

**Best Practices and Models of Care in Rural Health:  
A Compendium for the Virginia Rural Health Access Council  
Executive Summary**



**Project Objectives**

This project aimed to compile best and promising practices and models of care for rural health in the following four specialized areas: oral health, maternal and newborn health, behavioral and mental health, and telemedicine and telehealth. The resulting compendium of evidence-based and best practices will serve as a resource for implementing the recommendations of the Virginia State Rural Health Plan, including effective new programs and practices to address Virginia's most challenging health issues. This project will also serve as the foundation for a comprehensive website managed by the Virginia Rural Health Resource Center to disseminate relevant health information to a diverse audience of health professionals, local policy-makers, consumers, public health professionals, and program administrators.

*Systematic Literature Review*

A series of literature reviews was conducted for each of the four focus areas for this report: oral health, telemedicine and telehealth, maternal and newborn health, and behavioral and mental health. Online search engines and research databases such as PubMed and the Rural Assistance Center (RAC) were used to collect potential practices and models. Best and promising practices as well as models of care were identified and models and practices from within Virginia, the United States, and select international locations were considered for inclusion. The programs selected for inclusion are highlighted in the following tables. The full report can be downloaded at: <http://www.va-srhp.org/access.htm>

**Table 1. Models of Care and Best Practices in Rural Oral Health**

Program Name	Lead Agency	Service Area	Key need addressed	Program Overview	Key Successes	Challenges	Policy and Workforce Implications	Primary Funding	Program Website
ForsythKids School-based Dental Health Program	The Forsyth Institute	MA	High rate of dental caries in children	Licensed dentists and dental hygienists visit elementary schools (now over 50 participating) to conduct dental exams (including cleaning, fluoride, and sealants), develop treatment plans, provide oral health education, and make referrals if advanced care is required. Children are examined every 6 months free of charge.	<ul style="list-style-type: none"> <li>- Met or surpassed all child dental health goals from Healthy People 2010</li> <li>- 52% and 39% reduction in caries in primary and permanent teeth, respectively</li> </ul>	Lack of dentists in rural areas to meet referral demand	Loosen practice restrictions for dental hygienists	Billing of public and private insurances	<a href="http://forsyth.org/kids/index.html">http://forsyth.org/kids/index.html</a>
Access to Baby and Child Dentistry (ABCD)	Univ. of WA, School of Dentistry	WA	Poor access to dental care for children under 6	Begun in 1995, ABCD caters largely to Medicaid families through 4 components: <ol style="list-style-type: none"> <li>1) Outreach and case management</li> <li>2) Training and certification of dental professionals</li> <li>3) Enhanced dental benefits</li> <li>4) Enhanced dental fees</li> </ol>	<ul style="list-style-type: none"> <li>- Increase in % of young Medicaid-eligible children receiving dental care in WA (21% to 37%)</li> </ul>	Limited staff for dental office billing issues and understaffing in local health departments	Increase Medicaid eligibility for patients and Medicaid reimbursement rates for providers	Washington Dental Service Foundation	<a href="http://www.abcd-dental.org">http://www.abcd-dental.org</a>
New Mexico Community Voices (NMCV)	Univ. of NM, Health Sciences Center	NM	Lack of diverse oral health workforce in rural areas	Employing a health commons approach, NMCV aims to integrate dental care with primary care sites. Also, the program addresses access to dental health from the individual, community, institutional, state, and national levels through policy reform initiatives, establishment of health councils, and promotion of dentistry in high schools and universities.	<ul style="list-style-type: none"> <li>- Increase of Medicaid reimbursement rates to 85% of usual and customary fee</li> <li>- 72% retention rate for Primary physicians in new rural residency program</li> </ul>	Maintaining consistent public policy efforts in changing political environments and agendas	Improve collaboration between sectors and increase Medicaid reimbursement rates for providers	WK Kellogg Foundation	<a href="http://www.communityvoices.org">www.communityvoices.org</a>

Table 1. Models of Care and Best Practices in Rural Oral Health - continued									
Program Name	Lead Agency	Service Area	Key need addressed	Program Overview	Key Successes	Challenges	Policy and Workforce Implications	Primary Funding	Program Website
Smiles on Wheels Mobile Dental Program	Jackson County Health Dept.	FL Panhandle	Lack of oral health awareness and prevention practices among pregnant women and children	Begun in 2002, the mobile van services 5 rural counties providing dental exams, fluoride treatments, and sealants. The program schedules visits to childcare centers and schools to provide care to children. For more advanced dental care, patients are referred to Medicaid participating dentists in the area.	<ul style="list-style-type: none"> <li>- 124 pregnant women and over 6,000 children of low-income families have received care from the mobile services</li> <li>- achieved financial sustainability by 2004 through Medicaid billing</li> </ul>	50% no-show rate by pregnant women, and difficulty in finding local referral dentists who accept Medicaid patients	Increase Medicaid reimbursement rates for providers	Office of Rural Health Policy, HRSA, Dept. of Health and Human Services	<a href="http://www.doh.state.fl.us/chdJackson/dental.htm">http://www.doh.state.fl.us/chdJackson/dental.htm</a>
Smile! Alabama	Alabama Medicaid Agency	AL	Poor access to child oral healthcare for low-income families	<p>Begun in 2000, the program consists of 4 main elements:</p> <ol style="list-style-type: none"> <li>1) <u>Claims processing</u>- Collaboration with insurers resulted in standardization of claims submission process</li> <li>2) <u>Dental reimbursement</u>- Program task force worked with state legislature to recommend dental reimbursement rate increases</li> <li>3) <u>Provider outreach</u>- Identified Dental Ambassadors, Medicaid participating dentists to raise awareness on oral health in low-income communities</li> <li>4) <u>Patient outreach</u>- Initiated oral health awareness campaign</li> </ol>	<ul style="list-style-type: none"> <li>- Providers enrolled in Medicaid Dental Program increased 38.7% from 1999 to 2002</li> <li>- 57% increase in number of Medicaid-eligible children receiving dental services in the state from 1999 to 2002</li> </ul>	State financial hardship due to increased reimbursements for Medicaid	Increase Medicaid reimbursement rates for providers	Robert Wood Johnson Foundation's 21 <sup>st</sup> Century Challenge Fund	<a href="http://www.medicaid.state.al.us/programs/dental/dental_smile_alabama.aspx?tab=4">http://www.medicaid.state.al.us/programs/dental/dental_smile_alabama.aspx?tab=4</a>
Community Dental Center	Southern Illinois Univ., Carbondale (SIUC)	Carbondale, IL	Access to oral healthcare and, rural-based education for dental students	Established in 2001, the clinic provides services to Medicaid families in a fee-for-service arrangement. Led by SIUC faculty, dental hygiene and dental technology students from SIUC assist in running the clinic and provide select services for clients, including preventive and diagnostic care.	<ul style="list-style-type: none"> <li>- enhanced educational experience for dental students in caring for underserved populations</li> </ul>	Continuity of care (due to SIUC vacation sessions); and transportation for rural residents	Loosen practice restrictions on dental hygienists	Illinois Dept. of Public Health and the State of Illinois	<a href="http://www.sah.siuc.edu/DH/hdc_home.html">http://www.sah.siuc.edu/DH/hdc_home.html</a>

**Table 2. Models of Care and Best Practices in Rural Maternal and Newborn Health**

Program Name	Lead Agency	Service Area	Key need addressed	Program Overview	Key Successes	Challenges	Policy and Workforce Implications	Primary Funding	Program Website/Program Contact
Nurse Midwife and Family Physician Co-Practice: The Maternity Center	St. Claire Medical Center	North-eastern KY	Poor access to obstetric care for indigent, rural population	Nurse midwives and family practice physicians share practice in this rural Maternity Center, <u>Tier 1</u> : Nurse midwives provide routine obstetric and newborn care, perform normal deliveries. <u>Tier 2</u> : General physicians perform instrument deliveries and care for sick newborns. <u>Tier 3</u> : Obstetricians (on contract basis) care for high-risk deliveries (e.g. C-sections) and give consultation.	<ul style="list-style-type: none"> <li>- Increased number of deliveries in local maternity clinic and number of indigent women served</li> <li>- 12% C-section rate (compared to 30% nationwide)</li> <li>- Decrease in % of women receiving no prenatal care from 3% to 0.3%</li> </ul>	<ul style="list-style-type: none"> <li>- Poor reimbursement rate for Medicaid</li> <li>- Rising malpractice insurance premiums for obstetric care</li> </ul>	Improve Medicaid provider reimbursement rates; and Institute malpractice reform to encourage general physicians to offer obstetric services	Funded as a State Rural Health Clinic	Dr. William Melahn VP, Medical Affairs St. Claire Regional Morehead, KY 40351 (606)-783-6899 <a href="mailto:wlmelahn@st-claire.org">wlmelahn@st-claire.org</a>
Gadsden Woman-to-Woman Project	Florida State Maternal and Child Health Program	FL	High infant mortality and maternal and infant morbidity rates	The project partners with Healthy Start Program, who provides names of patients identified as high-risk but with no valid contact information. Social workers build trust with high-risk pregnant women and connect them to the necessary social and clinical services. The Family Health Advocacy Model includes the following dimensions: cultural mediation, peer health education, direct services, social support, and informal counseling.	<ul style="list-style-type: none"> <li>- 95% of women in the program are practicing good child spacing (not having a second baby within the recommended 18-month window)</li> <li>- A decrease in infant mortality in the county</li> </ul>	Community buy-in and collaboration of local service organizations	None	Office of Minority Health, HHS; and Gadsden Federal Healthy Start Program	<a href="http://www.centerfortheequity.com/abt/projects3.asp">http://www.centerfortheequity.com/abt/projects3.asp</a>
Maternal and Infant Health Outreach Worker (MIHOW) Program	Vanderbilt Univ. Center for Health Services	TN, WV, KY, LA, and MS	Poor developmental health outcomes for children of low-income families	Outreach workers are women recruited from the local community and trained to provide social support and health education to pregnant women and new mothers through home visitation. Workers receive no compensation.	<ul style="list-style-type: none"> <li>- 90% of MIHOW mothers begin prenatal care in first trimester, compared to 75% statewide</li> <li>- 7.7% of MIHOW mothers gave birth to LBW infants, compared to 14.3% statewide</li> </ul>	Financial sustainability due to the fact that all partner organizations fund their own participations	None	Whitley County Kentucky Dept of Health and private foundations	<a href="http://www.mihow.org">www.mihow.org</a>

**Table 2. Models of Care and Best Practices in Rural Maternal and Newborn Health - continued**

Program Name	Lead Agency	Service Area	Key need addressed	Program Overview	Key Successes	Challenges	Policy and Workforce Implications	Primary Funding	Program Website/P program Contact
Antenatal and Neonatal Guidelines, Education, and Learning System (ANGELS)- Perinatal Regionalization Program	Univ. of Arkansas for Medical Sciences (UAMS)	AR	Educational and capacity building challenges to perinatal regionalization	The program consists of 5 elements in efforts to regionalize perinatal care: 1) Statewide Telemedicine and clinic network 2) Education and support program for obstetrical providers 3) Case management services 4) 24-hr call center 5) Evidence-based guidelines development and distribution center	- Percentage of infants weighing less than 1000g born in Level III tertiary clinic compared to Level I or II clinic significantly increased from 41 to 47% - Increase in the number of rural pregnant women accessing prenatal care	- Rural hospital buy-in and ensuring fair distribution of client volume	Increase the number of telemedicine services covered by public insurance	Arkansas Medicaid Program	<a href="http://www.uams.edu/angels/">www.uams.edu/angels/</a>
Los Angeles Mommy and Baby (LAMB) Project	Los Angeles County Department of Health	Los Angeles County, CA	Poor birth outcomes, including low birth weight and prematurity	This project is a population-based surveillance tool and community outreach initiative. Surveys are conducted with mothers who have delivered in the past 6 months, obtaining information from pregnancy periods on issues such as access, substance abuse, breastfeeding, environmental exposures, and intimate partner violence. Results of the survey are used to affect policy change at the local and state levels.	- Several annual reports presented at CDC and national public health conferences to raise awareness on causes of LBW and prematurity	Preventing responder bias to the surveys	Results of the survey could inform policy reform	Los Angeles County Dept. of Health	<a href="http://publichealth.lacounty.gov/mch/LAMB.html">http://publichealth.lacounty.gov/mch/LAMB.html</a>
Allendale Women's Health Project- Lowcountry Regional Transportation Dispatch System	Lowcountry Health System (LHS)	Allendale County, SC	Poor access to healthcare	As part of the Allendale Women's Health Project, LHS began offering free transportation to rural residents for healthcare appointments. Patients may reserve a seat in the van the same day of their appointment.	- The mobile van serves about 14 daily in their healthcare transportation needs	- Uncertainty of financial sustainability without outside grants	None	Internally funded	<a href="http://www.lowcountryhealthcare.com/">http://www.lowcountryhealthcare.com/</a>

**Table 3. Models of care and best practices in rural mental and behavioral health**

Program Name	Lead Agency	Service Area	Key need addressed	Program Overview	Key Successes	Challenges	Policy and Workforce Implications	Primary Funding	Program Website/Program Contact
Program for All-Inclusive Care for the Elderly (PACE) Model	Center for Medicare and Medicaid Services, DHHS	National	lack of community-based, comprehensive care for the rural elderly	A registered team of health professionals assess participant needs, develop treatment and management plans, and provide medical, social, and rehabilitative services. In addition to all services normally covered under Medicare and Medicaid, the PACE program covers services for people over 55 such as prescription drugs, occupational and physical therapy, transportation, and home care.	- lower rates of in-patient utilization, higher utilization of ambulatory services, and a lower mortality rate compared to non-PACE patients - providers receive capitated payments for reimbursements	- Difficulty in disseminating necessary information to other rural areas in Virginia (already in 4 facilities)		State Medicare and Medicaid program	<a href="http://www.npaonline.org/website/article.asp?id=203">http://www.npaonline.org/website/article.asp?id=203</a>
Telemedicine-based Collaborative Care Model	Univ. of Arkansas for Medical Sciences (UAMS)	AR	poor access to mental and behavioral health services in rural areas	Model uses three types of providers: 1) on-site primary care providers (PCP); 2) off-site telephone nurse care managers (CM); and 3) off-site tele-psychiatrists. On-site PCPs screen, diagnose, and prescribe antidepressants to patients. CMs conduct biweekly telephone encounters using a web-based decision support system to assess barriers and monitor symptoms, adherence and side-effects. Tele-psychiatrists provide clinical supervision for CMs during weekly meetings to discuss with PCPs new patients and recommendations for those failing treatment, as well as video consultations with patients.	- 31% patients with depression showed significant improvements - program is cost-effective - Quality of life and medication adherence improved	Finding an entity to host the off-site provider team members and a mechanism to pay them	States should use a reimbursement method that uses a capitation method instead of a per-patient per-encounter method	VA and NIHM	John Fortney 4301 West Markham, Little Rock, AR 72205 (501)-257-1726 <a href="mailto:fortneyjohnc@uams.edu">fortneyjohnc@uams.edu</a> or <a href="mailto:John.Fortney@va.gov">John.Fortney@va.gov</a>
Integrated Behavioral Healthcare Program	Southern Virginia Central Health Services	VA	lack of mental healthcare providers to address acute and chronic psychological conditions	The primary care provider (PCP) and the Behavioral Health Consultant (BHC) work together through referral using both face to face encounters and e-clinical system (EMR) encounters to discuss the patients' health issues. The BHC provides medical management services and then provides feedback to the PCP regarding treatment plans and interventions used.	- 6 behavioral health providers recruited - PCP-BHC relationships are strong and functional - Shared medical records	Shortage of behavioral health providers and need to retrain psychologists to be BHCs	need for management codes for bundling primary care and behavioral health services reimbursements	Federal grants and third-party reimbursements	Bill McFeature SVCHS, Inc. (276)-669-5179 <a href="mailto:bmcfeature@svchs.com">bmcfeature@svchs.com</a>

**Table 3. Models of care and best practices in rural mental and behavioral health - continued**

Program Name	Lead Agency	Service Area	Key need addressed	Program Overview	Key Successes	Challenges	Policy and Workforce Implications	Primary Funding	Program Website/Program Contact
Intermountain Healthcare Mental Health Integration (MHI) Model	Intermountain Healthcare	UT and ID	lack of mental health and substance abuse service for all ages	Based on categorization of problem complexity calculated from a comprehensive assessment survey completed by the patient, the appropriate services are provided to treat and manage each patient's problem(s). Included in each patient's profile/medical record is information on his/her family's style of learning and coping with stress, making it easier to develop a comprehensive and effective treatment plan.	<ul style="list-style-type: none"> <li>- The number of clinics using the MHI model has grown to 68 in 2008</li> <li>- High provider and patient satisfaction with care and treatment</li> </ul>	<ul style="list-style-type: none"> <li>- billing, scheduling, and credentialing for the clinics due to poor reimbursement rates for mental health services</li> </ul>	Improve reimbursement rates for mental and behavioral health services	the Robert Wood Johnson and MacArthur Foundations	www.intermountainhealthcare.org
Cherokee Health Systems Integrated Health Model	Cherokee Health Systems	TN	poor quality of life due to lack of mental health services in rural areas	The clinics are designated as both Community Mental Health Clinics and Federally Qualified Health Centers. The model includes a Behavioral Health Consultant (BHC), generally a licensed clinical psychologist or social worker, embedded in the primary care team. Psychiatric consultation is also available to the primary care team. These teams deliver integrated care, with shared decision-making and equal partnership in clinical matters and management. Weekly team meetings are held in each clinic, and cross-specialty training often occurs between clinical providers.	<ul style="list-style-type: none"> <li>- Decreased number of medical visits to specialty mental health and primary health care providers, and fewer hospital admissions</li> <li>- Lower cost per patient for service</li> </ul>	Poor reimbursement rates for Medicaid-accepting providers	Introduce a global funding stream method for reimbursement that is more compatible with integrated care	85-90% from patient services. The remaining support is provided by small grants and gifts from foundations.	Dennis Freeman Cherokee Health Systems (865)-934-6711 <a href="mailto:dennis.freeman@cherokeehealth.com">dennis.freeman@cherokeehealth.com</a>

**Table 4. Models of Care and Best Practices in Rural Telemedicine**

Program Name	Lead Agency	Service Area	Number of participating sites	Key need addressed	Program Overview	Key Successes	Challenges	Policy and Workforce Implications	Funding	Source
Maine Telemedicine System (MTS)	HealthWays/ Regional Medical Center at Lubec (RMCL)	ME	over 200	Poor access to health services for rural areas; and large health disparities in the state	Composed of a number of regional telemedicine networks, MTS is unique to other telemedicine networks in two ways: 1) the system is organized as an open collaboration of independent health organizations; and 2) the network is coordinated not by an urban “hub” site, but by a rural “spoke” site	<ul style="list-style-type: none"> <li>- In 2,619 home health televisits, 95% of patients and 98% of staff found the technology “very satisfactory”</li> <li>- Estimated cost savings per clinical, educational, and administrative tele-session are \$491, \$496, and \$386, respectively</li> </ul>	Financial sustainability		Office for the Advancement of Telehealth, Office of Rural Health Policy, and Robert Wood Johnson Foundation	<a href="http://www.state.me.us/newsletter/july_aug_2004/maine_telemedicine_services.htm">www.state.me.us/newsletter/july_aug_2004/maine_telemedicine_services.htm</a>
Upper Peninsula Telehealth Network (UPTN)	Marquette General Health System (MGHS)	Upper Peninsula and Northern Great Lakes Region, MI	46	Access to health services for rural areas; and continuing education for rural providers	Known for its cutting edge work in telepathology, home health, and teleradiology, UPTN uses a wide range of connection technology (POTS to IP-based) depending on the type of session (educational, home healthcare, specialty consults, etc).	<ul style="list-style-type: none"> <li>- 95% of all telemedicine services are reimbursable by third-party payers</li> <li>- Over 7,000 videoconferencing events since 1994</li> </ul>	<ul style="list-style-type: none"> <li>- Some rural sites reported inadequate local staff support, high equipment cost, and low physician acceptance</li> </ul>	Increase Medicaid reimbursement for telemedicine services	Federal, state, and private grants including the Office of Rural Health Policy and Rural Utilities Services	<a href="http://www.mgh.org/telehealth/">www.mgh.org/telehealth/</a>
Integrus TeleStroke Network	Integrus Health	OK	6	poor time-to-treatment for rural acute stroke patients	Stroke neurology specialists located in the two hub hospitals use videoconferencing technology to remotely examine acute stroke patients, confirm the diagnosis, interpret the brain images and give recommendations to the originating site physicians. The service is provided 24/7, and a 12-week training for rural sites is provided by Integrus Health.	<ul style="list-style-type: none"> <li>- Increase in number of rural “Stroke Ready” facilities</li> <li>- 9 successful consults completed with high provider and patient satisfaction</li> </ul>	<ul style="list-style-type: none"> <li>- Physician buy-in from spoke sites</li> <li>- Tedious process of credentialing neurologists for all rural sites</li> </ul>		Internal (Integrus Health)	

<b>Program Name</b>	<b>Lead Agency</b>	<b>Service Area</b>	<b>Number of participating sites</b>	<b>Key need addressed</b>	<b>Program Overview</b>	<b>Key Successes</b>	<b>Challenges</b>	<b>Policy and Workforce Implications</b>	<b>Funding</b>	<b>Source</b>
Informatics Diabetes Education and Telemedicine (IDEATel)	Columbia University	NYC and rural upstate and northern New York	homehealth care (about 350 patients)	poor access to healthcare and case management services for rural diabetes patients	Patients received a computer in their home, which allowed for videoconferencing as well as electronic transfer of glucose and insulin readings. Case managers, scheduled visits with each patient every 4 to 6 weeks to monitor their health. Each patient received 30-45 minute consultations with the endocrinologist and case manager, and meeting summaries were sent to the patient's primary care provider.	<ul style="list-style-type: none"> <li>- High provider satisfaction and participation</li> <li>- Glycemic control, blood pressure levels, and total and LDL cholesterol levels improved at one year follow-up</li> </ul>	Technical challenges such as rural connectivity (with POTS), as well as obstacles to use by an older population	- Increase the number of providers using interoperable electronic medical record systems to ease the transition to telemedicine	Healthcare Financing Administration (HCFA)	<a href="http://www.idea-tel.org">www.idea-tel.org</a>
Minnesota Telehealth Network (MTN)	Tri-County Hospital (TCH)	Northern Minnesota and Eastern North Dakota	35	Lack of specialist care in rural communities	TCH trains rural telemedicine sites on telehealth applications (10-12hr training module), provides and schedules specialist consults, assists physicians with reimbursement issues, billing, coding, and medical records, coordinates telehealth session scheduling, and makes on-site visits to troubleshoot and set up equipment. All participating sites are Critical Access Hospitals. Most common applications are dermatology and child psychiatry.	<ul style="list-style-type: none"> <li>- Not including teleradiology and telehome healthcare visits, MTN conducts over 1,200 visits annually</li> <li>- 99% of claims submitted by providers for telemedicine services are reimbursed by insurance</li> </ul>	Rural physician buy-in can be poor in some sites. To address this problem, TCH has identified Physician Champions at each site to encourage use of the technology.		The Office for the Advancement of Telehealth and the Federal Communication Commission (FCC)	<a href="http://www.mntel-ehealth-network.org/facts.html">http://www.mntel-ehealth-network.org/facts.html</a>