



Colorado Rural Oral Workforce Project

*Report of Findings
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Colorado Health Institute
1576 Sherman Street, Suite 300
Denver, Colorado 80203-1728
www.coloradohealthinstitute.org

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- Tracy Anselmo, Dental Hygienist, Oral Health Unit, CDPHE
- Rob Berg, DDS, MPH, University of Colorado - School of Dentistry
- Rich Call, DMD, MS, University of Colorado – School of Dentistry, Practicing Dentist, Thornton
- Mark Deutchman, MD, MPH, Family Medicine, University of Colorado Denver – Health Sciences Center
- Gary Cummins, Executive Director, Colorado Dentist Association
- John Hanck, DDS, Past-President, Colorado Dentist Association, practicing dentist in Fort Collins
- Steve Holloway, Director, Primary Care Office, CDPHE
- David Lurye, DDS, Secretary, Colorado Dentist Association, practicing dentist in Winter Park
- Jim Sutherland, DDS, MPH, U.S. Public Health Service
- Lou Ann Wilroy, Director, Colorado Rural Health Center

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INTRODUCTION AND BACKGROUND

This assessment of Colorado's rural dental health workforce was prepared under contract with the Colorado Department of Public Health and Environment (CDPHE) as part of its Colorado Rural Oral Workforce Project. The paper examines findings specific to the rural dental workforce in Colorado from CHI's 2006 survey of licensed Colorado dentists and presents options for increasing the number of dental providers in rural areas of the state based on survey findings and insights from a group of key informant experts in Colorado.

Although oral health care access has improved over the past several decades, some segments of Colorado's population still face barriers to receiving the dental care they need. Among these populations are rural residents who, according to numerous studies, see dental providers less frequently than their urban counterparts. This lack of access is due primarily to an overall shortage of dentists practicing in rural communities. Six Colorado counties have no practicing dentist or dental hygienist,¹ and as a result many of these rural residents must drive long distances for dental care. To improve access to oral health care in rural areas it is essential to understand dental workforce issues so that solutions appropriately incorporate strategies to increase their supply, either directly or indirectly through such means as telemedicine.

Overview of oral health workforce issues: A national perspective

- The number of practicing dentists nationally has declined over the past 20 years with a concomitant drop in dental school graduates from the early 1980s through the mid-1990s. While the number of graduates has risen since then, it still remains significantly below the peak achieved in 1985.²
- The great majority of the nation's dentists provide services only in the private sector, with public health dentists and safety net dental clinics few in number relative to populations in need. Only half of federally supported community and migrant health centers include a dental care component.³
- Dentists are increasingly limiting the services they provide to Medicaid patients at a time when caseloads have risen significantly and service availability is critical to ensuring dental care access for low-income children in need of dentistry.

- Although the federal Early and Periodic Screening, Diagnosis and Treatment (EPSDT) program requires that Medicaid-enrolled children receive regular dental screening and treatment, only one-in-five Medicaid children receive these services.⁴
- Although the American Dental Association (ADA) does not currently forecast a shortage of dentists, most health professions workforce centers on the country project that a current shortage exists.
- The Health Resources and Services Administration (HRSA) Shortage Designation Branch of the National Center for Health Workforce Analysis, federal Bureau of the Health Professions, reported 1,036 Dental Health Professional Shortage Areas (dental HPSAs) in 1998, a number that had increased in 2002 to 1,953 dental HPSAs nationwide.⁵ Dental HPSAs are used to designate identified workforce shortage areas or underserved populations for federal and state programs that include the National Health Service Corps, Federal and State Loan Repayment Programs, the Rural Health Centers Program and a number of Title VII Programs.
- Dental hygienists are an important component of the oral health workforce, particularly in their role as primary care providers of preventive oral health care. Dental hygienists must complete at least a two-year program and are licensed by state licensing boards. In most states, direct supervision by a dentist is required and independent practice is rare. Another adjunct profession to the dentist is the dental assistant who may or may not receive formal training. Nearly two-thirds of all dentists employ at least one hygienist and most work with a chair-side assistant.
- The current oral health workforce is thought to have a reserve capacity, largely because of the increasing utilization of allied dental personnel such as advanced dental hygiene practitioners, community dental health coordinators and dental health aide therapists.
- The Centers for Disease Control and Prevention (CDC)-sponsored Healthy People 2010 Initiative has two oral health objectives related to increasing access to oral health care: 1) to increase the proportion of school-based health centers with an oral health component; and 2) to increase the proportion of local health departments and community-based health centers that provide oral health services.

Overview of oral health status and care in Colorado

- The percentage of Colorado children with untreated tooth decay is unevenly distributed in the state, with the greatest unmet needs in geographic areas with a high percentage of low-income families.⁶
- In 2005-06, only 30 percent of Colorado children eligible for Medicaid received any dental services.⁷
- In 2002-03 in Colorado, 11,333 children between the ages of 3-5 years were enrolled in a Head Start program. Head Start program performance standards recommend that centers, in collaboration with parents, determine a child's oral health status within 90 days of entry into the program. Nationally, 88 percent of children enrolled in a Head Start program have had a dental exam—in Colorado the rate is 93 percent.⁸
- Only 30 percent of adults over the age of 65 in Colorado have any type of dental insurance.⁹
- Twelve federally qualified community health centers operate 34 dental clinic sites in 21 Colorado counties, providing 158,680 visits to more than 70,500 patients in 2006.¹⁰
- School-based health centers (SBHC) in 7 cities and 25 sites in Colorado offer access to dental services, only four sites in Aurora, Cortez and Greeley offer on-site dental care. In 2005-06, SBHCs provided 1,667 dental visits to youth, and of these, the majority were provided at the Aurora SBHC (n=1003).¹¹
- Additionally, fourteen public or private nonprofit clinics contribute to the dental safety net capacity in Colorado.¹²
- Only three county public health departments (Denver, Tri-County and San Juan Basin) have a dental program.
- Legislation passed in 2006, SB 06-212, provided authority for dental hygienists to own a place where dental hygiene is performed and to purchase needed equipment. Hygienists may also contract with a licensed dentist or dentists to perform dental treatments in their office provided the treating dentist determines the services needed and is responsible for dental records, appropriate medication and patient payment. It is the responsibility of dental hygienists to inform their patients about the supervisory relationship between them and their supervising dentist.

- In 2000, Colorado ranked 11th-highest among the states in the dentist-per-capita ratio with a ratio of 70 dentists per 100,000 population; this is higher than the national rate of 63.6 per 100,000.¹³
- Historically, Colorado has depended on dentists migrating to Colorado from other states to meet the demand for oral health services in the state. Recently, the University of Colorado Denver School of Dental Medicine (UCDSDM) increased its enrollment to 50 students per year. At the same time, the school suspended admissions to its dental hygienist program for 2008. The dental school is the only state school to offer a 4-year baccalaureate degree for hygienists. The state still has three community college programs that offer an associate of applied science degree in dental hygiene.
- In Colorado, only 11 percent of the dental workforce is non-White compared to 25 percent of the state's population.¹⁴
- Less than 12 percent of Colorado's licensed and practicing dentists participate in Medicaid. Only 3 percent of Medicaid dental providers are classified as "significant providers."¹⁵

Oral health availability in rural Colorado

Colorado is primarily a rural state with approximately 4.7 million people in 2006. According to the 2000 Census, the state's population density was 41 people per square mile, compared with the national average of almost 80 people per square mile. Twenty-three of Colorado's 64 counties have a frontier county designation (fewer than six people per square mile) and an additional 24 counties are designated rural. A majority (80%) of Colorado residents reside in 10 metropolitan counties along the Front Range. Colorado's extreme geography (e.g., the Rocky Mountains, high desert plains and national forest system) creates barriers to obtaining physical, oral and mental health services in many rural areas.

Because dentists are concentrated along Colorado's Front Range metropolitan population centers, many rural residents must travel long distances to obtain dental care. Nearly half of Colorado counties are currently designated as either a geographic or low-income Dental Health Professional Shortage Area (HPSA) and around 20 more are in the application process. Dental HPSAs are defined by the federal government as having a dentist-to-population ratio of 1:5000 or greater or a dentist-to-population ratio of 1:4000 or greater in areas with less than half the population on fluoridated water or greater than 20 percent of the population at or below 200 percent of the federal poverty level (FPL). [See HPSA map in Appendix A]

State and federal incentive programs including scholarships, education loan repayment and tax credits are available to dentists and dental hygienists who are willing to work in an underserved area or with an underserved population. The Colorado Rural Outreach Program (CROP) provides grants to communities that can be used for payment of educational loans to help recruit and retain health care providers. The grants can also be used to support innovative projects that provide temporary coverage for rural providers. As of this date, only one dentist has ever participated in CROP.

In contrast, the state-administered Dental Loan Repayment Program (DLRP) provides up to \$25,000 for dentists and \$6,000 for dental hygienists in loan repayment for agreeing to serve a medically underserved population. Over 50 dentists have been recipients of loan repayments under the DLRP since 2002.¹⁶

FINDINGS FROM 2006 DENTIST WORKFORCE SURVEY

The 2006 Dentist Workforce Survey was designed to examine a number of workforce-related issues that included personal demographics, education and post-graduate education, specialist training, practice settings and patient-level characteristics. The survey domains are amenable to increasing our understanding of the unique characteristics of dentists that choose to practice in rural Colorado and how they differ from dentists practicing in urban areas of the state. A better understanding of the demographic profiles of rural practicing dentists can inform policy options intended to increase the supply of these dentists and thus alleviate current shortages that exist in the oral health workforce practicing in rural areas. Beyond the Dentist Workforce Survey, CHI also completed a dental hygienist workforce survey in 2006 whose findings will be released this summer. The combination of findings from these two surveys can shed light, through data-driven information, and inform policy options available to Colorado policymakers that increase the numbers of oral health professionals that choose a rural health practice setting.

2006 Dentist Workforce Survey: Methods, response rate and survey limitations

Methods

In March 2006, 4,427 survey questionnaires were mailed to all dentists who were currently licensed to practice dentistry in Colorado. The questionnaires were mailed to the address in each licensee's contact database maintained by the Colorado Department of Regulatory Agencies (DORA). Accounting for envelopes returned as "undeliverable", CHI received a completed survey from 1,666 dentists and an additional 160 that were completed electronically via a web-based version of the survey instrument for a total of 1,826 completed surveys. This number represented a 42 percent response rate of dentists surveyed. Of these, 1,286 listed a Colorado address as their practice location—this group comprised the sample for the analysis conducted for this report.

Survey limitations

The primary limitation of the survey results is that the questionnaire was mailed out only once to all active licensed dentists in Colorado in 2006. Because of a low response rate, even after a second mailing to nonresponders, results cannot be generalized statewide. The absence of a follow-up mailing greatly restricted CHI's ability to track non-responder bias in the survey sample. We were able to compare our sample to the DORA database of dentists licensed to practice in Colorado and reporting a Colorado mailing address on three variables: gender, degree earned and urban/rural (see footnotes). As Table I

indicates, the survey respondents look very similar to the universe of Colorado dentists with the exception of rural dentists who were slightly more represented in survey respondents.

Table 1. Comparison of survey respondents to Colorado licensed dentists

| 2006 Dentist Survey (n=1,826) | | DORA Database^{1, 2} (n=4,452) | |
|--|-------------|---|-------|
| Gender (n=1,187) ³ | | Gender (n=3,091) ⁴ | |
| Male | 83.4% | Male | 83.8% |
| Female | 16.6% | Female | 16.2% |
| Degree (n=1,191) ^{5, 6} | | Degree (n=3,172) | |
| DDS | 88.7% | DDS | 90.0% |
| DMD | 11.3% | DMD | 10.0% |
| RUCA Regions (n=1,167) ⁷ | | RUCA Regions (n=3,184) ⁸ | |
| Urban | 85.7% | Urban | 88.1% |
| Rural | 14.3% | Rural | 11.9% |
| Age (n=1,179) ⁹ | | | |
| Average | 50.2 (11.1) | | |
| Median | 51 | | |

¹ Licensees with status "Active" only

² As of February 6, 2006

³ Questions D5 and C6a

⁴ Based on the following algorithm:

- Attempt to match gender based on first name
- If no match with first name, attempt to match gender based on middle name
- If no match, attempt to match based on presence of a suffix (e.g., Jr, Sr, II, etc.), which implies a male.
- If no match, gender is categorized as "unknown"

⁵ Questions A2 and C6a

⁶ One respondent reported holding both degrees

⁷ Excludes responses where Question C6a indicated primary practice in CO, but ZIP code from Question C5 indicated another state

⁸ Based on ZIP code of mailing address

⁹ Age is calculated by subtracting year of birth (Question D6) from 2006 (year of survey)

Rural-Urban Commuting Area (RUCA) codes were used to classify rural and urban areas. RUCA codes are a sub-county measure of urban/rural status based on 2000 Census data and 2004 ZIP code areas. They are more specific than larger county-based definitions in order to more accurately classify intra-county areas as rural or urban. For more information on RUCA codes, refer to <http://depts.washington.edu/uwruca/index.html>.

Because non-responder bias is unknown, the data obtained from the 2006 Dentist Workforce Survey should not be extrapolated to represent characteristics of the general population of dentists practicing in Colorado.

A demographic profile of dentists practicing in Colorado: Rural versus urban characteristics

The analysis conducted by CHI for the Rural Oral Health Project has been limited to a rural vs. urban analysis to highlight those characteristics that may differentiate the two subgroups of dentists. In spite of the fact that CHI surveyed all dentists renewing their license in 2006 and achieved a relatively high response rate for a health professions survey (42%), the sample size of the rural responders was only 169 dentists. Keeping sample size in mind, the following bivariate analyses provide a lens through which to view potential demographic and practice differences that can inform policy and program initiatives intended to address oral health access in rural areas currently underway here in Colorado as well as those that have been evaluated elsewhere.

Gender

Of dentists licensed in Colorado and currently working as a dentist in 2006:

- 91.7% of dentists practicing in rural areas were male and only 8.2% were female; whereas,
- 82.3% of dentists practicing in urban were male and 17.6% were female.

These data suggest that men are more likely to choose a rural practice than women. However, because responder bias is unknown, we can only speculate at this time whether this gender difference in likelihood to practice in a rural area is a real difference or an artifact of responder bias. It is possible that CHI may be able to get gender and geographic location data from DORA, which would allow us to check our sample against the universe of licensed dentists in Colorado. Regardless, these data are suggestive of a similar finding in the 2005 Physician Workforce Survey where women were less likely to practice in a rural community relative to their male counterparts. Additionally, in the physician survey, we found that women practiced fewer hours than men, but that of the hours spent in practice, more were spent in direct patient care than men. Interestingly, the same findings did not emerge from the dentist survey. In general, men and women practice, on average, the same number of hours per week (29-30 hours) and spent, on average, the same amount of time in direct patient care (34-35 hours), regardless of whether they are practicing in a rural or urban setting.

Age

Of dentists licensed and currently working as a dentist in Colorado at the time of the survey, the age distribution between rural and urban looks quite different, particularly among older respondents.

Table 2: Age of survey respondents by urban/rural practice location

| Age Cohort | Rural Practice | Urban Practice |
|--------------|-----------------|------------------|
| 25-34 years | 7.7% (n=13) | 10.3% (n=103) |
| 35-44 years | 16.7% (n=28) | 21.3% (n=213) |
| 45-54 years | 28.6% (n=48) | 32.4% (n=323) |
| 55-64 years | 36.9% (n=62) | 29.2% (n=291) |
| 65-84 years | 10.1% (n=17) | 6.8% (n=68) |
| TOTAL | (n=168) | (n=998) |

These data portend an aging dental workforce, particularly in rural areas—responders 55 years and older comprised 47% of the rural dental workforce, while representing only 36% of the urban dental workforce. One strategy for an aging professional workforce that has been used successfully for other health professionals is to provide opportunities for retired dentists and dental hygienists to continue to practice on a part-time basis to give back to their community; maintain their professional competencies; and supplement the supply of oral health professionals that continue to maintain a fulltime practice.

Community in which dentist grew up

In the medical workforce literature, one of the strongest predictors of whether a physician chooses a rural practice setting is where the physician grew up. The findings from the 2006 Dentist Survey are harder to interpret in this regard—more dentists responding to the survey that grew up in an urban location practice in an urban area (77%) than dentists who grew up in a rural area who are practicing in a rural area (43%).

- 57.2% of responders who are currently practicing in a rural area reported growing up in an urban location; while,
- 77.4% of responders who are currently practicing in an urban area reported growing up in an urban location.
- In the alternative, 42.8% of responders who are currently practicing in a rural area reported growing up in a rural area; and
- 22.6% of responders who are currently practicing in an urban setting reported growing up in a rural area.

Grew up in Colorado and practice in Colorado

The data from our sample do not suggest that growing up in Colorado is a significant factor in predicting whether a dentist chooses to practice in a rural area, although it is interesting to note that Colorado-raised dentists have chosen their practice setting in direct proportion to the urban/rural distribution of the state's population.

- Of the 347 practicing Colorado dentists who grew up in Colorado that responded to the survey, 15.3% were practicing in a rural area and 84.7% were practicing in an urban setting at the time of the survey. These data precisely match the population distribution between rural and urban areas in Colorado as 85% of the population lives in an urban metropolitan area and 15% live in a rural area as defined by the U.S. Census Bureau.

Ethnicity

Because of small numbers of ethnic minorities in the survey sample, the data were divided between White and non-White. The distribution of non-White dentists working in rural versus urban areas was very close to being the same—7.7% of non-White dentists were working in a rural area compared to 9.5% of non-White dentists working in an urban setting.

Graduation from the University of Colorado Dental School

Having gone to dental school in Colorado does not appear to have a relationship to the decision to practice in rural Colorado. Of the graduates of UCDSM, 23.7% reported they were working in a rural area compared to 21.5% who went to dental school out of state.

Year of graduation from dental school

The data from the 2006 survey suggest that year of graduation from dental school may be a factor in understanding who chooses a rural practice setting. More recent graduates appear to be less likely to choose a rural practice than middle-age to older dentists.

Table 3: Year of graduation from dental school by urban/rural practice location

| Year of graduation from dental school | Working in a rural setting | Working in an urban setting |
|---------------------------------------|----------------------------|-----------------------------|
| 1946-1965 | 7.8% | 4.2% |
| 1966-1985 | 62.3% | 54.7% |
| 1986-2005 | 29.9% | 41.1% |

Board Certification

With few exceptions, there are no differences between rural and urban practicing dentists reporting being board certified in a dental specialty. Board certification among all survey respondents was quite low and there were no differences between rural and urban respondents in the areas of maxillofacial pathology, maxillofacial radiology and oral, maxillofacial surgery and public health dentistry. For the following board certifications, although the numbers were generally quite low, there were very slight differences between the rural and urban dentists that reported board certification and participated in the survey.

- One rural dentist (.6%) and 20 urban dentists (1.2%) reported being board certified in *endodontics*.
- 4.1% of rural dentists reported being board certified in *orthodontics* and 3.1% urban dentists reported this board certification.
- 2.4% of rural dentists reported being board certified in *pediatric dentistry* while 2.5% of urban dentists reported this board certification.
- 1.2% of rural dentists reported being board certified in *periodontics* while 2.7% of urban dentists reported this board certification.

Specialty training after dental school graduation

Dentists practicing in urban areas appear to be more likely to pursue specialty training after graduation from dental school; this is likely an artifact of closer proximity to training opportunities. 28.9% of

dentists working in an urban setting reported specialty training after graduation, whereas only 19.5% of dentists practicing in rural areas reported such training.

Focus areas of dental practice

Survey respondents were asked to report the focus areas of their dental practice, the majority of dentists reported general dentistry—87% of dentists practicing in a rural area and 77.8% practicing in an urban setting. Of those reporting another focus area, many were mentioned, with few differences between dentists in rural and urban settings.

Table 4: Focus areas of practice by urban/rural practice setting

| Focus area | Rural Setting | Urban Setting |
|---------------------|---------------|---------------|
| Cosmetic | 30.8% | 34.4% |
| Geriatrics | 13.6% | 11.6% |
| Implantology | 19.5% | 23.1% |
| Temporal Mandibular | 11.8% | 12.3% |
| Endodontics | 24.8% | 24.6% |
| Forensics | 0 | .4% |
| Oral Pathology | 1.2% | 4.4% |
| Oral Radiology | 5.3% | 3.9% |
| Oral Surgery | 24.8% | 20% |
| Orthodontics | 10.1% | 10.2% |
| Pediatrics | 19.5% | 17.8% |
| Periodontics | 18.3% | 17% |
| Prosthodontics | 28.4% | 26.2% |
| Public Health | 0 | 2.4% |

Practice Setting and ownership type

A large majority of dentists responding to the survey own their dental practice, 79.5% of dentists practicing in a rural area and 80.1% practicing in an urban location.

When asked about the type of facility in which they practice, survey respondents overwhelmingly responded either a solo or group practice:

- 68.6% of rural dentists and 61.8% of urban dentists reported a solo practice; and
- 21.9% of rural dentists and 29% of urban dentists reported a group practice.
- 79.5% of dentists practicing in a rural area reported owning their practice and 80.1% in an urban setting reported owning their practice.

Income

There does not appear to be significant income disparities between dentists practicing in rural versus urban areas.

Table 5: Income levels by urban/rural practice setting

| Income Level | Rural Practice Setting | Urban Practice Setting |
|-----------------------|------------------------|------------------------|
| Less than \$50,000 | 6.7% | 5.1% |
| \$50,000 - \$99,000 | 20.3% | 16.6% |
| \$100,000 - \$149,000 | 24% | 23.6% |
| \$150,000 - \$199,000 | 22.1% | 17.1% |
| \$200,000 - \$249,000 | 10.8% | 13.2% |
| \$250,000 - \$299,000 | 4.4% | 7.4% |
| \$300,000 - \$349,000 | 3.8% | 5.9% |
| \$350,000 or more | 7.6% | 10.8% |

Accepts new patients, private, Medicaid and CHP+

There appears to be a slight tendency for respondents practicing in rural areas to report not accepting new patients, but the numbers are so small in this category that the finding should be interpreted with caution.

- 3% (n=5) of dentists practicing in rural areas reported not accepting new patients, while only 1.2% (n=12) of urban areas reported having closed practices.

Alternatively, when asked about whether they accept Medicaid patients, a different finding emerges. For both rural and urban respondents, the “not accepting” categories were quite large:

- 68.1% of rural dentists reported not accepting Medicaid patients and 74.5% of urban dentists reported not accepting Medicaid patients.

Of those who did report seeing Medicaid patients, the percentage of those who reported not seeing *new* Medicaid patients was even larger:

- 73.3% of rural dentists reported not accepting *new* Medicaid patients and 71.3 of urban dentists reported not accepting *new* Medicaid patients.

With regard to CHP+ patients, there appears to be much greater acceptance of this program relative to Medicaid. In addition, rural dentists appear to be much more likely to report seeing CHP+ patients than their urban counterparts.

- 52.3% of rural dentists reported providing care to CHP+ patients and opposed to only 29.7% of urban dentists.
- Again, 48.1% of rural dentists reported accepting *new* CHP+ patients, while only 27.8% of urban dentists are accepting *new* CHP+ patients.

POLICY OPTIONS TO IMPROVE ACCESS TO ORAL HEALTH CARE IN RURAL COLORADO

Key informants interviewed for this report agreed that the problems of access to appropriate oral health care in rural Colorado are complex with no single solution. Long-term success and sustainability in increasing access to oral health care in rural areas will require policy change, community buy-in and public education—each of these approaches, singularly and in combination, holds promise for resulting in a better geographically distributed, appropriately available and accessible dental workforce. The data from the 2006 Dentist Workforce Survey, although not generalizable to the general dentist population in Colorado, confirms key informants' observations.

One goal of this report is to recommend ways in which CDPHE and others can track the implementation of these legislative initiatives to better understand whether they are making a difference in the supply of oral health care practitioners in Colorado, particularly those committed to practicing in rural areas and to serving the state's underserved residents.

Option 1: Increase oral health outreach to toddlers and school-age children

- In the 2006-07 school year more than 3,012 third grade children in 49 schools were screened in a statewide survey for untreated decay, caries experience, urgent dental needs and sealants. The survey team identified 56 public schools in a probability sample; 49 of these schools agreed to participate. Sampling was based on free and reduced school lunch participation. Of the schools participating, 26 percent of children had untreated decay and 57 percent had experienced dental decay.¹⁷

Expanding annual dental screenings to a larger proportion of school-aged children, particularly those residing in rural areas of the state with few or no dental providers, would be a first step at improving children's access to preventive oral health care. Likewise, making preventive dental services more available to pre-school age children in the state's Head Start centers would be a proven cost-effective intervention. As noted earlier, Colorado could do better at ensuring that dental screenings occur when children enroll in a Head Start center.

- Governor Ritter's *Building Blocks for Health Reform* contains a particular emphasis on improving access to health care for children by expanding income eligibility for children in the CHP+ program to 225% of the federal poverty level, expanding public outreach and awareness of CHP+ and Medicaid, eliminating bureaucratic hassles in these programs and increasing dental rates to 52 percent of commercial rates. Assuming these building blocks get implemented in 2008-09, there will be a great need to educate the dental community about the changes in

Medicaid and CHP+ and engage them in becoming a part of the private sector solution to increasing access to oral health care for Colorado's children.

- Expanded use of dental hygienists in the schools has proven efficacy in other states. South Carolina and Maine currently send dental hygienists into schools to provide preventive services, an effort the Colorado Dental Hygiene Association has supported for Colorado. The Colorado Health Institute is currently conducting an evidence-based study of the scopes of practice of advanced practice nurses, physician assistants and dental hygienist for Governor Ritter's policy office and expects that evidence about the expanded use of dental hygienists will be incorporate into this review. A more comprehensive approach to school-based screenings and preventive care could be accomplished by legislation or executive branch fiat.
- An innovative pilot project funded by the Delta Dental of Colorado Foundation to place a dental hygienist in a pediatric office holds promise for reaching infants and young children before the enter the school system. There is increasing evidence for the importance of doing an initial screening of an infant's mouth prior to the age of one year to establish a baseline of information and to provide anticipatory guidance to mother's about the importance of oral hygiene including education about how unwanted bacteria can be transmitted between a mother and her infant.
- Survey findings from the 2006 Dentist Workforce Survey present disturbing statistics about the access children on Medicaid and CHP+ have to dentists in both rural and urban areas of the state. This being the case, it is possible that a more immediate intervention may be to get preventive oral health services to children through the expanded deployment of dental hygienists through the schools.

Option 2: Opportunities for innovation in dental education

- Partnerships between the University of Colorado Denver's School of Dental Medicine (UCDSDM) and dental schools in Nebraska and Iowa could be created to jointly develop curriculum specifically designed for rural track dental students. Since most dentists practicing in a rural area may be the only dental provider for a large geographic area, training modules or seminars in pediatric dentistry, public policy and public health and practice management could better prepare dental students for the opportunities and challenges they will encounter in being the only provider in town.

What is of interest to note in this regard is that this generalist/specialist approach to practice in rural areas already appears to be happening, although not necessarily by design. According to

the CHI survey findings, 20 percent of rural practicing dentists reported providing care to a pediatric population, 28 percent reported prosthodontics, 25 percent endodontics and 35 percent reported oral surgery as a focus area of their current dental practice. Given these numbers, dental schools would do well to provide additional coursework for dental students on the unique challenges of practicing in a rural area, including the breadth of practice skills and services they may be called upon to provide. Additionally, a population health focus is important when a single dental practice may be expected to care for the oral health needs of a large geographic area. This population focus, as curriculum content, should include attention to public programs and the policy goals behind such as Medicaid and CHP+ in terms of the role they play in extending dental care access to low-income children and their parents.

Option 3: Reimbursement and care coordination strategies

- While some Colorado counties do not have any dentists, others lack dentists who are willing to accept Medicaid and CHP+ patients. The CHI survey indicates that this problem may be even more acute in urban areas of the state. Efforts to encourage dentists to accept families and children on Medicaid necessarily will have to address dentists' chief complaints about the program—low reimbursement rates, burdensome paperwork and slow claims processing.¹⁸ Although key informants acknowledged that there are “reality and myth” components to each of these complaints, it is the case that 68 percent of dentists practicing in a rural area and three-quarters of urban dentists responding to the CHI survey reported not accepting Medicaid patients, and of those with Medicaid patients in their practice, 73 percent of rural and 71 percent of urban dentists reported not accepting *new* Medicaid patients.

This issue represents a major political problem in Colorado's oral health benefit in Medicaid program; a problem that can only be addressed by the legislature and/or the administration. As noted above, Governor Ritter has proposed a rate increase from 47 to 52 percent of commercial dental rates as part of his *Building Blocks to Health Reform* Initiative.

Key informants suggested additional strategies that could help to mitigate the willing provider problem. For example, an outreach campaign targeted at dentists to provide objective and unbiased information about the importance of this dental benefit to low-income children, including the impact of poor oral health on the physical health of Colorado's children. Another strategy would be an outreach campaign that provides useful information to dental practices about how to make the economics of serving Medicaid children work.

Care coordination (care management) is often used in medical settings for hard-to-reach populations, but has not routinely been used in dental care. Care coordinators that navigate between medical and oral health providers can assist low-income families including those who are uninsured and on Medicaid and CHP+ to use the health care system appropriately and also can provide health education and enrollment assistance to families eligible for publicly-funded programs. The Caring for Colorado Foundation has provided grant funds to test and evaluate a care coordination model for dental care access and has found benefits to this approach such as fewer appointment “no-shows,” a greater number of people using the system appropriately and successful assistance in helping families with funding for their dental care needs.

Option 4: Community-based interventions

- The federal Health Resources and Services Administration (HRSA) developed criteria to determine whether geographic areas or populations have a shortage of health professionals (see map in Appendix A). Designation as a Dental Health Professional Shortage Area ensures eligibility for a number of federal programs including the National Health Services Corps, scholarship funds and loan repayment. These programs are important tools currently promoted by the Colorado Rural Health Center to recruit oral health providers to rural Colorado. The Colorado Department of Public Health and Environment’s Primary Care Office assists rural communities in completing the HPSA application process.

Once an area has a Dental HPSA designation, the community has expanded opportunities for local collaborations to recruit oral health professionals. Additional tools available to a rural community include low-cost loans for establishing a dental practice from a local bank, real estate assistance in finding a practice site and securing loan assistance and entrée into local community support systems such the local school board and school superintendent, recreational opportunities, local cultural events and other services that characterize the community’s unique resources and assets. Meaningful opportunities for community involvement and work for spouses are also important resources to be developed when recruiting health professionals to a community. Professional recruitment is a community investment and economic resource that cannot be overemphasized in a rural context. So saying, oral health recruitment is a community activity that requires the commitment of the entire community.

Colorado has five Area Health Education Center (AHEC) programs that were established to assist communities in their health professional recruitment efforts. Designed to assist communities with the initial recruitment of a health professional, AHECs also provide continuing education and faculty appointment opportunities for health professional practicing in a rural area of the state. The AHEC program is often an underutilized resource and increased coordination between the five AHECs, the Rural Health Center, Office of Primary Care and UCDSMD holds the potential to expand available community resources for the recruitment and retention of dentists in rural areas.

- Community and migrant health centers that have an oral health component are exemplary models of collaborative, interdisciplinary approaches that have been demonstrated to effectively provide a bridge between physical and oral health care. Best practices dissemination strategies should be promoted to rural areas across the state through various mechanisms, including the CHI Safety Net Indicator and Monitoring system that is currently developing best practice community studies for wide dissemination throughout Colorado.
- Additional community-based interventions that could be leveraged to integrate oral health care and that should be evaluated for efficacy include:
 - The Nurse Home Visitor Program administered by CDPHE. This program is evidence-based and sends nurses into the community to support first-time, at-risk mothers. CDPHE provides toothbrushes and information on oral health. An explicit link to dental hygienists' preventive services would strengthen the impact of the intervention on oral health outcomes.
 - The Colorado Trust is funding a Promotora model in three schools in the Native American community. Another type of community-based resource is the Community Liaison funded by Caring for Colorado Foundation.
 - Outreach workers in the Women, Infants and Children (WIC) clinics could include basic oral health education about the importance of preventive and basic oral care services. Outreach and education are only as effective at improving population health outcomes as they are linked to actual preventive and oral health services. This is another example of the importance of having adequate providers available once oral health problems are identified.

Option 5: Recruitment and retention strategies

Several key informants spoke directly to the issues related to recruitment and retention.

- Dental hygienists provide preventive oral health care using evidence-based approaches to prevent caries and oral disease. The Dental Hygiene Practice Act guidelines were recently updated for the first time since 1985 to reflect these proven practices. The Colorado Dental Hygienists Association currently is evaluating whether the Practice Act also needs updating to reflect the different settings in which dental hygienists apply their skills and expertise. As noted earlier, CHI is currently undertaking a study for the Governor’s policy office that includes examining the evidence for expanding dental hygienists’ scope of practice to address oral health care shortages in rural and other underserved areas of the state.
- In 2004, the American Dental Hygienists Association (ADHA) created the concept of Advanced Dental Hygiene Practitioners (ADHPs) to address the lack of access to oral health care for underserved communities across the country. ADHPs would be masters-level prepared oral health practitioners similar to nurse practitioners, functioning independently under remote supervision, in community-based settings. The ADHP would be trained to manage the on-going dental needs of patients, provide oral health education and full preventive services and perform simple extractions and restorations. The ADHA currently is seeking funding for a pilot project to demonstrate the efficacy of this new professional category. Colorado policymakers should monitor the evidence that may be forthcoming from demonstrations conducted elsewhere.
- Colorado’s rural health advocates enthusiastically promote the “grow your own” approach to increasing the supply of dentists and other oral health professionals opting to work in rural areas of the state. Of the programs listed below, particular attention should be paid to recruiting Colorado students into the oral health professions as they exit high school. It is one thing to expose students to careers in the oral health professions, it is another to actively recruit them into oral health profession schools—this is a strategy that requires an explicit commitment on the part of health professions programs. Options that promote a more focused approach to recruiting oral health professionals into rural areas include:
 - Offering pre-medical and pre-dental educational opportunities and scholarships for rural high school students to attend conferences and university-based programs that are designed to introduce students to medical and dental careers.

- Providing rural experiences for dental and dental hygienist students. A rural track at the UCDSDM places residents in rural locations for a clinical rotation. Colorado's Area Health Education Centers report that in FY2005-06, they had provided a total of 648 weeks of rural dentistry clinical rotations for 108 students. Both of these programs could be expanded to create a larger pool of dentists and hygienists interested in a rural practice setting.
- Promoting cross-training and jointly developed curricula between dentists and physicians. The Delta Dental Foundation funded the establishment of the Frontier Center in 2005 for this purpose. Another goal of the Frontier Center is to develop evidence-based strategies for recruiting greater numbers of rural and minority students into UCDSDM.
- Supporting and expanding the Advanced Clinical Training and Service Program at UCDSDM. Fourth-year dental students currently have the opportunity to provide a year of dental service in an underserved community under the guidance of a practicing dentist. There are 50 participating clinics with students rotating to new clinic setting each four to six weeks.

Option 6: Reviewing the evidence for new oral health professionals

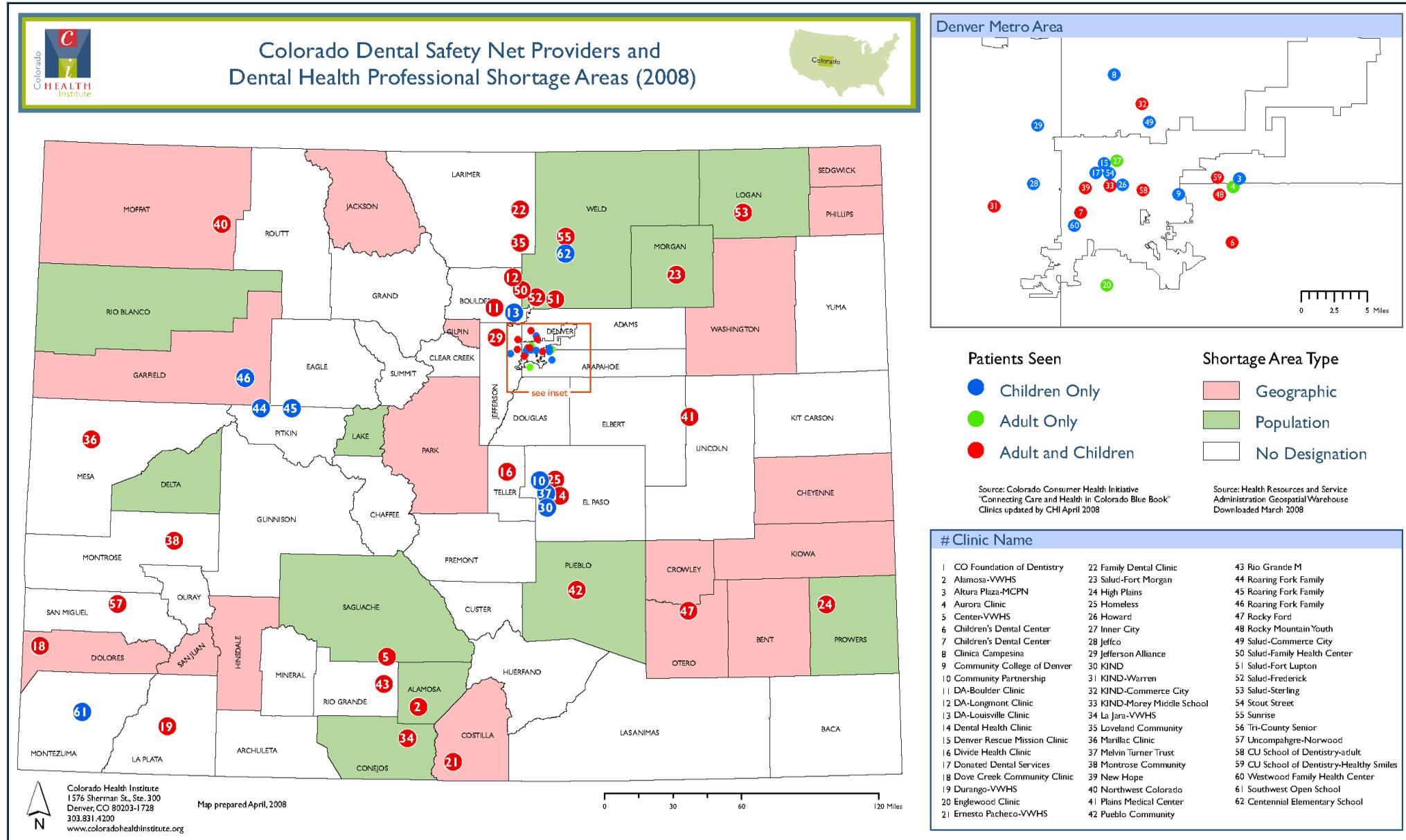
- The oral health literature is reporting other new types of oral health providers and methods for expanding access to oral health care in underserved areas, many of these approaches have been implemented on a limited basis.
 - Expanded Function Dental Assistants work under the direct supervision of a dentist to prepare or complete restorations, take x-rays, apply sealants and fluoride varnishes and polish teeth.
 - Dental Health Aides and Dental Health Aide Therapists currently work on Alaska Native reservations in Alaska. The aides provide preventive services, while therapists are trained to do cleanings, fillings and uncomplicated extractions in addition to preventive services. All work is done under the general supervision of a dentist at regional hospitals.
 - Community Dental Health Coordinators attend an 18-month training program and then work under the supervision of a dentist in medical offices and community settings to promote oral health and provide basic preventive screening services.

- Because rural residents tend to have greater access to physical primary care than dental care, one promising intervention is to provide training, support and Medicaid reimbursement for primary care physicians to perform basic oral health preventive care and uncomplicated dental tasks. The UCDSM rural track is providing such training opportunities for both physicians and residents in a “train the trainer” format which has introduced oral health into the medical school curriculum. West Virginia is cross-training dental professionals, primary care physicians, nurse practitioners and physician assistants to provide early oral health screening to identify potential oral health problems in the early years of a child’s growth and development.

NEXT STEPS FOR INCREASING ORAL HEALTH ACCESS IN RURAL COLORADO

- 1) Establish a policy monitoring system that tracks over time policy changes made in previous legislative sessions related to the oral health workforce to produce the evidence needed to institutionalize those changes that have resulted in increasing the number and distribution of Colorado’s oral health workforce, particularly in underserved areas, and make recommendations for strengthening those that have not.
- 2) Ensure that 2-3 oral health access and utilization questions are added to the 2008 and 2010 Colorado Household Survey being administered by CHI under contract with the Colorado Department of Health Care Policy and Financing in the fall of 2008.
- 3) Work with Colorado’s philanthropic foundations to ensure that appropriate evaluations are conducted and metrics developed in the area of oral health grant-making to produce the needed evidence for informed and effective policy changes that will improve access to oral health care services in rural areas.
- 4) Work with oral health professions training programs to identify and implement aggressive recruitment strategies to reach high school students and young professionals living in rural areas to the oral health professions. Possible strategies might include a separate rural health track in dental school and dentist hygienist training programs that provides targeted incentives and curriculum designed to prepare oral health practitioners for rural health practice.

APPENDIX A – DENTAL HEALTH PROFESSIONAL SHORTAGE AREAS



ENDNOTES

¹ Colorado Department of Regulatory Agencies, Division of Registration, 2006, https://www.doradls.state.co.us/lic_database_req.php, as posted on the Colorado Health Institute Web site. http://datacenter.coloradohealthinstitute.org/data_results.jsp?i=105&rt=3&p=2&c=5 and http://datacenter.coloradohealthinstitute.org/data_results.jsp?i=104&rt=3&p=2&c=5

² American Dental Education Association (2007). "Total U.S. Dental School Graduates, 1960-2007." http://www.adea.org/TDE/2_1_3.htm

³ Health Resources and Services Administration dataset, reported in Association of State and Territorial Dental Directors (2006). *Proven and Promising Best Practices for State and Community Oral Health Programs*. <http://astdd.org/index.php?template=bestpractices.html>

⁴ National Academy for State Healthy Policy (2007). *Improving Oral Health Care for Young Children*. <http://www.oralhealthamerica.org/pdf/NASHPImprovingOralHealthofYoungChildren.pdf>

⁵ Center on an Aging Society, Georgetown University (2004). *Oral Health Care: Can access to services be improved?* <http://ihcrp.georgetown.edu/agingsociety/pubhtml/oralhealth/oralhealth.html>

⁶ Colorado Department of Public Health and Environment (CDPHE) (2004), Oral Health Program, Basic Screening Survey, 2004.

⁷ CDPHE. *Snapshot of Oral Health in Colorado*. <http://www.cdphe.state.co.us/pp/oralhealth/Snapshot.html>

⁸ CDPHE (2005). *The Impact of Oral Disease on the Health of Coloradans*. <http://www.cdphe.state.co.us/pp/oralhealth/impact.pdf>

⁹ CDPHE. *The Impact of Oral Disease*.

¹⁰ Colorado Community Health Network (2007). *Fact Sheet*. http://www.cchn.org/pdf/health_centers/2007_fact_sheet.pdf

¹¹ Colorado Association of School-based Health Care, 2006 Annual Report.

¹² CDPHE (2007). *Dental Loan Repayment Program Annual Report July 2006 – June 2007* <http://www.cdphe.state.co.us/pp/oralhealth/dlrrannualreportFY05-06.pdf>

¹³ National Center for Workforce Analysis (2000). *The Colorado Health Workforce: Highlights from the Health Workforce Profile*. <http://bhpr.hrsa.gov/healthworkforce/reports/statesummaries/colorado.htm>

¹⁴ CDPHE. *The Impact of Oral Disease*.

¹⁵ CDPHE. *The Impact of Oral Disease*.

¹⁶ Colorado Rural Health Center. *Comparison of Colorado Healthcare Provider Loan Repayment Programs*. http://www.coruralhealth.org/crhcl/resources/fact%20sheets/loan_compare_grid.pdf

ENDNOTES

¹⁷ Colorado Department of Public Health and Environment. *Snapshot of Oral Health in Colorado*. <http://www.cdphe.state.co.us/pp/oralhealth/snapshot.html#Children's%20Oral%20Health>

¹⁸ National Conference of State Legislatures (2001). Increasing dentists' participation in Medicaid and SCHIP.