Family Medicine Residency Education in Colorado

Recommendations to Increase Training and Retention of Family Physicians in Rural and Underserved Areas

A Report to the Colorado Legislature

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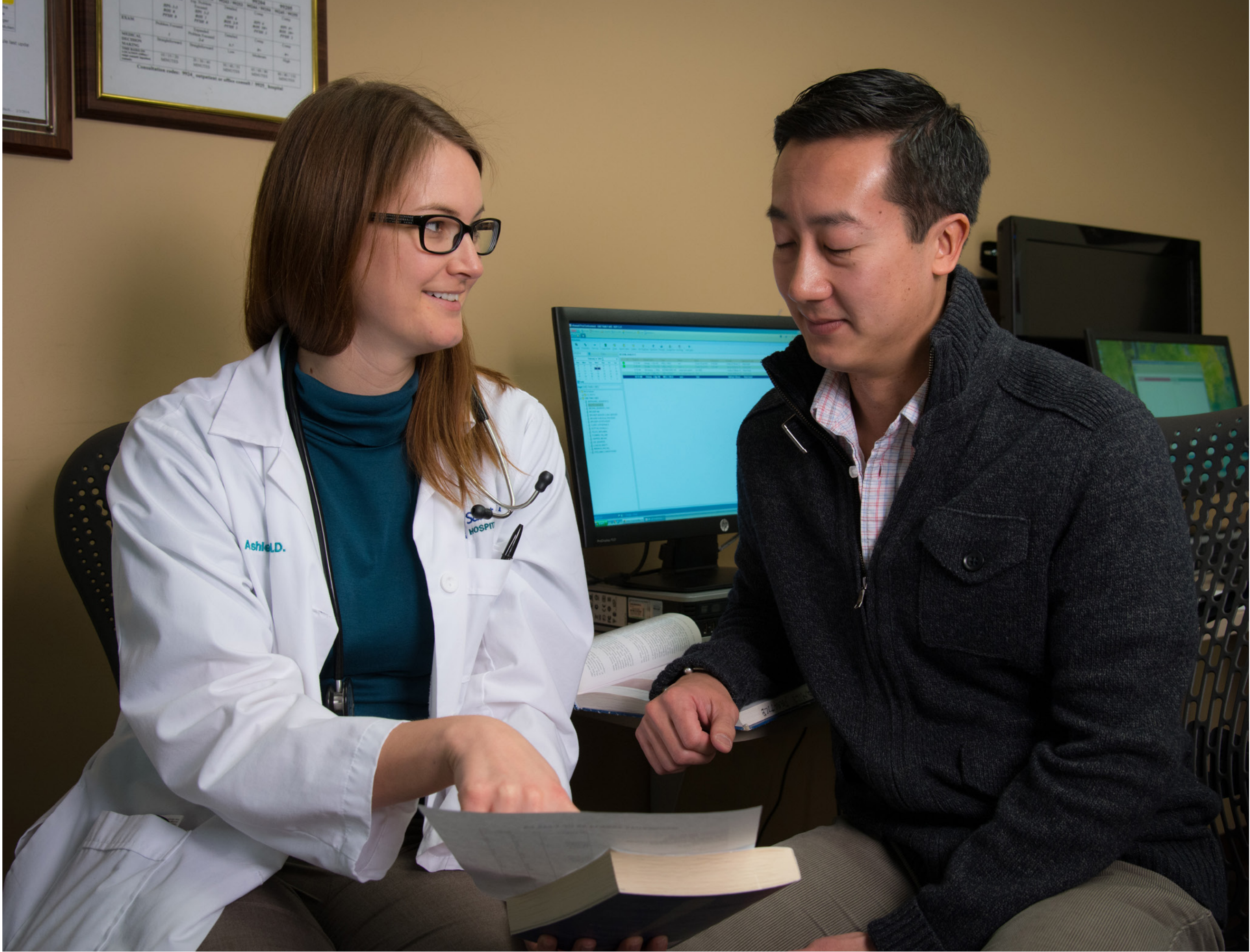


EXECUTIVE SUMMARY

Colorado faces a shortage of primary care physicians. This is due to several factors, including population growth and the aging and retirement of physicians in the Baby Boom generation. At the same time, hundreds of thousands of Coloradans have gained health insurance since the beginning of 2014 because of state and federal health reform efforts.

This confluence of events is making it difficult for many Coloradans to access health care, especially those who live in rural areas.

The Colorado General Assembly, responding to this concerning trend, passed Senate Bill 14-144 in 2014 requesting that the Colorado Commission on Family Medicine (COFM) conduct an in-depth study and provide recommendations for increasing the training of family physicians for practice in rural and underserved areas of the state.

COFM undertook the study between June 2014 and January 2015. Work groups composed of health care and primary care experts interviewed key informants, reviewed relevant academic literature, and met with national consultants.

The work groups began by acknowledging that patients are best served by interdisciplinary teams of primary care providers, including physicians, nurse practitioners, physician assistants, pharmacists, behavioral health providers, nurses and other staff,

all practicing within the full scope of their skills.

While family physicians are one component of effective primary care, this study and the resulting recommendations focus on them exclusively because of SB 14-144's instructions to limit the scope of the study to COFM's sphere of influence and expertise.

The study found that Colorado's nine family medicine residency programs produce 68 family physician graduates each year. Historically, about 65 percent of these graduates continue to practice in the state. And of those who stay in Colorado, roughly 40 percent practice in rural and underserved areas.

These programs are nationally recognized for their excellence. However, they are not producing enough graduates to meet Colorado's health care needs.

COFM is highly successful recruiting applicants. Colorado's family medicine residencies annually receive more qualified applicants than they can train. Securing adequate and sustainable funding is the bigger challenge. Two major funding sources for the residencies – patient care revenue and Medicare Graduate Medical Education (GME) payments – are unlikely to grow in coming years.

The study has produced 14 recommendations, including a strategy to fund more family medicine training positions in Colorado by leveraging state funds with federal Medicaid GME funds. This strategy would not only double the state's investment in GME, it would allow Colorado to target the funds to specific health care workforce needs. This state investment would be monitored closely to ensure that the public funds address targeted workforce needs.

The study showed the value of Colorado's family medicine residency programs. They have graduated 1,950 family physicians since 1972 when the programs started. More than 1,000 of those graduates still practice in the state, many in rural and underserved areas.

Yet Colorado faces an important challenge as it thinks creatively about how to increase the number of family physicians, particularly in areas of highest need. The findings of this study provide practical options as Colorado works to make health care available for all of its citizens.

A Summary of the 14 Recommendations

For a more detailed explanation, please see page ?.

1. Continue to provide state funding to support the nine existing family medicine residency programs.
2. Continue to provide state funding to support the rural training programs under development.
3. Continue the required rural rotation during residency.
4. Develop educational tools to clarify the benefits of GME for administrators of teaching hospitals.
5. Develop a training pipeline between Colorado's medical schools and the residency rural training tracks in development.
6. Provide loan repayment for recruitment and retention of family medicine residency faculty.
7. Add new training positions to existing family medicine programs.
8. Add rural fellowship training programs to existing family medicine residency programs.
9. Fund a new program to provide loan repayment assistance for Colorado medical students to practice in the state after residency.
10. Provide a tax credit to primary care physicians who practice in rural communities.
11. Consult with the Colorado Health Plan Association to identify methods for insurance companies to partially fund training of primary care physicians.
12. Support the Health Workforce Plan that is under development.
13. Support the Health Professions Database that is under development.
14. Maintain the current GME advisory groups. Do not create a GME Advisory Council.

INTRODUCTION

This report contains findings and recommendations of a study completed to meet the requirements of SB14-144, “Concerning Extending the Commission on Family Medicine’s Support for the Development of Family Medicine Residency Programs in Underserved Areas of the State.”

The Colorado Commission on Family Medicine (COFM) completed the study “concerning family medicine residency programs and how these programs will meet the primary care workforce needs of rural Colorado and other underserved areas of the state” as required by SB14-144.

The study was a collaborative process involving more than 30 stakeholders representing a wide variety of health care interests. The stakeholders identified an overarching goal of increasing the number of family medicine residency graduates who practice in rural and underserved areas and ensuring the sustainability of the training programs.

To reach that goal, the stakeholders settled on 14 recommendations in five general areas: Support existing residencies and their rural programs; Expand existing programs; Enhance recruitment and retention strategies for rural and underserved areas; Consider alternate methods to fund family medicine residencies; Develop coordinated workforce policy and data collection systems.

SB14-144 Identified Eight Topics of Study

1. Family medicine workforce data collection systems in the state and how these systems could be more effective in providing data on primary care workforce needs and provider retention, particularly in rural and other underserved areas of the state.
2. The utility of creating a GME advisory council to develop a method for assessing Colorado’s graduate education needs more generally, including primary care as well as specialty care in rural and other underserved areas of the state.
3. Methods to engage third-party payers in supporting GME programs to meet physician shortages.
4. Effective strategies to enhance federal funding to family medicine training programs, including rural training tracks.
5. Effective strategies for targeting state funding to rural and other underserved areas in the state where family residency programs are needed.
6. Methods for monitoring the effect of rural residency programs on physician retention in rural and other underserved areas of the state.
7. Methods for monitoring the effect of loan repayment programs on physician retention in rural and other underserved areas of the state.
8. Costs required to sustain family medicine residency programs that are not recouped over time through other sources of revenue such as Medicaid and Medicare billing.

METHODOLOGY

The findings and recommendations included in this report are based on work groups staffed by state experts, consultations with nationally recognized experts, academic literature reviews and stakeholder outreach. Drawing on all of these sources of information, the process provided evidence-based discussions and a sense of what is working and what isn't working in Colorado.

Three work groups and a steering committee convened to gather data, identify gaps in existing programs and develop recommendations. The membership of each group represented a breadth of stakeholder perspectives and provided subject-matter expertise. The work groups met monthly between July and December 2014. Additional work group sessions came together around opportunities to meet with national consultants. The executive director of COFM chaired all work group and steering committee meetings.

Steering Committee

This committee was charged with overseeing the project and assuring that recommendations align with the legislative mandate of SB14-144. Members:

- **Rebecca Alderfer,** Senior Analyst, Colorado Health Institute
- **Hon. Kristen L. Mix,** U.S. District Court for the District of Colorado, and Chair of COFM.
- **Kim Marvel, Ph.D.,** Executive Director, COFM
- **Janell Wozniak, M.D.,** Program Director, Fort Collins Family Medicine Residency Program, and Chair, Colorado Association of Family Medicine Residencies
- **Sarah Hemeida, M.D.,** Policy Fellow, University of Colorado's Department of Family Medicine
- **T. J. Staff, M.D.,** Associate Program Director, Denver Health Family Medicine Residency Program
- **Tom Told, D.O.,** Dean, Rocky Vista University College of Osteopathic Medicine
- **Sharry Veres, M.D.,** Program Director, St. Anthony's Family Medicine Residency Program
- **Kent Voorhees, M.D.,** Vice Chair of Education, University of Colorado's Department of Family Medicine

Medicaid GME Work Group

The Medicaid GME Work Group established a baseline understanding of Medicaid GME funding and examined strategies for targeting and better accounting for current and future state funding, enhancing federal funding to expand family medicine residencies, further developing the Colorado rural training track programs, and sustaining the existing family medicine residencies. Members:

- **Nancy Dolson,** Safety Net Programs Manager, Colorado Department of Health Care Policy and Finance

Physician Retention Work Group

The Physician Retention Work Group identified best methods to monitor the effects of rural residency programs and loan repayment programs on physician retention in rural and underserved areas and how to employ data to improve the distribution of primary care physicians in Colorado. Members:

- **Melissa Bosworth,** Director of Workforce and Outreach, Colorado Rural Health Center
- **Erica Grover,** Public Health Analyst, National Health Service Corps
- **Richard Marquez,** Workforce Programs Specialist, Primary Care Office, Colorado Department of Public Health and Environment

- **Jeanie Rhee,** Residency Recruiter, Colorado Association of Family Medicine Residencies
- **David Smith, M.D.,** Program Director, North Colorado Family Medicine Residency Program
- **Tanah Wagenseller,** Senior Manager of Workforce and Training, Colorado Community Health Network

Physician Workforce Work Group

The Physician Workforce Work Group examined physician workforce data available in Colorado, recommended how these systems could be more effective in providing data on primary care workforce needs and provider retention, particularly in rural and underserved areas, and assessed whether data can inform recommendations for the structure and location of residency training programs. Members:

- **Sharon Adams,** Executive Director, ClinicNet
- **Rebecca Alderfer,** Senior Analyst, Colorado Health Institute
- **Melissa Bosworth,** Director of Workforce and Outreach, Colorado Rural Health Center
- **Erin Lantz,** Health Center Operations Director, Colorado Community Health Network
- **Richard Marquez,** Workforce Programs Specialist, Primary Care Office, Colorado Department of Public Health and Environment

Academic Literature Review

Professional articles, national reports, and Colorado assessments were sources of information for this study. Extensive research has been conducted on the effects of rural training and loan repayment programs on physician recruitment and retention and on the challenge of determining workforce needs. The articles and reports cited in this report and used to inform the work groups are listed in the Reference section.

Key Informant Interviews

Many local and regional experts, in addition to the work group members, were interviewed in person or by telephone. Interviews were conducted during full work group meetings or were conducted by work group members or the COFM Executive Director.
Key Informants:

- **Daniel Burke, M.D.,** University of Colorado's Department of Family Medicine
- **Frank DeGruy, Chair,** University of Colorado's Department of Family Medicine
- **Mark Deutchman, M.D.,** University of Colorado's Department of Family Medicine
- **Alfred Gilcrest,** Executive Director, Colorado Medical Society
- **Larry Green, M.D.,** University of Colorado's Department of Family Medicine
- **Steve Holloway,** Director, Primary Care Office, Colorado Department of Public Health and Environment
- **Glenn Levy,** Senior Director, Hospital Partnerships and Medical Education, the Colorado Health Foundation
- **Cheryl Lovell, Ph.D.,** President, Rocky Vista University
- **Ben Price,** Executive Director, Association of Colorado Health Plans
- **Raquel Rosen,** CEO, Colorado Academy of Family Physicians
- **Carol Rumack, M.D.,** Director, Graduate Medical Education, University of Colorado School of Medicine
- **Marguerite Salazar,** Colorado Insurance Commissioner
- **Tom Told, D.O.,** Dean, Rocky Vista University College of Osteopathic Medicine
- **Jack Westfall, M.D.,** Chief Medical Officer, Colorado HealthOP

Two national consultants met with the workgroups to provide external expertise:

- **Tim Henderson, MPH,** a national expert on Medicaid GME and the author of "Medicaid GME Payments: A 50-State Survey." He met with the work groups on October 27, 2014.
- **David Schmitz, M.D.,** a family physician in Boise, Idaho, and an expert on rural training of family physicians, including rural training tracks and strategies to enhance recruitment and retention to rural areas. He met with the work groups on September 9, 2014.

Primary Care in Colorado: A Baseline Understanding

This inquiry began with a shared understanding of primary care.

Primary care is defined as the provision of integrated, accessible health care services by clinicians who are accountable for addressing a large majority of personal health care needs, developing a sustained partnership with patients, and practicing in the context of family and community, according to the Institute of Medicine (IOM).

In literature related to GME, primary care refers to three medical specialties: family medicine; general internal medicine; and general pediatrics. OB/GYN, psychiatry and geriatrics are sometimes considered to be primary care specialties. However, the vast majority of research showing that primary care results in improved health outcomes at lower costs focuses on the three core primary care specialties.

The scope of this report is limited to physicians, both Doctors of Medicine (MDs) and Doctors of Osteopathic Medicine (DOs), in the family medicine specialty.

GME, also known as residency training, prepares physicians for the independent practice of medicine. Medical students apply to a residency program during their fourth year of medical school.

Medical students may choose from more than 25 specialties. While residency training is required for board certification in each specialty, the length of the residency varies by specialty. Primary care specialties such as family medicine, general pediatrics and general internal medicine require three years of residency training.

In recent years, only eight percent to nine percent of U.S. medical school graduates have chosen family medicine for their career.[1]

Family physicians treat people of all ages and are the primary care providers for the majority of Coloradans, according to the Colorado Academy for Family Physicians. Family physicians comprise 57 percent of the state's primary care physicians. Family physicians provide primary care for nearly half of Colorado's children and for a majority of Medicaid clients.[2]

Colorado: Examining the Supply of Primary Care Physicians

Colorado has nearly 12,000 primary care physicians. But there are significant gaps in the primary care physician workforce across regions of the state. While some areas of Colorado have plenty of primary care physicians, others struggle to attract and retain enough physicians to care for their residents. Together, the nine regions in the state with a shortfall need an additional 258 primary care physician FTEs.[3]

Colorado's supply of primary care physicians increased 21 percent between 2005 and 2013, climbing from 9,868 to 11,894.[4]

Colorado ranks well in national benchmarks, with 94.6 primary care physicians for each 100,000 people compared with the national average of 90.1 per 100,000.[5]

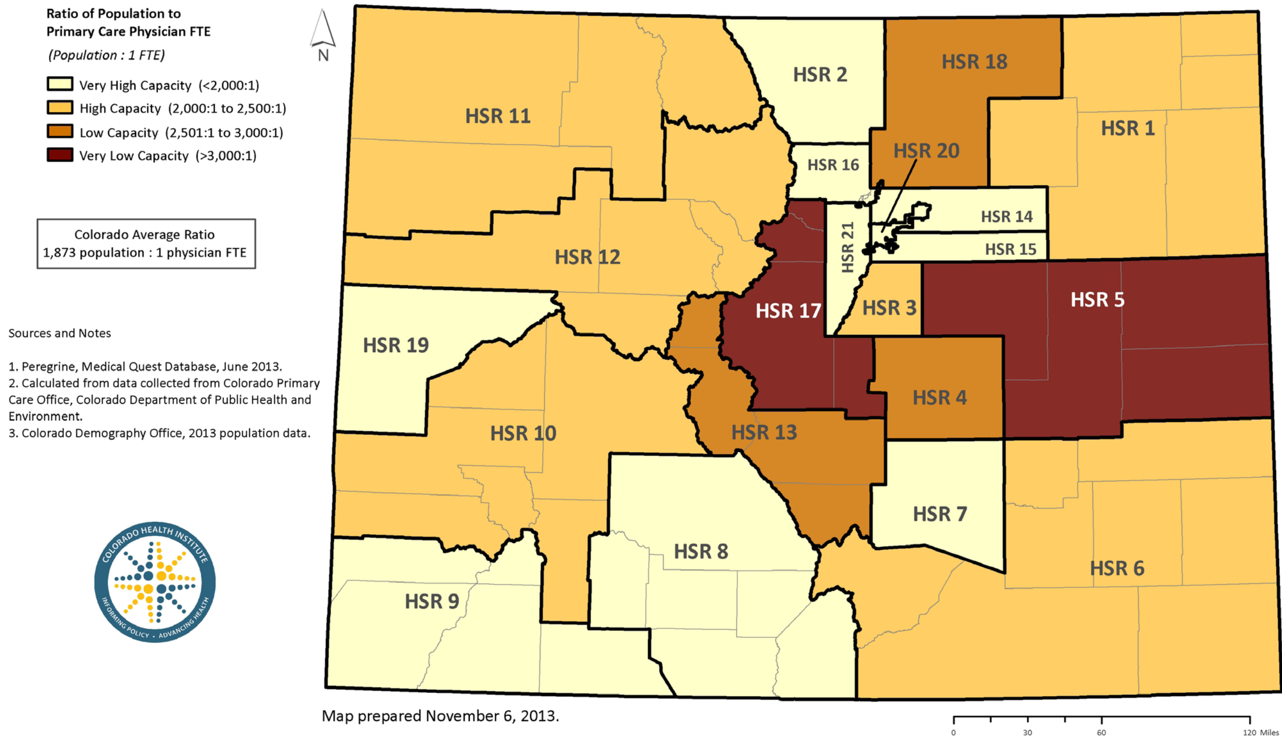
Measured in full-time equivalents (FTEs), Colorado has one full-time primary care physician for each 1,873 residents, slightly better than the benchmark panel size of one FTE physician for each 1,900 patients that is generally considered reasonable, according to a Colorado Health Institute study.[6]

The statewide statistics, however, mask an uneven distribution of Colorado's primary care physicians.[7] In Denver County, for example, there is one FTE primary care physician for each 1,348 residents. But the rural eastern counties of Cheyenne, Elbert, Kit Carson and Lincoln only have one FTE physician for each 5,636 residents. (See Map 1.)

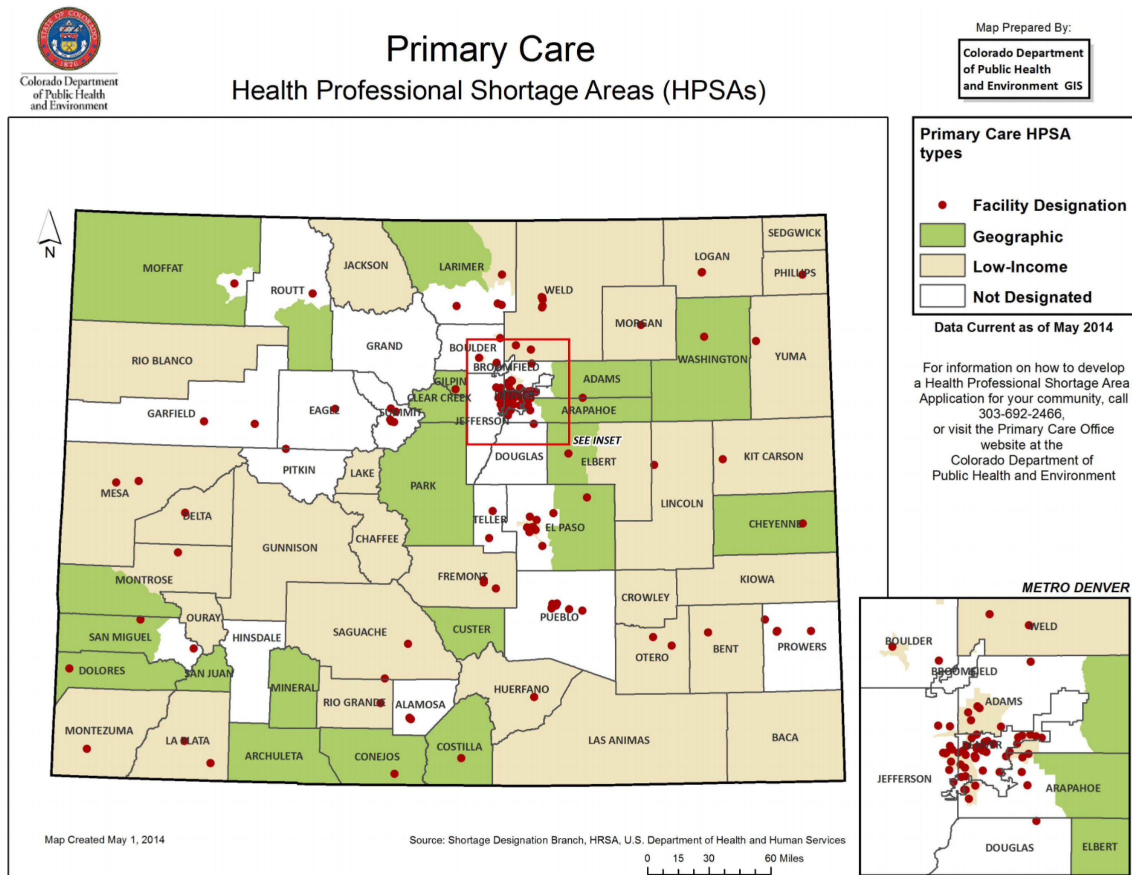
And of Colorado's 64 counties, 56 are either fully or partially designated as primary care health provider shortage areas.[8] (See Map 2.)

Maintaining primary care physicians in locations of high need will be even more important as long-serving Colorado physicians retire. Nationally, more than one of four (27.6 percent) active physicians are 60 or older. Nearly 26 percent of Colorado's physicians fall within this age group.[9]

Map 1. Regional Comparison of Primary Care Physician Workforce, 2013



Map 2. Designated Primary Care Health Professional Shortage Areas, 2014



Demand for Primary Health Care

The supply of primary care physicians is only one part of the equation. The other factor is the demand for care.

It is expected that the demand for primary care will increase in the coming years.

First, Colorado is seeing an increase in the number of people covered by health insurance because of the state's decision to expand Medicaid eligibility as well as the requirement in the Affordable Care Act that most people have health insurance. More than one million Coloradans are now Medicaid clients.[10]

Increased use of health care already is being noted. Colorado hospitals are reporting a spike in the number of Medicaid clients seeking care, as well as an increase in the complexity of their health care needs.[11]

Meanwhile, Colorado's population is aging thanks to the Baby Boomers. By 2030, there will be an estimated 1.2 million residents who are 65 or older, an increase of 125 percent from 2010.[12] Generally, seniors have more chronic health conditions than younger people, increasing the demand for care.[13]

Colorado's primary care physician workforce is aging as well. And retirees are not being sufficiently replaced, according to a 2010 review that found the proportion of students choosing family medicine careers will likely remain below the number required to replace rural and urban doctors leaving the field because of death or retirement.[14]

In addition, younger physicians are less likely to practice full time than their older counterparts, which also may mean fewer medical services available to a community.

Meanwhile, the health care system is undergoing profound changes. Transformations in productivity, scope of practice, and the structure and financing of the health care delivery system will all shape the supply and demand equation.[15]

Numerous statewide initiatives are looking at the impact of the systemic transformations that are influencing the primary care workforce.

While this report focuses on the challenges and opportunities facing family medicine physicians, we note the importance of nurse practitioners and physicians assistants, along with other primary care health care professionals, in enhancing the capacity of the health care workforce. Colorado has roughly 3,200 nurse practitioners and 1,000 physician assistants working in primary care settings.[16]

The State of Family Medicine Graduate Medical Education (GME) and Primary Care in Colorado

Colorado is home to nine family medicine residency programs that train 204 physicians at a time. Each June, 68 third-year residents graduate from the programs and 68 medical students begin their three years of training. (Please see Map 3 .)

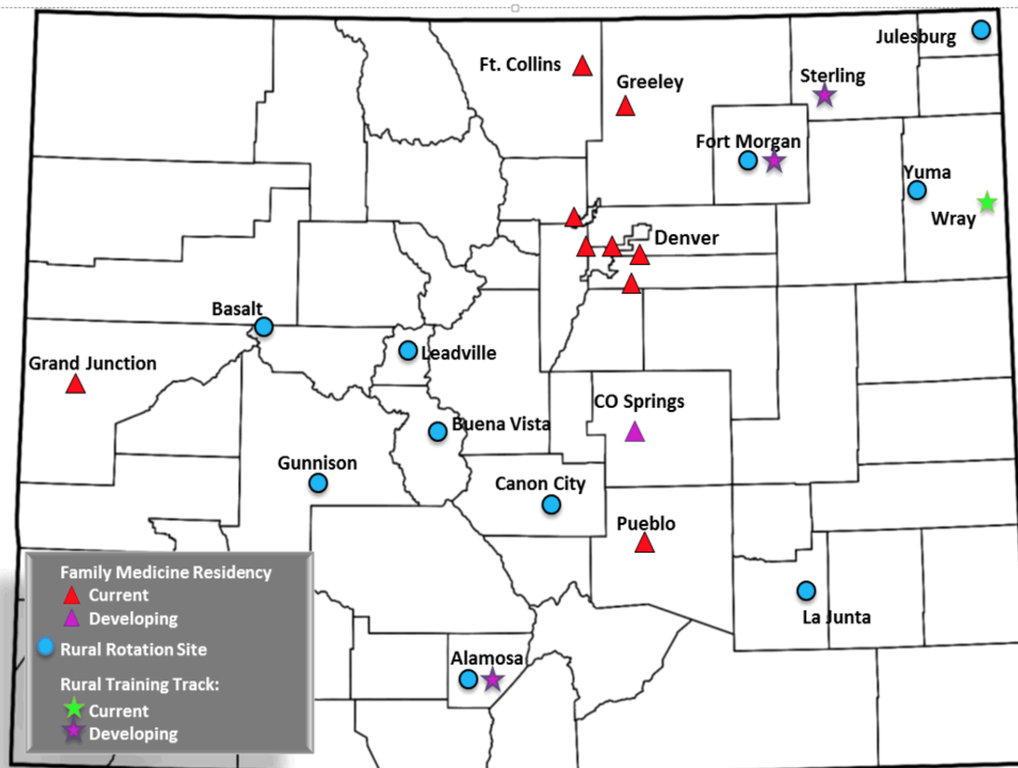
Most of the programs are sponsored by community hospitals and operate independently of one another. The University of Colorado administers three of the programs, one is sponsored by the University Hospital and two are sponsored by community hospitals

An aggressive recruitment program, administered by the Colorado Commission on Family Medicine, results in hundreds of well-qualified medical students competing for the 68 residency positions each year, most coming from medical schools outside of Colorado.

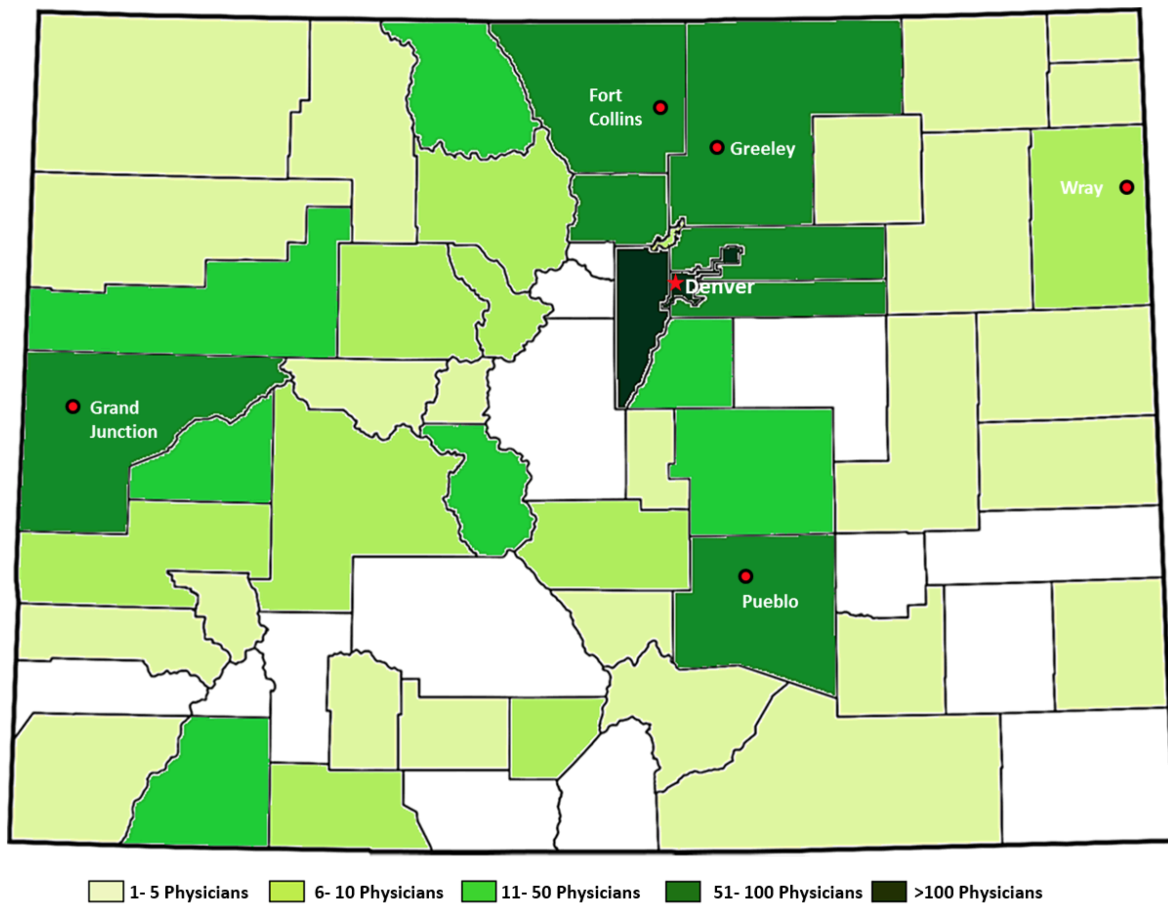
Locations of the Colorado Family Medicine Residency Programs

- **Exempla St. Joseph Family Medicine** (Denver)
- **Fort Collins Family Medicine Center** (Fort Collins)
- **North Colorado Family Medicine** (Greeley)
- **Rose Family Medicine Center** (Denver)
- **Southern Colorado Family Medicine** (Pueblo)
- **St. Anthony Family Medicine Center** (Westminster)
- **St. Mary's Family Medicine Center** (Grand Junction)
- **Swedish Family Medicine Center** (Littleton)
- **University of Colorado Family Medicine Residency** (Denver)

Map 3. Colorado Family Medicine Training Sites



Map 4. Practice Locations of Family Medicine Training Graduates, 1972-2014



Of the 68 medical students who entered a Colorado family medicine residency program in 2014, 13 were from the University of Colorado Medical School, eight were from Rocky Vista University College of Osteopathic Medicine, and 47 were from medical schools across the country. Between 60 and 65 percent of residency graduates have remained in Colorado to begin their careers in recent years.[17] Sixty percent of graduates from 1972 to the present practice in the state. (Please see Map 4.)

All family medicine residents are prepared for practice in underserved and rural settings by training in safety net clinics during their residencies. Nearly three of four (71 percent) of the 64,226 patients served by the residencies in 2013-14 were covered by Medicaid (40 percent), Medicare (13 percent), or were indigent (18 percent). Providing care to patients who lack resources is excellent preparation for practice in underserved areas. In addition, family medicine residents must complete a one-month rotation in one of 10 approved rural clinics, living in the community and receiving instruction from rural family physicians.

Colorado has one rural training track (RTT) program, which started in 1992 in Wray on the Eastern Plains. It graduates one resident each year.

Resident physicians in the RTT program train at the core program in Greeley during their first year and then move to Wray for the second and third years of training. The RTT program has successfully placed graduates in rural communities of less than 10,000 residents.[18]

RTT programs are under development in Alamosa, Fort Morgan and Sterling, with plans to place two second-year residents and two third-year residents in each community starting in 2017, for six additional graduates per year. This RTT expansion was supported by increased state funding for rural residency programs through bills passed by the legislature in 2013 and 2014.

It is noteworthy that all nine residency clinics are certified by the National Committee of Quality Assurance (NCQA) as Patient-Centered Medical Homes (PCMH), characterized by coordinated team-based care that integrates a variety of services. This training environment assures that residents are prepared to work closely with nurse practitioners, behavioral health specialists, pharmacists and other members of a primary care team once they enter practice.

These efforts to prepare graduates for rural and underserved service have been successful. Of the 35 graduates who stayed in Colorado in 2014, 20 percent practice in rural communities and an additional 29 percent practice in underserved areas.

Funding for Colorado Primary Care GME

It is difficult to determine the total cost of GME. The major expenses are salaries and benefits for the residents, faculty teaching time and administrative support.

The cost per resident in small family medicine residency programs is higher than in larger programs due to economies of scale available to the bigger programs. The cost of living also differs across regions.

Adding new training positions to an existing residency program, estimated to cost between $150,000 and $180,000 per resident per year, is more cost effective than starting a new program. These estimates are based on regional research in the Washington, Wyoming, Alaska, Montana, Idaho (WWAMI) network[19] and financial consultation reports for Alamosa, Fort Morgan, and Sterling.[20]

A new program can be more expensive because it may involve the cost of operating an outpatient clinic, if one does not exist, including personnel and a building lease.

Financial support for Colorado's family medicine GME programs comes from these four main sources:

- **Patient Revenue:** Residents in primary care specialties, such as family medicine, complete most of their training in outpatient clinics. Reimbursement rates for the main types of outpatient primary care, such as the management of chronic conditions and preventive care, are lower than hospital-based medical specialties. In addition, many patients seen by resident trainees are uninsured, underinsured, or covered by Medicaid or Medicare, both of which pay less for services than commercial insurance carriers. In Colorado, revenues from patient care in family medicine residencies cover about half of the cost of operating the programs.
- **Medicare GME Payments:** These payments from the federal government cover about one-third of the costs of the programs.
- **Medicaid GME Payments:** State funds are matched by federal Medicaid funds and allocated to the residencies through the COFM. These funds cover about three percent of the total program costs. In addition, hospitals that sponsor residency programs receive a supplemental payment to care for Medicaid clients. These supplemental payments do not directly support the cost of the residency programs.
- **Sponsoring Hospitals:** The sponsoring hospitals pay the balance of the costs of the program. In Colorado, most sponsoring hospitals provide $500,000 to $1 million annually.

FINDINGS

This section provides the findings for the eight specific study topics identified in SB14-144. To present the findings cohesively, the topics are organized into three groupings: Funding Family Medicine GME in Colorado (four topics), Recruiting and Retaining Physicians (three topics), and Oversight of GME Moving Forward (one topic).

Funding Family Medicine GME in Colorado

• SB 14-144 Topic 4:

Effective strategies to enhance federal funding to family medicine training programs, including rural training tracks.

One work group focused exclusively on strategies to enhance federal funding to support family medicine training programs. The group's goal was to better understand how Medicaid GME funds are accessed and how Colorado can leverage these funds to increase our primary care physician workforce. As a point of reference, GME is synonymous with residency training.

Background

The two main funding sources that support family medicine residency programs are patient care revenue and federal Medicare GME payments. A third source of support is Medicaid GME payments.

Patient care revenue covers roughly half the cost of operating Colorado's family medicine residencies. But the residency clinics are limited in the revenue they can generate through patient care because more than 70 percent of the patient base is covered by Medicaid or Medicare or is uninsured.

As safety net clinics, they operate with full patient schedules, but receive lower reimbursement rates than most private practices. In addition, family medicine practices produce less clinical revenue than specialty practices, resulting in fewer dollars to support a residency. Additionally, time allotted for education reduces the patient volume, especially during the first year of training.

For these reasons, an increase in patient care revenue is an unlikely source for expanding the number of training positions. Sponsoring hospitals often make up the deficit, which is becoming increasingly difficult for urban hospitals, and may not be possible at all for rural hospitals.

Medicare is the dominant public funder of GME. Medicare GME payments cover roughly one-third of the cost for operating the family medicine residencies (about $2 million of approximately $7 million to run each program). The calculation of Medicare GME payments is complex, based on the number of residents in a program, the proportion of Medicare patients cared for in the sponsoring hospital, and a "per resident amount" set at the opening of the residency and reflected in the hospital cost report.

Medicare GME payments are paid in the form of DGME (Direct GME Payments), also referred to as DME, and IME (Indirect Medical Education Payments). DGME is the amount that Medicare pays the hospital for its share of direct costs of the residency, such as resident salaries, benefits, faculty teaching and administration. When a hospital becomes a teaching hospital and establishes a residency, these costs are used to establish the PRA (Per Resident Amount). The PRA is multiplied by the percentage of Medicare bed days the hospital has to determine the DGME payment. IME is a very complex formula that establishes a percentage increase to the DRG (Diagnostic Related Group) payment the hospital receives for all Medicare patients, even those not cared for by residents – often about a five percent increase. The formula and final calculation are determined by the Centers for Medicare & Medicaid Services.

Since 1997, a cap has been placed on the number of residency training positions funded by Medicare GME. With the exception of alternative programs, described below, new programs, or the addition of training slots to existing programs, will not receive Medicare GME funds.

So, in general, Medicare GME is not a viable source for expanding residencies in the state. However, an exception to the cap is the creation of "alternate track" programs such as rural training tracks. In these cases, sometimes referred to as a "1-2 program," a resident physician spends the first year in an urban established residency and then moves to a new site for years two and three. This is the model we have been exploring for the rural training tracks (RTTs) under development in Alamosa, Fort Morgan, and Sterling.

However, restrictions in CMS policy have decreased the amount of Medicare GME payments to the RTTs under development. Three particular CMS policies are problematic. First, the "per resident amount" (PRA), part of the calculation for Medicare GME payments, may be reduced to zero in the rural hospitals, which would mean zero DGME payments permanently. For more than 20 years, COFM has required family medicine residents to complete a one-month rural rotation. The rural hospitals were being good citizens by allowing these residents to train there. No one knew, until recently, that allowing a resident to train at their hospital converted it to being a teaching hospital in the eyes of Medicare.

The rural hospital would have needed to pay all of the expenses for the resident for that month and report this on their Medicare cost report. If they did not pay for this and report it, which none of the rural hospitals did, their PRA would be set at zero forever, meaning they would not ever be eligible for DME payments.

Second, sole community hospitals, such as the hospitals in Sterling and Fort Morgan, are not eligible for Indirect Medical Education (IME) payments (supplemental payments for their Medicare patients), as they are not paid by Medicare through the DRG system.

Third, established residencies that already have an "alternate track," such as Greeley with the Wray RTT and the University of Colorado with Clinica Campesina in the past, are not able to sponsor a second alternate track due to the cap, because these new programs would be considered to be an expansion rather than a new rural training track that would be an exception to the cap. These CMS policies are obstructing the creation of rural training tracks in Colorado and other states.

Medicaid GME in Colorado

- Medicaid payments for hospital services – state funds plus the federal match – total about $1.4 billion. This includes payments to hospitals through Medicaid fee-for-service rates and supplemental hospital payments financed with hospital provider fees.
- All state funds for Medicaid services are matched by federal funding on a dollar-for-dollar basis.
- The majority of Medicaid payments are to provide health care services for Medicaid clients.

The COFM and other organizations across the country are challenging the CMS interpretation of these policies and may pursue Congressional action to change them. However, even without these unusual obstructive CMS policies, the amount of Medicare GME funding many of the rural hospitals would receive may still be insufficient to fund residencies. The payment to rural hospitals would be limited by their low percentage of Medicare patients, as Medicare GME funding is based on the percentage of Medicare patients cared for by the hospital.

Another potential source of federal funding for residency programs is the Teaching Health Center (THC) pilot project. The Health Resources and Services Administration (HRSA) in 2011 funded a five-year pilot project in which payments were distributed to community health centers, or consortia, that sponsored new primary care residency programs. This is in contrast to Medicare GME that must be paid directly to teaching hospitals.

The THC pilot project, originally scheduled to end in 2015, was recently extended into 2016 for the participating residencies. The status of continued funding beyond 2016 is uncertain and will require Congressional action. None of the Colorado residencies are in the THC pilot. The current rules of the THC program only provide funding for new positions, so once a program is started with

a different funding mechanism, it is not eligible to be converted to receive THC funding. However, if Congress reauthorizes and expands the THC program to allow new programs to participate, and if this were to occur prior to residents actually starting in our new RTTs, COFM and the RTTs will aggressively seek these federal funds.

Medicaid GME is another potential source of federal funding for the family medicine residency programs. By leveraging Medicaid GME funds, many states have targeted GME positions to meet state health workforce needs, specifically by producing more physicians. Unlike Medicare, the federal government has no explicit guidelines for states on whether and how their Medicaid programs should make GME payments.[21]

While Medicaid programs are not obligated to pay for GME, most states historically have offset a portion of GME costs incurred by teaching hospitals by making such payments under their fee-for-service and/or Medicaid managed care programs.[22] The majority of states make GME payments to teaching hospitals, although a few (mainly rural) states specify that teaching sites in non-hospital settings are also eligible.[23]

In Colorado, state funds committed to Medicaid GME are matched at least 50/50 by federal funds from CMS, essentially doubling the state's investment in GME.

A 2012 national survey showed that total Medicaid GME payments by the states and the District of Columbia reached an estimated $3.87 billion.[24] Colorado was one of 42 states that provided GME payments under its Medicaid program. With an annual GME payment of $5.4 million, Colorado ranked 35th among the 42 states in the amount of GME payments.

States that invest considerably more in Medicaid GME included New York at $1.8 billion; Michigan at $163 million; Arizona at $113 million; Washington at $111 million; Oklahoma at $73.4 million; Kansas at $49.7 million; and Nebraska at $14.1 million.

States that invest a similar amount to Colorado included Utah at $6.3 million and New Mexico at $5.4 million.

Colorado Medicaid provided about $7 million to fund GME in fiscal year (FY) 2012-13 through a variety of methods, including:

- **Inpatient Hospital Fee-For-Service Base Rates (approximately $1.1 million):** 10 percent of the GME cost per discharge amount is added to teaching hospitals' inpatient Medicaid base rates. Of the approximately 82 hospitals in Colorado, 17 teaching hospitals receive a GME inpatient base rate add-on.
- **Outpatient Hospital Fee-For-Service (amount unknown):** Outpatient hospital claims are settled at approximately 71 percent of costs in the Medicaid program. Medicaid outpatient GME costs are allowable and included in the cost settlement process. The amount of GME costs included in the outpatient reimbursement is not known at this time.
- **Managed Care Wraparound (approximately $2.1 million):** Medicaid GME payments are made to teaching hospitals with managed care enrolled clients. Managed care rates do not include a GME component, so the Colorado Department of Health Care Policy and Financing (HCPF) determines each hospital's GME costs for serving managed care enrolled Medicaid clients and makes quarterly lump-sum payments to the hospitals. In FY 2012-13, the managed care wraparound GME payments totaled approximately $376,000 for inpatient services and $1.7 million for outpatient services.
- **State University Teaching Hospital Payments ($2.4 million):** Payments are made to Denver Health Medical Center (DH) and the University of Colorado Hospital (CU) in lieu of GME inpatient base rate add-ons and managed care wraparound GME payments, subject to annual appropriations by the General Assembly. In FY 2013-14, DH received $1.8 million and CU received $633,000. (Note: For CU's State University Teaching Hospital payment of $633,000, the $296,000 for its family medicine residency program is included in this figure.)
- **Family Medicine Residencies (approximately $2.4 million):** Through the COFM, payments are made to hospitals that sponsor a family medicine residency. Excluding CU, eight hospitals qualify for the payments ($296,000 per hospital in FY 2013-14).
- **Rural Program Development and Maintenance ($3 million):** The General Assembly appropriates

$3 million annually to the COFM to develop and maintain rural residency programs. This funding was initiated with $1 million in Senate Bill 13-264 (FY 2013-14) and has been expanded to an annual appropriation of $3 million in the COFM line item. The funds are used to develop and maintain three rural training tracks.

With recent increases in Medicaid GME funds for DH and for the Family Medicine Rural Training Programs, the total Medicaid GME funding in FY 2014-15 is approximately $11 million, although the exact amount is uncertain because the fee-for-service and managed care wraparound payments cannot be known until actual payment data becomes available.

Colorado submits a Medicaid State Plan to CMS for approval to receive federal Medicaid matching funds for its hospital reimbursement methodologies, including inpatient and outpatient fee-for-service payments and GME payments made through the State Teaching Hospital and Family Medicine Residency programs. When the General Assembly increased the appropriation for Family Medicine Residency payments, for example, HCPF submitted a State Plan Amendment for the increased federal funds. There are firm timeframes for federal review and approval of State Plan Amendments. State Plan Amendments are effectively approved indefinitely.

The other option for receiving federal funds for GME is through a Medicaid demonstration waiver. A waiver is effective for five years following approval. The approval process for a waiver is more complicated than a State Plan Amendment, as the state must demonstrate federal budget neutrality; regular reporting is required; and there is no set timeline for federal approval.

The state is near the upper payment limit (UPL) for Medicaid payments for hospital services. Therefore, a significant increase in one component of Medicaid payments, such as Medicaid GME, could impact other payments.

Conclusion

Using state funding to leverage matching federal Medicaid dollars is a viable approach to increasing the number of family medicine training positions in the state. There are several advantages to getting additional Medicaid GME payments to support the family medicine residency programs.

First, the state's investment is matched by federal Medicaid dollars. Second, the funds can be targeted for specific health workforce needs – in this case, training additional family physicians for rural or underserved areas. Third, the outcomes of the funding can be tracked to help assess the return on the state's investment.

The State of Colorado has the ability to direct and achieve its physician workforce needs, including in rural Colorado, by providing financial support for needed residency programs with state dollars and matching Medicaid GME funding. We recommend leveraging Medicaid GME payments to increase the number of training positions in family medicine residencies. This can be done with a modest increase in Medicaid GME that will have negligible effect on the upper payment limit. Increases in Medicaid GME should require transparency and accountability, such as tracking the number of graduates practicing in rural or underserved areas.

• SB 14-144 Topic 5

Effective strategies for targeting state funding to rural and other underserved areas in the state where family residency programs are needed.

Financial constraints must be considered when discussing strategies to add family residency programs in rural and underserved areas. Below is a recap of the constraints, followed by a review of practical strategies.

Background

Three primary considerations for starting or expanding a family medicine residency program are the interest within the rural community, the

accreditation potential, and funding sources.

The medical staff and hospital administration must have a strong interest in sponsoring a program for a community to be considered a viable location for a residency program. Medical staff members in some smaller communities are often challenged to meet patient care needs and may not be willing to increase their workload with an educational program. A rural community requires a core of interested family physicians plus the availability of subspecialists who are willing to commit some of their time to teaching. Without teaching "champions," a residency program is unlikely to take root.

Another common obstacle for teaching sites is the ability to meet accreditation requirements. Accreditation standards assure that family medicine trainees have an adequate depth and variety of patient care experiences to become competent providers. The accreditation requirements for family medicine programs are very specific. Smaller hospitals and clinics may not have an adequate number of patient visits within all age groups, such as deliveries, ICU patients, ED visits, pediatric cases, and nursing home visits.

Few rural communities in Colorado have adequate patient volume and mix to meet accreditation standards for a full program. Alternate training tracks, such as RTTs, are the most practical models for smaller communities.

COFM will continue to advocate for increased federal funding for rural programs. In the meantime, a combination of state dollars and foundation funding is the most feasible strategy for funding rural training programs.

A significant advantage of using state funds is the ability of the state to target the funds where needed and to ensure transparency by closely monitoring the outcomes. A good example is the current strategy of using state funds to develop three rural training tracks for family physicians. The funds are earmarked for a specific purpose and the COFM reports on the progress of the project and, eventually, the number and placement of graduates. This transparency is in contrast to federal Medicare GME funds that are distributed to teaching hospitals with no accountability for how they are spent.

Four general strategies can be used to target state funds for rural programs: rural training tracks, loan repayment, strengthening the primary care training pipeline, and increasing the exposure of trainees to rural and underserved communities.

State funds can be targeted to train family physicians in rural training tracks. The RTT model is characterized by a smaller number of trainees and a higher retention rate of graduates in rural settings compared with traditional residency programs.

The pool of medical school graduates interested in the RTT model may be limited. For that reason, a small number of RTTs should be developed in the state to assure that all the training slots are filled each year before expanding RTTs.

A second strategy is to target state funding for loan repayment for Colorado medical students and family medicine residency graduates. Medical students typically carry a large debt and are motivated by loan repayment awards. Through the Colorado Health Service Corps, loan repayment can be tied to rural and underserved communities that meet established criteria. The awards can be designed to keep Colorado students in the state. Some awards can be offered to family medicine residents prior to graduation. Residents who are assured a loan award are highly incentivized to commit to practice in an underserved community.

Strengthening the primary care pipeline is a third strategy for targeting state funds. The ideal scenario for the training and retention of primary care physicians for rural Colorado is to identify medical students who grew up in rural areas of the state and maintain their involvement with rural communities during medical school and residency, and to provide loan repayment opportunities in exchange for service in rural communities.

A fourth strategy is to maximize the exposure of medical students and resident physicians to rural or urban underserved settings during their training. Rural rotations and longitudinal rural experiences during medical school and residency increase the likelihood a physician will practice rurally upon graduation.[25] The majority of physicians practice within a 100-mile radius of where they were trained.[26]

In Colorado, 65percent of the family medicine graduates who currently are in practice in the state are within 25 miles of where they trained.[27]

State funds should be targeted to programs that enable health care professionals to live in rural or underserved communities during their training. The reason is that the trainees become more comfortable with the rural and underserved environment and are more likely to settle in that area upon completion of their formal education.

Conclusion

A distinct advantage of using state funds to train family doctors is the ability to target the funds for the greatest effect. Additionally, distributing state funds should be tied to a requirement to monitor and report the effects of the state's investment. The four evidence-based strategies outlined above, paired with transparency of outcomes, would be effective use of public funds.

• SB 14-144 Topic 8

Costs required to sustain family medicine residency programs that are not recouped over time through other sources of revenue such as Medicaid and Medicare billing.

To answer this topic, we present ideas about how to sustain GME programs financially into the future.

Background

We have described in great detail the system that funds GME and its many challenges. Now we turn to a number of ideas and options for sustainable funding, including:

- **Leveraging state funds by matching federal Medicaid GME funds.** State funds can be used to support the existing family medicine residencies, add new trainee positions in existing programs, and support loan repayment strategies. With decreased likelihood of increased federal Medicare GME funds, support of state funds is vital.
- **Seeking federal funds for the Teaching Health Center model.** COFM will continue to advocate in Congress for a different federal funding source that pays residency programs to train primary care providers where they are needed, such as community health centers, rural health clinics, and education consortia. These funds are not currently available, but there is interest among states that need to educate a primary care workforce for underserved areas.
- **Educating teaching hospital administrators about the benefits of sponsoring a primary care residency.** Benefits such as building a primary care workforce and referral base, care for indigent and underinsured patients, and increased medical staff engagement through teaching can be overshadowed by hospital financial concerns. Hospital administrators may not completely credit a residency with increased fee-for-service rates for the care of Medicare and Medicaid patients. Appropriately attributing the Medicare and Medicaid GME funds to the residency program, along with the broader benefits of sponsoring a residency, may decrease the possibility of a sponsoring hospital closing a residency due to financial losses associated with the program.
- **Encouraging third party payers to contribute to GME.** COFM will continue to work with insurance companies to explore how a portion of the medical loss ratio for quality improvement initiatives in the residency clinics can be allocated to the residency programs.

An alternate potential source of sustainable funding for the residency programs is through private foundations and community support.

COFM receives grant funds for specific residency projects. The Colorado Health Foundation and Caring for Colorado Foundation have provided funds to improve the recruitment program, develop the patient-centered medical home (PCMH) curriculum, transform the practices into PCMHs, and rural rotation support. Meanwhile, COFM is collaborating with two local foundations for support of the new rural training tracks - the A.F. Williams Foundation, which has expressed interest in sustainable funding for the RTT in Fort Morgan, and the El Pomar Foundation, which has indicated interest in providing short-term support for developing the RTT in Alamosa.

COFM will actively explore partnerships with rural communities as we consider other potential rural rotation sites. Financial support from local communities combined with state funds to create a private-public partnership will more likely result in sustainable training programs

Conclusion

With the uncertainty of federal funding and the obstacles for obtaining federal funding for new rural training programs, state funding has become more important for sustaining existing family medicine residencies and creating new programs in rural and underserved locations. An advantage of state funding is the ability to target the financial resources for specific types of primary care providers in places with greatest need. Also, the programs can be established with transparency so the state can monitor outcomes of its investment in GME.

However, if new GME positions intended to support state workforce needs are created in response to new funding streams, to ensure long-term impact, funding must be sustainable.

• SB 14-144 Topic 3

Methods to engage third-party payers in supporting graduate medical education programs to meet physician shortages.

A third-party payer system may provide a new state funding stream for expansion of GME programs and positions. While we have found only one state that requires insurance companies to provide direct financial support for residency programs, there is a strong rationale for this method and it should be considered.

Background

Public payers, such as Medicare and Medicaid, as well as private payers, such as insurance companies, benefit from an adequate primary care workforce. Yet only public payers contribute to the costs of GME training.

Voorhees et al assert that overreliance on Medicare and Medicaid to support the GME system is not sustainable and that health care insurers should contribute to primary care GME training.[28] Medicare assumed responsibility for GME financing in 1965 to pro¬vide a trained physician workforce to meet the needs of the country, "until the community bears the cost in some other way," according to the House Report.[29]

Insurance companies require a trained physician

workforce to support their product, yet do not contribute to the training of this workforce. A robust primary care workforce has been shown to decrease health care costs, while at the same time improving quality and outcomes.[30] This leads to fewer ED visits, decreased hospitalizations, fewer unnecessary tests and procedures, while improving quality of care. All of these factors benefit health insurance companies. Up to now, the community has not stepped forth to create a public-private partnership to pay for primary care GME.

A recent national survey found that only Maryland has an all-payer system for GME. Maryland hospitals do not receive direct GME payments from Medicare or Medicaid. Rather, GME payments from insurers are built into the rates for services in hospitals that sponsor residency programs.[31] Survey respondents from all other states believed it would be difficult to convince third-party payers to pay for GME.

Another example of a third-party payer contributing to GME was reported from California. Kaiser Permanente administers its own residency program. In addition to federal Medicare GME funds, Kaiser helps to finance the program. Roughly 50 percent of the residency graduates go on to work for Kaiser.

The California state legislature considered a bill in 2013 that proposed a $5 per covered life fee for health insurers to support GME, including creation of GME Council and governing board. The bill was opposed by insurers and it did not pass.

The national survey researchers concluded that third-party payers are not likely to contribute to GME even though they benefit from it. Either third-party payers must be mandated to contribute by legislation, or there must be incentives in place, they concluded.[32]

A potential strategy for involving insurers in GME is to make the case for improved quality of care. Although there is no mandate or precedent for insurers to pay for GME, one consideration is whether quality improvement activities in the residency programs would qualify for an insurer's Medical Loss Ratio (MLR) expenses. The majority of an insurer's MLR is patient claims. However, the MLR can also include expenses for quality initiatives, preventive care, care coordination, and practice transformation.

To be considered a quality expenditure, an activity must improve health outcomes, prevent hospital readmissions, improve patient safety and reduce medical errors, or implement wellness and health promotion.[33] The overarching theme of quality requirements is that they be grounded in evidence-based medicine and work toward measurable outcomes. Primary care physicians trained in providing coordinated care through a patient-centered medical home (PCMH) have been shown to improve quality and outcomes while at the same time decreasing costs.[34] A question worthy of further exploration is whether the quality improvement activities in the family medicine residencies can be included in an insurer's MLR and qualify for reimbursement.

A second strategy is for the state legislature to mandate that insurance companies contribute to the training of the state's primary care workforce. Granted, such a mandate may be difficult to pass at this time. However, this strategy could be considered in the future to provide a sustainable funding stream through a public-private partnership.

Conclusion

Mandating insurance companies to contribute to GME training would be unlikely to succeed in the current climate. The COFM has initiated discussions with the Colorado Healthcare Plans to determine whether the quality improvement activities in the family medicine residencies would qualify the programs for funds from the insurance companies' MLR pool.

Recruiting and Retaining Physicians for Colorado

• SB14-144 Topic 6

Methods for monitoring the effect of rural residency programs on physician retention in rural and other underserved areas of the state.

Many factors influence the likelihood that a physician will choose to practice in a rural or underserved setting. Here we examine several key factors that influence the practice location of a primary care physician beyond compensation, discuss Colorado's existing training programs and identify gaps in recruiting and retaining family physicians in rural and underserved areas.

Background

A wide variety of factors exist related to the propensity of a primary care physician to practice in rural and underserved areas, according to a review of national and international academic literature.

Professional isolation, spousal contentment, lifestyle factors, malpractice rates, availability of shopping, physician workload, proximity to family, osteopathic training, quality of schools, preparation for small-town living, and other factors have been associated with rural and undeserved practice selection and long-term retention. We have selected three key factors for closer examination: rural or underserved experience during training, a rural background, and community factors.

A wealth of research indicates that the longer a physician trains in a rural or underserved setting, the greater the impact on future practice selection.[35,36] Rural rotations and rural experiences during medical school and residency increase the likelihood a physician will practice rurally upon graduation.

For example, a study of medical schools showed that rural track graduates were 10 times more likely to be rural family physicians[37] In residency training, a prime example is the rural training track (RTT) model that combines one year of urban training with two years of rural training. Follow-up studies show that more than 70 percent of graduating residents go on to practice in rural locations, a rate two to

three times higher than family medicine residency graduates overall.[38]

Similarly, a study of physicians who trained in safety net clinics showed they are much more likely to practice in safety net clinics after graduation. Of trainees in Federally Qualified Health Centers, 31 percent went on to practice in FQHCs; of trainees in, rural health clinics, 38 percent practiced in rural health clinics, and of trainees in critical access hospitals, 53 percent practiced in critical access hospitals. In comparison, around two percent of physicians training in traditional settings go on to practice in FQHCs and rural health clinics.[39]

Related research shows the majority of residency graduates practice in the vicinity of their residency program.[40] This finding supports current efforts to train residents in rural and underserved areas using models such as RTTs and teaching health centers.

A physician's background is a strong predictor for choosing a rural practice. Physicians with rural backgrounds are more likely to locate in rural areas than those with urban backgrounds. Students from most rural counties are four times more likely to practice medicine in a rural area than those from urban counties.[41]

This finding has led to "pipeline" strategies such as K-12 enrichment programs designed to support student success in the health sciences as well as medical school admission policies that target more students from rural backgrounds. Outcomes after 10 years of a three-week intensive high school summer program that exposed students to health professions showed that 75 percent of participants pursued health careers.[42] A similar program in the San Luis Valley showed that early exposure to health care experiences for high school students resulted in a more positive interest in health careers.[43]

Community factors also play an important role. In one study, a strong attachment to the community was a top factor for physicians who stayed in rural practices up to 10 years.[44]

Important retention factors focus on engaging the provider and the provider's family in the community as well as lifestyle factors such as outdoor and recreational opportunities and social activities.

Key informant interviews conducted for this study confirmed these findings. The experts told us that important success factors for recruiting and retaining physicians in rural communities include:

- Matching the provider's personality with recreational and social activities in the community.
- Exposing the provider to a rural practice during training.
- Providing a loan repayment program.
- Assisting the rural hospital's administrators and board members to be attentive to the professional needs of the employed physicians.
- Extending the opportunity for the provider to teach medical students and residents in the rural clinic.
- Providing technology, such as telemedicine, that helps reduce professional isolation.

Authors of an international guidebook for rural medical education suggest the following strategy for preparing students for rural practice:[45]

- Encourage people from rural areas to become medical students.
- Promote medical school rural tracks.
- Promote rural training track residency programs and rural fellowship programs.
- Establish rural practice loan repayment programs.
- Reshape rural workforce and health care delivery through promoting team-based care and the use of telehealth in rural health care delivery.

Existing Programs in Colorado

Colorado's residency programs have been successful in providing physicians for the state, with 1,004 of the 1,952 physicians who have graduated from the state's nine family medicine residencies since 1972 continuing to practice in Colorado and provide primary care services in 50 of Colorado's 64 counties. Of the 35 graduates in 2014 who are practicing in the state, 49 percent selected rural or underserved sites.

Two strategies are being employed by the family medicine residencies to increase the probability that graduates will choose a rural practice. All residents are required to complete a one-month rural rotation

at one of 10 COFM-approved sites. Outcomes show a positive effect: 19 percent of residents following the rotation report an increased likelihood of choosing a rural practice. The second strategy is to train family medicine residents in a rural training track (RTT). Colorado has one RTT in Wray that graduates one physician per year.

The state's two medical schools encourage students to consider rural practice. The University of Colorado School of Medicine's Rural Track, founded in 2005, nurtures students who aspire to rural careers. Most are from small communities and are highly likely to stay in the track (90 percent) throughout their four years of medical school.[46] Similarly, Rocky Vista University College of Osteopathic Medicine's Rural Scholars program trains a selected group of students for eventual rural practice.

But there is only one RTT residency program in Colorado, so graduates of CU's Rural Track and RVU's Rural Scholars Program often leave the state in order to find rural residency programs.

Colorado's six Area Health Education Centers (AHECs) provide early exposure to health care careers for K-12 and college students. The AHECs also provide housing at rural sites where medical students can receive teaching from practicing physicians.

Several agencies work to recruit and retain primary care providers in rural and underserved communities. The Colorado Rural Health Center (CRHC) sponsors the Colorado Physician Recruitment (CPR) program. Through a screening process, CPR seeks to match the right provider with the right rural community. The goals are is to recruit rural providers and find sustainable placements that result in long-term retention. The five-year retention rate of CPR is 78 percent compared with 38 percent for all rural Colorado physicians.[47] CRHC works with rural communities to strengthen their ability to recruit and retain primary care providers. An important component of the community work is interacting with rural hospital administrators to assure supportive relationships with local primary care physicians.

The Colorado Community Health Network (CCHN) recruits and retains primary care physicians for Community Health Centers. CRCs are community-based clinics supported by federal funds that provide primary care services to populations that have limited access to health care. CCHN sponsors job fairs, publicizes openings, supports and mentors administrators seeking medical providers, and conducts workforce needs assessments for the health centers.

The Primary Care Office (PCO) in the Colorado Department of Public Health and Environment administers the loan repayment program through the Colorado Health Service Corps. The office assesses community needs as part of the loan repayment award process. Staff also work to develop policy for building Colorado's primary care workforce.

Identified Gaps

Colorado needs more rural training tracks for family medicine residents. The RTTs under development will solidify the pipeline between medical students in the rural tracks at the University of Colorado and Rocky Vista University College of Osteopathic Medicine, helping to increase retention of rural providers.

The training pipeline could be better connected. There should be collaboration between medical students in the rural tracks at the University of Colorado and Rocky Vista University and the residency RTTs when they open next year. This would ensure that when the RTTs are recruiting, Colorado's rural track medical students will very likely be selected by the residency program.

In addition, the pipeline between residency and rural and underserved practices can be strengthened through the loan repayment process. Applicants for loan repayment awards in the Colorado Health Service Corps compete with physicians who completed training in other states. Graduates of the state's family medicine residencies should be targeted to continue to practice in Colorado through loan repayment awards.

The CRHC needs additional resources to carry out its important work. CRHC is funded through grants, both public and private, along with revenue generated through their services. CRHC's goal of long-term retention by matching providers with rural communities warrants ongoing financial support.

Conclusion

Colorado has well-established resources to train and place primary care providers in rural and underserved locations. Data show the effectiveness of these efforts. However, gaps in the training pipeline need to be filled, such as adding residency RTTs and better coordinating the medical school rural tracks, the residency RTTs, and the loan repayment program. Monitoring the effects of rural training programs will be straightforward by tracking the number of graduates who practice in rural and underserved locations in Colorado and reporting these results to the legislature annually.

• SB14-144 Topic 7

Methods for monitoring the effect of loan repayment programs on physician retention in rural and other underserved areas of the state.

Loan repayment programs have been a successful strategy for recruiting and retaining primary care physicians in rural and undeserved areas. Colorado has two loan repayment programs: The National Health Service Corps (NHSC) administered by the Health Resources and Services Administration (HRSA) and the Colorado Health Service Corps (CHSC) administered by the Primary Care Office in the Colorado Department of Public Health and Environment (CDPHE). In this section, we review national and local data and conclude with recommendations to expand loan repayment resources in Colorado.

Background

Medical school graduates averaged $170,000 in debt in 2012, and nearly nine of 10 graduates (86 percent) report having education debt.[48]

Loan repayment programs address high loan debt, a key barrier for physicians who would consider rural or underserved primary care settings.[49] A study of 69 state programs that provided financial support in exchange for a period of service showed the programs improved retention, with participants staying longer in their practices at four and eight years than non-participants.[50]

A 2009 COFM study found that a third of family medicine residents who left Colorado to practice in rural and underserved communities in other states reported that a loan repayment incentive was a critical factor in their decision.[51] A recent evaluation of the NHSC and CHSC loan repayment programs in Colorado found that 78 percent of providers who completed their initial contract are practicing in the same health care site.[52] Three of four (75 percent) active CHSC clinicians report that loan repayment was a key factor in deciding where to work.[53]

Key informant interviews conducted for this study with primary care physicians, hospital administrators and citizens of rural communities underscored loan repayment as a vital component of successful recruitment and retention

The Colorado Health Service Corps is often cited as a successful national model. Created in 2009 by consolidating five independent loan repayment programs, it is administered by the Primary Care Office of CDPHE and has granted $15 million in loan repayment awards to nearly 230 primary care clinicians practicing in safety net clinics throughout Colorado.

CHSC is a good example of a public-private partnership, with funding provided by the Colorado Health Foundation, HRSA, the state of Colorado, and the Comprecare Foundation. As of February 2014, 152 CHSC providers were practicing in the state - 54 physicians, 21 physician assistants, 16 nurse practitioners, 14 dentists, four registered dental hygienists, 24 licensed professional counselors, 13 licensed clinical social workers, four psychologists, and two marriage and family therapists.

All are employed by public or nonprofit clinics that are in communities designated as HPSAs.[54]

As of February 2014, 146 NHSC providers, including 26 physicians, were practicing in high need areas of the state.[55]

Identified Gaps

Two gaps were identified in the state's loan repayment strategy: insufficient funding relative to program demand and the need for loan repayment for teachers of primary care trainees.

Health care applicants for the CHSC loan repayment program include physicians, other primary care providers such as nurse practitioners and physicians assistants, and mental health providers. The number of applicants greatly exceed the available

funds. During the last four rounds of awards, the CHSC has seen an exponential growth in demand for the program, with applications rising from 54 in September 2012 to 80 in March 2013, 105 in September 2013 and 149 in September 2014.This trend could yield more than 200 applicants for awards in the next round in 2015

In the most recent award cycle, less than 20 percent of the applicants received loan repayment awards. Of the 29 primary care physicians applying for the first time, five received a loan repayment package and 24 did not.

The Colorado Health Foundation has been the major funder for the CHSC loan repayment program. In March 2014, the CHF approved a two-year grant of $3,393,673 for 2014-2016

There is an opportunity to increase state funding for the loan repayment program. The funds could be targeted to specific provider groups, such as graduates of Colorado's medical schools to strengthen the pipeline within the state. Outcomes of targeted funding could be tracked to assure that state funds are resulting in the retention of state-trained primary care providers. Citizens in many areas of Colorado continue to have inadequate access to primary care providers. Loan repayment is a strategy shown to improve recruitment and retention of primary care providers and uses the existing infrastructure of the CHSC.

A second identified need is loan repayment for teachers of primary care trainees. The nine family medicine residency programs find it difficult to recruit qualified faculty, leading to burnout among existing faculty and high turnover.

A major reason for the faculty shortage is a significant pay discrepancy between a faculty salary and the income of a family physician in full-time practice. Full-time practitioners earn between $40,000 and $50,000 more per year than those who teach.[56]

A solution to the chronic shortage of residency faculty is to provide a loan repayment package for new or recently hired faculty. This strategy would level the playing field between teaching positions and private practice, stabilizing faculty recruitment and retention within the residency programs.

Colorado also faces a shortage of preceptors who teach students in rural and underserved clinics. Preceptors are primary care providers that take the time to teach students and residents in the clinical environment. Clinicians and administrators in such clinics must also care for patients. Loan repayment programs for clinicians who teach students is a strategy to recruit and retain providers while, at the same time, increase the number of preceptors for Colorado's health professions trainees.

Conclusion

Colorado has two opportunities to strengthen its loan repayment programs. First, state funding of the CHSC could be increased, with funds targeted to specific provider groups, such as graduates of state's medical schools

Second, loan repayment programs could be provided for teachers of our health professions workforce. Loan repayment for faculty at the family medicine residency programs would strengthen recruitment and reduce turnover as well. Loan repayment for preceptors in rural and underserved communities would increase the number of teaching placements for Colorado's health care professions workforce.

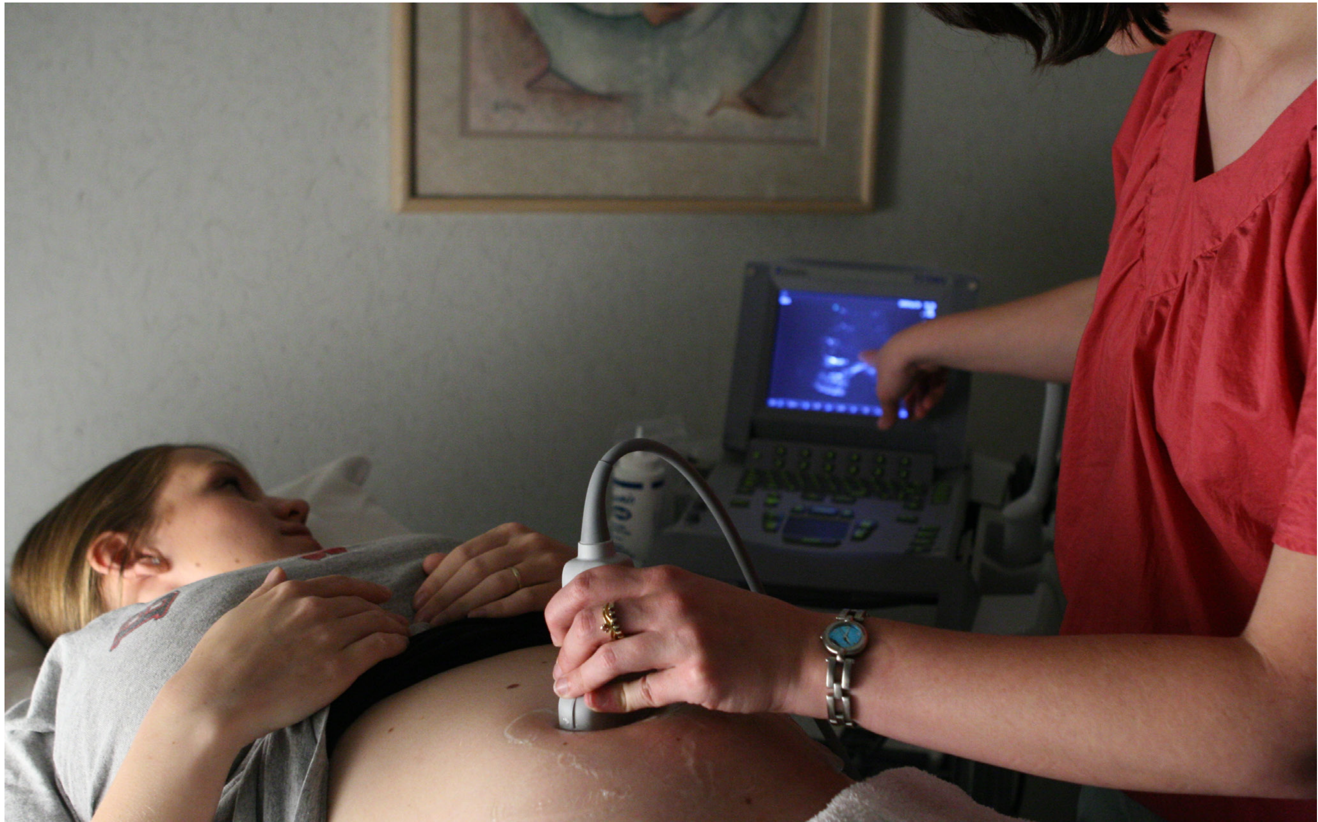
• SB14-144 Topic 1

Family medicine workforce data collection systems in the state and how these systems could be more effective in providing data on primary care workforce needs and provider retention, particularly in rural and other underserved areas of the state.

The Physician Workforce Work Group examined the family medicine workforce data collection systems in Colorado. The work group decided to expand the question by considering the quality of data collection systems for the overall health care workforce. In addition, the work group examined the linkage between data collection systems and decisions about primary care workforce training needs. Do policymakers have access to current and valid primary care workforce data and is that information used to inform decisions to address workforce needs?

Background

A recent national study found that most states lack a reliable and comprehensive health care workforce



data collection system.[57] The researchers also found that the quality of workforce data varies considerably by state.

While some states have a robust infrastructure that collects and analyzes data, many states rely on incomplete survey data. Consequently, decisions are made regarding training programs based on anecdotal evidence and political or financial considerations rather than accurate and evidence-based data.

The authors concluded that while workforce data collection can be difficult, states should fund ongoing physician workforce data collection systems that would allow policymakers to respond to changing workforce needs in their states.[58]

The same national study showed that most states lack a central governance structure, such as a health care workforce council, to use workforce data in the development of policy. Conversely, those states that do have policymaking bodies to coordinate workforce training decisions may lack reliable workforce data to guide them.[59]

These findings point to the need for two elements to guide state policy on workforce development: an accurate and up-to-date workforce database and a policymaking body that can use the data to provide recommendations to the legislature.

Idaho provides a worthy model with its Health Professions Education Council. The council's eight members, from a variety of educational organizations and higher education, work closely with the state's department of labor database to make recommendations to the state government.[60]

Monitoring systems provide the feedback loop necessary to track public funds invested in health care workforce training. Changes to the state health care training system must be data-driven. New funding should be tied to performance metrics and require monitoring to show how funds are spent.[61]

The Colorado Health Workforce Development Strategy, completed in 2010 and updated in 2014, targets the primary care workforce needs of the state's rural, frontier, and urban underserved communities. The strategy was guided by the Primary Care Office of the CDPHE as part of a collaborative effort of more than 35 organizations engaged in health care workforce development.

The strategy provides a comprehensive picture of

current workforce needs, recognizes the need to create lasting solutions to the uneven geographic distribution and projected shortages of the primary care workforce, and provides a set of recommendations. The recommendations focus on how to: organize Colorado's health care workforce initiatives, including a mechanism to collect provider information; educate the health care workforce; recruit and retain a health care workforce for underserved communities; and advocate for health care workforce policy reform.

However, the strategy remains unimplemented due to lack of funding.[62]

Several health care professional databases are maintained in the state. Each has value as well as limitations.

COFM monitors the practice location of graduates of the state's family medicine residency programs. This information furthers understanding of practice patterns, such as the proportion of graduates working in urban or rural settings. The database is limited to family physicians from the Colorado residencies.

The Department of Regulatory Agencies (DORA) maintains a database of licensed health care professionals. Based on license renewals, it is one of the most complete databases in the state and is available to the public.

HB12-1052 was enacted in 2012 to expand, within limits, the state's ability to collect more detailed information from health care professionals, such as specialty, full- or part-time status, and practice location. The additional data has increased the usefulness of the database. However, the validity and completeness of the data continues to be uncertain because it is voluntary rather than required. In addition, the information for a specific health profession may lag up to two years and data about a provider's patient mix, such as the percentage of Medicaid patients, is not available through this database.

Other databases use the health care provider's billing information. This claims-based information reveals the provider's practice location and payer mix. However, these databases are owned by private companies and may be costly to access or may not be accessible at all for public use. Additionally, the location and profile of health care professionals who do not bill directly, such as nurses, or professionals who bill under a physician's name, such as physician assistants, is not available.

The Colorado Health Institute (CHI) is a valuable resource for workforce information and analysis. For instance, CHI has created models to determine the distribution of health care professionals by region.[63]

Several state organizations began meeting in May 2014 to identify provider data needs and strategies for collection, collaboration and cost sharing for a common health workforce professional data system.

Under the auspices of CDPHE's Primary Care Office, participants in the Health Professional Workforce Data Consortium have formulated a health professional data system to allow stakeholders to invest in and mutually benefit from a master directory for a range of health professionals, including physicians, nurses, dentists, pharmacists, and licensed mental health professionals.

Participating organizations include the Governor's Office, CDPHE, HCPF, DORA, CHI, the Colorado Regional Health Information Organization, the University of Colorado, the Center for Improving Value in Health Care (CIVHC), the Colorado Association of Family Medicine Residencies, and Connect for Health Colorado.

Meanwhile, Colorado does not have one organization that is in charge of aligning resources to ensure that the state's health care workforce is sufficient to meet patient health care needs. While many organizations contribute to the training and placement of the primary care workforce, particularly in rural and underserved areas, the coordination of health care workforce assessment, planning, and policy has been elusive.

The list of Colorado's primary care educational programs as well as recruitment and retention programs is extensive. These programs are effective at training and placement of health care professionals, but their efforts are not coordinated nor based on a long-term statewide strategy.

The National Governors Association Health Workforce Policy Academy was formed in June 2014 under the leadership of the Colorado governor's office. The Policy Academy aims to improve assessment of the health workforce needs and provide strategy and funding recommendations

for Colorado. By December 2015, the Policy Academy will identify a structure and "home" for an interagency coordinating and planning body capable of engaging stakeholders and bringing together Colorado's health and economic development goals to better align education, training and policy.

Conclusion

While several health care professional databases are maintained in Colorado, none are adequate to guide policy decisions. A shared comprehensive health workforce professional data system will improve our understanding of workforce distribution and the needs of communities. A professional data warehouse will provide information to better assess the return on investment and success in retaining Colorado residency graduates practicing in rural and underserved areas. The proposed health professional data system under development in the Primary Care Office will allow a consortium of stakeholders to invest in and mutually benefit from a master provider directory for a range of health professionals. We support the budget request and ongoing General Fund expenditure from the CDPHE to create and maintain a health professional data system.

It is also crucial to have coordinated health care workforce assessment, planning, and policy. We recommend supporting the work of the National Governors Association Health Workforce Policy Academy.

Oversight of Graduate Medical Education Moving Forward

• SB14-1444 Topic 2

The utility of creating a graduate medical education advisory council to develop a method for assessing Colorado's graduate education needs more generally, including primary care as well as specialty care in rural and other underserved areas of the state.

This section addresses the question whether Colorado would benefit by creating a new organization to guide GME development.

Background

Nearly all decisions about GME expansion occur at the level of the training institution, usually a teaching hospital, and are not based on workforce assessment needs of the states, a recent national study found.[64] The most common reason why teaching hospitals have increased residency training is to generate revenue from expanded service lines. Decisions about expanding or adding new residency programs tended to include decision-makers at local teaching institutions, department chairs, and chief medical officers, not state government or policymakers.[65]

Researchers found a few examples of both formal and informal GME advisory groups that have advocated for GME policy changes at the state legislative level. Several states have created GME councils but have failed to maintain the groups due to funding cuts. It is more common for GME groups to be formed on an ad hoc basis to advocate for specific policy changes. Few states, other than Colorado, have had an ongoing coordinated role in state GME policy.[66] Below are three examples of states that have coordinated GME policy.

- Utah has a statewide GME governance board composed of eight members appointed by the governor. The board plays an advisory role in decisions about GME positions. Between 2003 and 2010, the board managed a CMS demonstration project on the allocation of Direct Medicare GME funds for the four GME institutions in the state. The CMS waiver expired in 2010. The GME board continues to hold an advisory role in GME decisions.

- Texas has a Higher Education Coordinating Board that oversees issues ranging from community colleges to health-related institutions. While not a GME board per se, this body is implementing state appropriations of $17 million for developing new GME programs.

- Georgia has two entities, both created by state statute, that have some influence over state appropriations for GME. A physician workforce board conducts workforce studies and has a role in financing GME. A new funding body, administered by the Board of Regents, manages funds for starting new primary care GME programs. The legislature committed $1.2 million in 2013 and an additional $2.07 million in 2014.[67]

GME Programs in Colorado

Colorado has three main entities that oversee GME training: COFM, the University of Colorado School of Medicine (CU) and the Rocky Mountain Postdoctoral Training Institution (RMOPTI). CU hosts the majority of the training programs, training 74 percent of residents and fellows (physicians that seek additional training after residency).

The COFM, established in 1977 as a legislatively mandated commission, is comprised of governor-appointed citizens from Colorado's seven congressional districts, the directors from the state's nine family medicine residencies, the deans of the University of Colorado School of Medicine and Rocky Vista University College of Osteopathic Medicine, and a representative from the Colorado Academy of Family Physicians.

Colorado's nine family medicine residency programs are training 204 family physicians in 2014-15. In addition to directing the collaborative recruiting, training, and retention of family physicians, the COFM oversees the equitable flow of state funding to the family medicine residencies. The state legislature directed COFM in 2013 to develop and maintain family medicine programs in rural locations. It is noteworthy that the Colorado family medicine residency programs collaborate with one another although the sponsoring hospitals operate independently. In order to receive state funding, the programs participate in COFM.

The CU School of Medicine administers residency programs in all the major medical disciplines, in addition to family medicine. In 2013-14, CU administered 26 residency programs (741 residents) and 116 fellowship programs (249 fellows), including family medicine. Of the 286 graduates in 2013, 65 (23percent) completed training in primary care programs. Of the 65 primary care graduates, 20 are from the CU family medicine residencies (Rose, Swedish, University of Colorado) that participate in the Commission on Family Medicine, described above. The Graduate Medical Education Committee monitors the programs and approves new GME programs.[68]

The goal of the Rocky Mountain Osteopathic Postgraduate Training Institution (RMOPTI) is to expand opportunities for osteopathic postgraduate trainees in the Mountain West and to ensure high quality training in existing programs. Like allopathic physicians (M.D.s), osteopathic physicians (D.O.s) complete four years of medical school and can choose to practice in many medical specialties. However, osteopaths receive additional training in hands-on manipulation of the musculoskeletal system. RMOPTI and the Office of Graduate Medical Education at Rocky Vista University identify new opportunities for graduate medical education in the region and assist in the creation of those new programs. Once the programs are up and running, RMOPTI works with member institutions to provide academic support and oversight as well as continuous quality improvement. RMOPTI currently has 13 residency programs and three fellowships in Colorado, Wyoming, Utah, and Idaho.

Additional residency programs are sponsored by private hospitals such as St. Joseph's in Denver and Parkview in Pueblo. All of the family medicine residency programs are under the auspices of COFM.

Conclusion

Colorado is one of the few states to have a legislatively established commission to oversee family medicine residencies. COFM makes annual reports to the legislature and provides recommendations for meeting the state's family medicine workforce needs.

There is no need to establish a GME advisory council at this time. While a state-appointed council might provide some additional oversight of GME policy, it would be redundant with existing entities and create an unnecessary level of bureaucracy.

However, as the state establishes a comprehensive health professions workforce database and creates a health care workforce council, COFM, the UCSOM Graduate Medical Education Committee, the RMOPTI, and all other hospitals that sponsor GME should contribute information about their graduates to the master health care workforce database and participate in the health care workforce council under development by the Policy Academy.

In coordinating health care workforce policy to inform funding decisions, it will be important not to separate physician workforce policy from overall health care professions workforce policy. An integrated workforce policy is especially vital in primary care where team-based care is necessary to meet the health needs of underserved populations.

Support Existing Residencies And Their Rural Programs.

Recommendation 1: Continue to provide state funding to support the nine existing family medicine residency programs.

For many years the state has provided funds through COFM to help support the nine family medicine residency programs. The funds have been used to support the recruitment of high-quality medical students to the residencies, to coordinate the rural rotations, to help the residency clinics transform into Patient-Centered Medical Homes, and to enable sharing of expertise among the programs. The collaboration among the Colorado family medicine residency programs is unique in the country. In FY 2013-14, funding was increased to provide care coordination services within the residencies. Continuation of this funding is an important source of financial support for the family medicine residency programs and is essential for the continuation of the Colorado Association of Family Medicine Residencies.

- **Funding:** $1,185,538 annually in state funds matched by federal Medicaid dollars. This is currently in the state budget and no increase is required.
- **Outcome:** Continue the stability and excellence of Colorado's nine family medicine residency programs. The residencies graduate 68 family physicians annually and the residency clinics are an important part of the state safety net.

Recommendation 2: Continue to provide state funding to support the rural training programs under development.

The General Assembly allocated funds to COFM beginning in FY 2013-14 to develop and maintain residency rural training programs. Rural training tracks (RTTs) are under development in Alamosa, Fort Morgan and Sterling. Evidence shows that RTTs are a proven training model for getting family physicians to "stick" in rural communities after graduation. Once up and running, these three sites will produce six additional graduates annually.

- **Funding:** $1.5 million annually in state funds matched by federal Medicaid dollars. This is currently in the state budget and no increase is required.
- **Outcome:** Increase the number of RTT graduates by six annually. Graduates of RTTs are two to three times more likely to practice in rural communities compared with graduates of traditional family medicine residencies.

Recommendation 3: Continue the required rural rotation during residency.

All residents in the Colorado family medicine residencies are required to complete a one-month rotation at one of 10 approved rural communities. COFM requires this training to encourage residents to consider rural practice upon graduation. The experience has a demonstrated benefit of increasing resident interest in rural practice. We recommend continuation of this requirement at no extra cost to the state.

- **Funding:** No state funds required.
- **Outcome:** Expose 68 family medicine resident physicians each year to rural training which increases the likelihood of rural practice following graduation.

Recommendation 4: Develop education resources to clarify the benefits of GME for administrators of teaching hospitals.

The residency program directors will educate new hospital administrators about the benefits of sponsoring a family medicine residency program, including building a primary care workforce and referral base, caring for indigent and underinsured patients, and increasing medical staff engagement.

Directors will also focus on the financial benefits that may not be clear to hospital administrators, including appropriately attributing the Medicare and Medicaid GME funds to the residency program.

COFM will coordinate the educational resources,

which will be available upon request of a program director and may involve the expertise of HCPF and Residency Program Solutions from the American Academy of Family Physicians.

- **Funding:** No state funds required.
- **Outcome:** Increase the perceived value of family medicine residency programs for health systems.

Recommendation 5: Develop a training pipeline between Colorado's medical schools and the residency rural training tracks being developed.

Along with the development of three additional rural training tracks in Alamosa, Fort Morgan and Sterling, Colorado should create a pipeline from the medical school rural tracks to the family medicine residency RTTs. We recommend close collaboration between the medical school rural trainees and the family medicine rural training tracks so those students can complete their rural residencies in Colorado.

- **Funding:** No state funds required.
- **Outcome:** Create closer linkage between Colorado's medical students with rural interests and Colorado's residency rural training tracks in order to keep talent in the state.

Recommendation 6: Provide loan repayment for recruitment and retention of family medicine residency faculty.

Colorado could help fill a gap for faculty physicians by helping recent graduates with the daunting task of paying medical school debt. We recommend funding loan repayment for three faculty positions per year. The faculty loan repayment program will be overseen by the Colorado Health Service Corps.

- **Funding:** $270,000 annually allocated to CDPHE and administered by Colorado Health Service Corps.
- **Outcome:** Provide loan repayments awards for three faculty positions per year with three-year commitments, improving the recruitment and retention of qualified faculty and stabilizing the family medicine residency programs.

Expand Existing Residencies

Recommendation 7: Add new training positions to existing family medicine residency programs.

Several of Colorado's nine family medicine residencies have the capacity to add one training position to each class. However, due to the federal cap on training positions, no Medicare GME funds are available. We recommend providing state funding to add five new training positions, which would yield an additional 15 residents in training at any one time — five first-year residents, five second-year residents, and five third-year residents. This would mean five additional graduates per year.

We propose phasing them in by adding five first-year positions each year over three years. Residents who fill the state-funded positions will be required to commit to practice in rural or underserved locations in the state for three years following graduation. In return, they will receive a loan repayment package. This will require a minimum of three years of state funding in order to graduate at least one cycle of trainees.

- **Funding:** $1.35 million annually in state funds to COFM, to be matched by federal Medicaid funds.
- **Outcome:** Graduate five additional family physicians per year with three-year service commitments to practice in rural areas of the state. The presence of more family physicians will increase the physician workforce capacity to care for the expanded Medicaid population, especially in rural areas.

Recommendation 8: Add rural fellowship training positions to existing family medicine residency programs.

A rural fellowship provides the opportunity for a family physician to receive one year of additional training in skills often needed in rural practice. The extra training typically includes advanced obstetrical, such as C-sections, at an existing urban family medicine residency and may also include trauma and ED experience. In return for the training, the fellow will make a commitment to practice in a rural location in the state for one year after completion of the fellowship. We recommend adding two fellowship positions per year.

- **Funding:** $60,000 annually in state funds to COFM, to be matched by federal Medicaid funds.
- **Outcome:** Add two fellowship-trained family physicians per year with one-year service commitments for rural areas of the state. Family physicians with advanced OB skills are a valuable resource for patients in rural communities.

Enhance Recruitment and Retention Strategies For Rural and Underserved Locations.

Recommendation 9: Fund a new program to provide loan repayment assistance for Colorado medical students to practice in the state after residency.

This new program will create a pipeline between training and practice and will place more primary care physicians in rural and underserved areas. The proposed "Colorado Medical Student to Service Program" will target medical students from the University of Colorado School of Medicine and the Rocky Vista University College of Osteopathic Medicine, with preference given to students who participate in the rural training tracks at either school. Five loan repayment packages will be awarded to students who commit to practice primary medicine at a Colorado Health Service Corps approved site for three years after they complete residency training. The service obligation commitment would apply whether they complete a residency in Colorado or another state and then return to Colorado to practice.

- **Funding:** $600,000 annually in state funds to CDPHE, administered by the Colorado Health Service Corps.
- **Outcome:** Five medical students educated in Colorado each year will provide three years of service in a rural or underserved area of the state after residency.

Recommendation 10: Provide a tax credit to retain primary care physicians practicing in rural communities.

This recommendation is designed to retain a primary care physician in a rural community after the physician has completed requirements for a loan repayment award. By remaining in the rural location after the loan repayment award ends, the physician could receive up to five years of credit on state taxes. This retention incentive would be part of the agreement signed by the provider upon starting the loan repayment program. The physician would commit to providing care to an underserved patient population in a rural community in return for the tax credit. Approximately 15 primary care physicians each year would take advantage of this incentive with roughly $75,000 in total tax credits, based on data from the Colorado Health Service Corps.

- **Funding:** Estimated $75,000 in decreased state revenue annually.
- **Outcome:** Extending the number of years a primary care physician practices in a rural community following completion of a loan repayment award.

Consider Alternative Methods To Fund Family Medicine Residencies.

Recommendation 11: Consult with the Colorado Health Plan Association to identify methods for insurance companies to partially fund training of primary care physicians. Public and private payers benefit from an adequate primary care physician workforce and both should contribute to the costs. We have initiated discussions with the Colorado Health Plan Association to explore how third-party payers can contribute to the education of the primary care physician workforce. At this time, we do not have specific recommendations for the General Assembly.

- **Funding:** No state funds required.
- **Outcome:** A long-term plan to develop alternative funding for family medicine education.

Develop Coordinated Workforce Policy and Data Collection Systems.

Recommendation 12: Support the Health Workforce Plan currently under development.

For a well-functioning health care system that provides comprehensive patient-centered care, it is crucial to coordinate the assessment, planning and policy efforts related to the workforce. Colorado does not have an entity that is accountable for aligning the resources necessary to ensure our health care workforce is sufficient to meet statewide objectives.

We recommend supporting the work of the National Governors Association Health Workforce Policy Academy, which is gathering statewide stakeholder input. The goal is to improve Colorado's assessment of the health care workforce needs and provide strategic and funding recommendations. This plan will begin implementation over an 18-month period from June 2014 through December 2015. The policy academy will identify a structure and "home" for an interagency coordinating and planning body capable of engaging stakeholders and bringing together Colorado's health and economic development goals to better align education, training and policy.

- **Funding:** No state funds required.
- **Outcome:** Establishes a health care workforce advisory council that is responsive to state's needs.

Recommendation 13: Support the health professions database currently under development.

The development of a shared health workforce professional data system will enable Colorado to better understand the uneven workforce distribution and the health care needs of communities. In addition, a professional data warehouse will provide information to better assess the return on investment and success in retaining Colorado residency graduates practicing in rural and underserved areas.

A consortium of organizations has formed to discuss common provider data needs and strategies for collection, collaboration, and cost sharing.

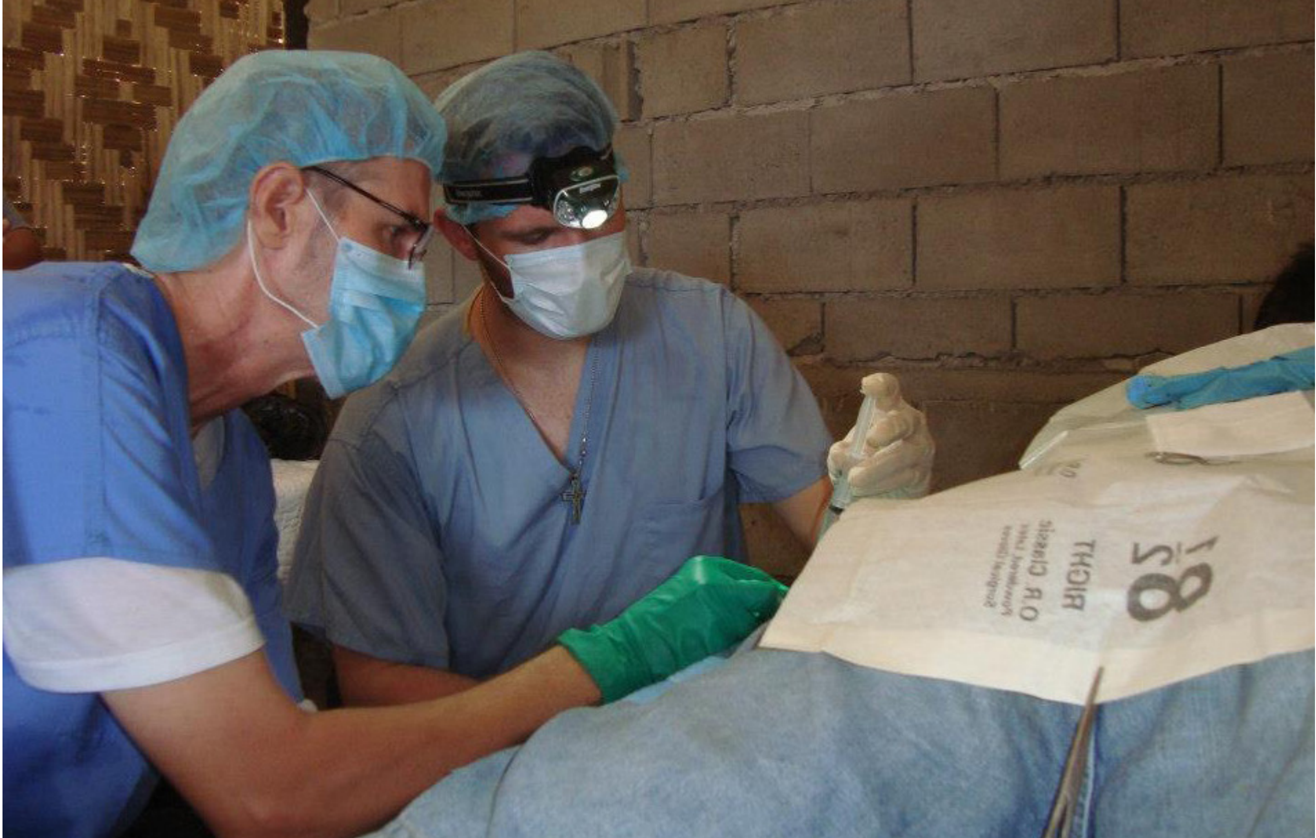
The proposed health professional data system will allow a consortium of stakeholders to invest in, and benefit from, a master provider directory for a range of health professionals. We support the budget request and ongoing General Fund expenditure from CDPHE to create and maintain a health professional data system.

- **Funding:** Support the FY 2015-16 budget request of $117,617 from CDPHE as well as ongoing General Fund expenditures, to create and maintain a health professional data system.
- **Outcome:** An established and comprehensive health workforce database that informs policy decisions.

Recommendation 14: Maintain the current GME advisory groups and do not create a GME Advisory Council.

Our findings indicate that Colorado has three highly functioning GME advisory groups — the COFM, the University of Colorado Graduate Medical Education Committee, and the Rocky Mountain Osteopathic Postdoctoral Training Institute — that provide oversight of GME as well as input for policymakers. A separate or additional GME advisory council is not necessary.

- **Funding:** No state funds required.
- **Outcome:** The continuation of effective GME advisory groups.



CONCLUSION

Many Coloradans lack access to primary care, especially in rural areas. Lack of access to primary care is more than just an inconvenience – it can affect the well-being of rural citizens. Recognizing this problem, the General Assembly requested this study to identify practical recommendations for placing more family medicine graduates in rural and underserved areas. The Commission brought together regional experts and national consultants, reviewed academic literature, and interviewed key informants to study this issue.

Results of this study confirm the value of Colorado's existing family medicine residency programs. Many graduates go on to practice in rural and undeserved locations. Yet more can be done. The study identified 14 recommendations that provide common-sense and relatively low-cost options. Most of the recommendations in this report will require no additional public funds. For a modest state investment, 13 new training positions can be added. Loan repayment awards can be used to place newly-trained family physicians in areas of greatest need.

The most effective strategy to pay for more training positions is by committing state funds that are matched with federal Medicaid GME funds. This approach allows the state can make efficient use of public funds to expand the primary care physician workforce in rural and underserved areas.

The Commission on Family Medicine thanks the legislature for support to complete this study. It is our sincere hope that the recommendations result in concrete improvements that benefit the citizens in rural and underserved areas of Colorado.

ENDNOTES

[1] Kozakowski, S.M., (2014). "Results of the 2014 National Resident Matching Program: Family Medicine." Family Medicine 46(9), 701-706.

[2] Colorado Academy of Family Physicians. (2014). "What is a Family Physician." (Retrieved September 2014, from: http://coloradoafp.org/what-is-a-family-physician/).

[3] Colorado Health Institute. (2014). Colorado's Primary Care Workforce: A Study of Regional Disparities." Available at: http://www.coloradohealthinstitute.org/key-issues/detail/health-care-workforce/colorados-primary-care-workforce-a-study-of-regional-disparities.

[4] Colorado Health Institute. (2013). "Practicing Primary Care Physicians by County, Colorado. 2004-2013." Download from Peregrine Management Corporation, State Demographer Office, Colorado Department of Local Affairs. http://www.coloradohealthinstitute.org/data-repository/category/workforce.

[5] Association of American Medical Colleges, Center for Workforce Studies. (2013). "2013 State Physician Workforce Data Book." https://members.aamc.org/eweb/DynamicPage.aspx?Action=Add&ObjectKeyFrom=1A83491A-9853-4C87-86A4-F7D95601C2E2&WebCode=PubDetailAdd&DoNotSave=yes&ParentObject=CentralizedOrderEntry&ParentDataObject=Invoice%20Detail&ivd_formkey=69202792-63d7-4ba2-bf4e-a0da41270555&ivd_prc_prd_key=CF418B98-7614-4B33-A516-68C8839FFD72.

[6] Colorado Health Institute. (2014). Colorado's Primary Care Workforce: A Study of Regional Disparities." Available at: http://www.coloradohealthinstitute.org/key-issues/detail/health-care-workforce/colorados-primary-care-workforce-a-study-of-regional-disparities.

[7] Colorado Department of Public Health and Environment, Primary Care Office. (2014). "Colorado health Workforce Development Strategy, 2014."

[8] Colorado Department of Public Health and Environment. (2014). "Primary Care: Health Professional Shortage Areas." https://www.colorado.gov/pacific/sites/default/files/PCO_HPSA-primary-care-inset-may-2014.pdf.

[9] Association of American Medical Colleges, Center for Workforce Studies. (2013). "2013 State Physician Workforce Data Book." https://members.aamc.org/eweb/DynamicPage.aspx?Action=Add&ObjectKeyFrom=1A83491A-9853-4C87-86A4-F7D95601C2E2&WebCode=PubDetailAdd&DoNotSave=yes&ParentObject=CentralizedOrderEntry&ParentDataObject=Invoice%20Detail&ivd_formkey=69202792-63d7-4ba2-bf4e-a0da41270555&ivd_prc_prd_key=CF418B98-7614-4B33-A516-68C8839FFD72.

[10] Health Care Policy and Financing. (2014). "FY 2014-15 Medical Premiums Expenditure and Caseload Report."https://www.colorado.gov/pacific/sites/default/files/Joint%20Budget%20Committee%20September%202014%20Report.pdf.

[11] Colorado Hospital Association, Center for Health Information and Data Analytics. (September 2014). "Impact of Medicaid Expansion on Hospitals: Updated for Second-Quarter 2014."

[12] Colorado State Demography Office. (2014). "65+ estimates 2014 and 2024." http://www.colorado.gov/cs/Satellite%3Fblobcol%3Durldata%26blobheadername1%3DContent-Disposition%26blobheadername2%3DContent-Type%26blobheadervalue1%3Dinline%253B%2Bfilename%253D%2522Population%2BProjections.pdf%2522%26blobheadervalue2%3Dapplication%252Fpdf%26blobkey%3Did%26blobtable%3DMungoBlobs%26blobwhere%3D1251833653289%26ssbinary%3Dtrue

[13] Freid, V.M., et. al. (July 2012). "Multiple Chronic Conditions Among Adults Aged 45 and Over: Trends Over the Past 10 Years." U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics.

[14] Rosenblatt, RA, M.D., MPH., et.al. (August 2010). "The Future of Family Medicine and Implications for Rural Primary Care Physician Supply." WWAMI Rural Health Research Center.

[15] Colorado Department of Public Health and Environment, Primary Care Office. (2014). "Colorado health Workforce Development Strategy, 2014."

[16] Colorado's State Health Innovation Plan. (December 2013). P. 97. Available at: https://drive.google.com/file/d/0B433IOgf8XV0RW1kY0g2OGxENnM/view.

[17] Colorado Commission on Family Medicine, 2014

[18] Patterson, D.B., et al. (2013). "Rural Residency Training for Family Medicine: Graduate Early-Career Outcomes, 2008-2012." WWAMI Rural Health Research Center Policy Brief.

[19] Conversation with Judy Pauwels, M.D., Associate Professor, University of Washington Department of Family Medicine, October 23, 2014.

[20] Residency Program Solutions Consultation Report to Colorado Association of Family Medicine Residencies, Lou Sanner, M.D., February, 2014 and April, 2014.

[21] Henderson T. Medicaid Graduate Medical Education Payments: A 50-State Survey. Washington, DC. 2013, p. 5.

[22] Henderson T. p. 7

[23] Henderson T. p. 8.

[24] Henderson T. p. 9.

[25] AAFP Position Paper. (2013). "Keeping Physicians in Rural Practice." American Academy of Family Physicians.

[26] Robert Graham Center. (2013). "Migration after FM Residency: 56percent of Grads Practice Within 100 Miles of Training.

[27] Commission on Family Medicine. Unpublished data, 2014.

[28] Voorhees, K.I., et al. (2013). "A Proposal for Reform of the Structure and Financing of Primary Care Graduate Medicine Education." Family Medicine 45(3): 164-170.

[29] House Report #213 and Senate Report #404. 89th Congress, 1st. Session House Report 32 and Senate Report 36, 1965.

[30] COGME. Advancing Primary Care: Twentieth Report. Council on Graduate Medical Education. December 2010.

[31] Spero, J.C. p. 15.

[32] Spero, J.C. p. 17.

[33] Federal Register, National Archives and Records Administration's Office of the Federal Register (OFR). Title 45: Public welfare; §158.150: Activities that improve health care quality. Accessed December 10, 2014.

[34] Nielson, M.O. et al. (2014). "The Patient-Centered Medical Home's Impact on Cost and Quality: An Annual Update on the Evidence 2011-2013." Patient-Centered Primary Care Collaborative.

[35] Eley, D.S., et al. (2012). "A Decade of Australian Rural Clinic School Graduates – Where are They and Why?" Rural and Remote Health 12(1): 1-12.

[36] AAFP Position Paper. (2013). "Keeping Physicians in Rural Practice." American Academy of Family Physicians.

[37] Rabinowitz, H.K., et al. (2012). "Medical School Rural Programs: A Comparison with International Medical Graduates in Addressing State-Level Rural Family Physician and Primary Care Supply." Academic Medicine 87:488-492.

[38] WWAMI Policy Brief. (2013). "Rural Residency Training for Family Medicine Physicians: Graduate Early-Career Outcomes, 2008-2012" WWAMI Rural Health Research Center.

[39] Phillips, R.L., et al. (2013). "Do Residents Who Train in Safety Net Settings Return for Practice?" Academic Medicine 88 (12): 1934-1940.

[40] Fagan, E., et al. (2013). "Migration after Family Medicine Residency: 56 percent of Grads Practice within 100 Miles of Training." The Robert Graham Center.

[41] The Robert Graham Center. (2007). Rural Origins and Choosing Family Medicine Predict Future Rural Practice. American Family Physician 76(2):207.

[42] Crump, W.J., et al. (2014). "A Rural Pathways Program for High School Students: Reinforcing a Sense of Place." Family Medicine 46(9): 713-717.

[43] Jaquez, F. (2008). "From High School to Health Careers." San Luis Valley Area Health Education Center, Inc.

[44] Hays, R. (2003). "Getting the Balance Right: GPs Who Chose to Stay in Rural Practice." Australian J of Rural Health. 11(4):193-198.

[45] Schmitz, D., et al. (2014). "Training in Family Medicine for Rural Practice in the USA. In Rural Medical Education Guidebook." World Organization of Family Doctors.

[46] Deutchman M. (2012). "The Rural Track at the University of Colorado School of Medicine." Unpublished paper.

[47] Bosworth M. (2014). "Retention rate of Colorado Rural Health Center CPR program." January 20, 2015, email communication, Melissa Bosworth.

[48] Youngclaus, J., et al. (2013). "Physician Education Debt and the Cost to Attend Medical School: 2012 Update." Association of American Medical Colleges.

[49] Primary Care Office. (2014). "Colorado Health Workforce Development Strategy, 2014." Colorado Department of Public Health and Environment. 35.

[50] Pathman, D.E., et al. (2004). "Outcomes of States' Scholarship, Loan Repayment, and Related Programs for Physicians." Medical Care 43(6), 560-568.

[51] Colorado Department of Public Health and Environment Primary Care Office. 35.

[52] Primary Care Office. (2014). "Improving Access to Primary Care through Education Loan Repayment for Providers." Colorado Department of Public Health and Environment.

[53] Colorado Department of Public Health and Environment Primary Care Office. 36.

[54] Colorado Department of Public Health and Environment Primary Care Office. 35.

[55] Colorado Department of Public Health and Environment Primary Care Office. 36.

[56] Medical Group Management Association. (2014). "Physician Compensation and Production Survey 2014 Report Based on 2013 Data: Key Findings Summary Report."

[57] Spero, J.C. p. 7

[58] Spero, J.C. p. 25.

[59] Spero, J.C. p. 7.

[60] Schmitz D. (2014). The Idaho Health Professional Education Council. September 9, 2014, conference presentation, David Schmitz, M.D. September 9, 2014.

[61] Spero, J.C. p. 28.

[62] Colorado Department of Public Health and Environment Primary Care Office. P. 1.

[63] Colorado Health Institute (2014). "Colorado's Primary Care Workforce: A Study of Regional Disparities." http://coloradohealthinstitute.org/uploads/downloads/Com_Cap2_for_web_2_11_14.pdf

[64] Spero, J.C. p. 18.

[65] Sheps 2013, p. 18

[66] Spero, J.C. p. 18.

[67] Spero, J.C. p. 18.

[68] School of Medicine. (2013). "CU School of Medicine University of Colorado Anschutz Medical Campus 2013 Facts and Figures." University of Colorado.