improve health care decisionmaking through the use of integrated data and knowledge management.

**Business Goal:** Implementation and Use

**Summary:** Dr. Waters concluded this 4-year grant in September 2008. The Technology Exchange for Cancer Health Network (TECH-Net) is a collaborative, multistate effort to implement a systematic care program to improve cancer management in the rural communities of west Tennessee, north Mississippi, and east Arkansas. These efforts continue past the term of this grant, as other sources of funding have been secured. The Federal Bureau of Health Professions designated all of the counties targeted by TECH-Net, excluding Shelby County, as Health Professional Shortage Areas. Residents with special health care needs who live in these rural communities of the Mississippi Delta are typically referred to larger urban areas for care. These referrals involve time, travel, and lost wages. When these barriers become significant, the patient may delay recommended referrals or treatments, further exacerbating their condition and increasing health care costs and the likelihood of an adverse outcome. Programs that bring specialty oncology and hematology care to these rural communities can provide rural physicians and their patients access to state-of-the-art care for improving health outcomes in a cost-effective and efficient manner. This rurality and corresponding lack of access to care is the first component that makes this population particularly vulnerable to diseases such as cancer. This health information technology (health IT) project builds upon a two-pronged approach to total clinical decision support. The first component provides access to oncology, hematology, and other specialists through the dedicated telehealth network of the University of Tennessee's Health Science Center (UTHSC). The second component involves a distributed electronic health record (EHR) integrated with decision support systems, online management of cancer protocols, electronic orders, and medication management systems. The primary goal of this implementation project has been to determine the extent to which a multistate health IT collaborative network can contribute to measurable and sustainable improvements in the cost, safety, and overall quality of cancer care for a region. TECH-Net has linked six separate cancer outreach clinics in a tri-state area with the specialists and researchers of UTHSC and with Methodist University Hospital, a major tertiary care hospital, for comprehensive care and communications across the spectrum of adult cancer care. Implementation of this telehealth and EHR program took a phased approach, sequentially building clinical decision support into existing workflows.

### Specific Aims

- Implement a collaborative, multistate Health Information Technology System that meets the needs of patients, families, and providers in a rural cancer care setting. **(Achieved)**
- Improve access to appropriate care, increase the quality and safety of care, and achieve better health outcomes at equal or lower cost for cancer patients in rural communities through an integrated Health Information Technology System. **(Achieved)**

- Produce and distribute a generalizable, replicable model for implementing an integrated Health Information Technology System for cancer care. **(Achieved)**

**2008 Activities:** Data collection from the evaluation study continued through the end of the grant period; as such, final analyses had not been concluded by the end of 2008.

**Preliminary Impact and Findings:** TECH-Net has linked six separate cancer outreach clinics in a tri-state area with the specialists and researchers of UTHSC and with Methodist University Hospital, a major tertiary care hospital, for comprehensive care and communications across the spectrum of adult cancer care. The program has been so well-received by clinicians and patients that the telehealth/EHR connections have remained active after the completion of the grant. These connections are currently being funded by UICI. Two hundred and seventeen (217) patients (134 rural, 83 urban) were enrolled in the evaluation study from 05/25/05 to 09/30/08. Patient satisfaction has been high—95 percent of patients indicated that their telemedicine visit was as good as or better than an in-person office visit. Patients also report high satisfaction with reduced transportation costs and appointment wait times. Cost analysis comparing cost savings (physician travel time) with telemedicine costs (equipment, high speed lines) indicates that the cost-benefit depends critically on distance to the rural facility and number of physician trips avoided. Initial cost data indicate that telemedicine must save at least 5 hours of physician travel time per month to break even. Telemedicine also appears to be associated with significant improvements in access to care for rural patients. Using patient self-reported health care utilization (verified with local providers for accuracy), variations in health care visits between urban and rural patients fell from an initial high point of a three-fold difference at month 1 to less than a two-fold difference at 6 months. Analysis of other study measures (medical errors, medication errors, treatment success/failure, adverse outcomes, use of investigational protocols, and protocol adherence) is still ongoing; this process was delayed in order to allow time for one-year follow-ups. Telemedicine offers a promising method for increasing access to oncology care in rural areas that is well-accepted by patients. Cost savings are achievable, even at relatively low patient volumes. The health care visit improvements observed for rural patients also suggest that telemedicine facilitates access to a wider range of health care professionals. It is likely that the regular care and follow-up provided through telemedicine visits identifies unmet need and early problems that might otherwise go undetected or untreated. A successful system implementation has produced data on patient outcomes currently being studied, and early indicators from the cost savings model suggest that the system has improved the efficiency of care.

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### **Selected Outputs**

Yunus F, Gray S, Fox KC, et al. The impact of telemedicine in cancer care. Proceedings of the American Society of Clinical Oncology; June 2009.

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**Grantee's Most Recent Self-Reported Quarterly Status:** The project is on track in some respects in terms of its progress.

**Milestones:** Progress is on track in some respects but not others.

**Budget:** Spending is roughly on target.