STATE OF NORTH CAROLINA
DEPARTMENT OF HEALTH AND HUMAN SERVICES

ROY COOPER
GOVERNOR

MANDY COHEN, MD, MPH
SECRETARY

March 27, 2020

SENT VIA ELECTRONIC MAIL

The Honorable Josh Dobson, Chair
Joint Legislative Oversight Committee on
Health and Human Services
North Carolina General Assembly
Room 307B, Legislative Office Building
Raleigh, NC 27603-5925

The Honorable Joyce Krawiec, Chair
Joint Legislative Oversight Committee on
Health and Human Services
North Carolina General Assembly
Room 308, Legislative Office Building
Raleigh, NC 27603-5925

The Honorable Donny Lambeth, Chair
Joint Legislative Oversight Committee on
Health and Human Services
North Carolina General Assembly
Room 303, Legislative Office Building
Raleigh, NC 27603-5925

Dear Chairmen:

Session Law 2018-88, Section 1, requires the Department of Health and Human Services ("Department") to conduct a study and report on options for modification, enhancements, and other changes to graduate medical education (GME) payments to hospitals, as well as any other reimbursements, to incentivize health care providers in rural areas of the State to participate and support GME residency programs.

In addition, Section 2 requires the Department to conduct a study and provide an interim report on rural hospitals that desire to be designated as new teaching hospitals by the Centers for Medicare and Medicaid Services. These reports are due to the Joint Legislative Oversight Committee on Health and Human Services and the Joint Legislative Oversight Committee on Medicaid and NC Health Choice.

Pursuant to the provisions of law, the Department is pleased to submit the attached report. Should you have any questions, please contact Maggie Sauer, Director of the Office of Rural Health, at 919-527-6440.

Sincerely,

Mandy Cohen

Mandy Cohen, MD, MPH
Secretary

cc:

Matt Gross	reports@ncleg.net	Dave Richard	Jared Simmons	Kody Kinsley
Joyce Jones	Rob Kindsvatter	Luke MacDonald	Theresa Matula	Susan G. Perry
Erin Matteson	Marjorie Donaldson	Zack Wortman	Mark Collins	Maggie Sauer
Deborah Landry	Katherine Restrepo	Jessica Meed	Lisa Wilks	Hattie Gawande

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Joint Legislative Oversight Committee on
Medicaid and NC Health Choice
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Room 303, Legislative Office Building
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Final Report on GME and New Teaching Hospitals

Session Law 2018-88, Section 2

Report to the

Joint Legislative Oversight Committee on Health and Human Services

and

Joint Legislative Oversight Committee on Medicaid and NC Health Choice

by

N.C. Department of Health and Human Services

March 27, 2020

Table of Contents

1. Executive Summary

Transforming medical education to improve the health outcomes of North Carolinians residing in rural and underserved areas requires a strategic, multi-pronged approach. Graduate medical education (GME) payments to health care institutions are a key policy tool that can be used to recruit and retain physicians in rural and underserved areas to ultimately increase access to health care and to increase the number and quality of students pursuing primary care fields.

This final report, which completes the NC Department of Health and Human Services (DHHS) response to Part I, Section 2 of S.L. 2018-88 requirements, explores the following topics related to GME:

- The potential for rural hospitals and rural outpatient settings (such as federally qualified health centers (FQHCs), rural health centers (RHCs), and local health departments (LHDs)) to develop promising residency programs, as well as best practices and recommendations to ensure the long-term success of such rural residency models.
- Various approaches to reform GME, including increasing accountability for existing GME investments and considering several strategies to alter the current funding flows for GME payments.
- DHHS offers the key recommendation that a formal fiscal impact analysis should be completed to meaningfully assess a variety of potential GME funding strategies.

DHHS acknowledges that GME reforms alone are insufficient to effectively address disparities in the rural health care workforce. At the same time, there is recognition that additional supports (e.g., investments in practice supports, interprofessional care, and broader attempts to strengthen the rural economy) as well as investments in the form of state GME funding are simultaneously needed to attract and maintain providers in rural regions of the state. The State has an important role to coordinate the various policy levers at its disposal to transform rural health care and to build the primary care workforce the state needs.

DHHS offers several recommendations to the North Carolina General Assembly (NCGA) on actions it can take that could 1) attract more physicians and other providers to practice and stay in rural communities, 2) increase accountability and transparency with existing GME dollars, and 3) strengthen the rural healthcare ecosystem, which are summarized in the table below.

Table 1. Goals and Recommendations.

Goal	Recommendations
A. Increase the number of providers that train and practice long-term in rural NC communities	1. The NCGA should appropriate funds to formally study the fiscal impact and effectiveness of the potential GME investment strategies proposed in this report. 2. The NCGA should assess the readiness of rural hospitals to develop residency programs and consider funding hospitals that are most likely to meet accreditation requirements.

	3. The NCGA should consider providing additional start-up and ongoing funds to outpatient sites (e.g., FQHCs, RHCs) that partner with an academic center or teaching hospital to establish residency programs.
B. Increase accountability for existing GME dollars	1. The NCGA should direct a formal study of historical graduates from UME and GME in NC for full transparency and to ensure that the GME investments made by the State are producing the desired outcomes. 2. The NCGA should amend legislation to receive meaningful data from formal tracking of UME/GME graduates by institutions receiving state funding. 3. The NCGA should direct DHHS to establish an oversight structure for all Medicaid funding to allow for auditing, oversight and accountability.
C. Strengthen the rural health care ecosystem	1. The NCGA should strategically invest additional dollars in rural loan repayment in areas with the highest need based on historical health outcomes. 2. The NCGA should invest in the practice supports, which are vital to the infrastructure of the rural health care ecosystem. 3. The NCGA should continue to invest in rural economic development.
Abbreviations: DHHS=Department of Health and Human Services, FQHC=federally qualified health center, GME=graduate medical education, IME=indirect medical education, NCGA=NC General Assembly, RHC=rural health center, UME=undergraduate medical education	

This final report from DHHS builds on the recommendations received from extensive stakeholder feedback from the North Carolina Area Health Education Centers (AHEC) system, Cecil G. Sheps Research Center at UNC-Chapel Hill (Sheps Center), representatives of NC medical schools, physician interviews, FQHCs, the Office of Rural Health (ORH) and the Division of Health Benefits (DHB).

2. Background

A. What is Graduate Medical Education (GME)?

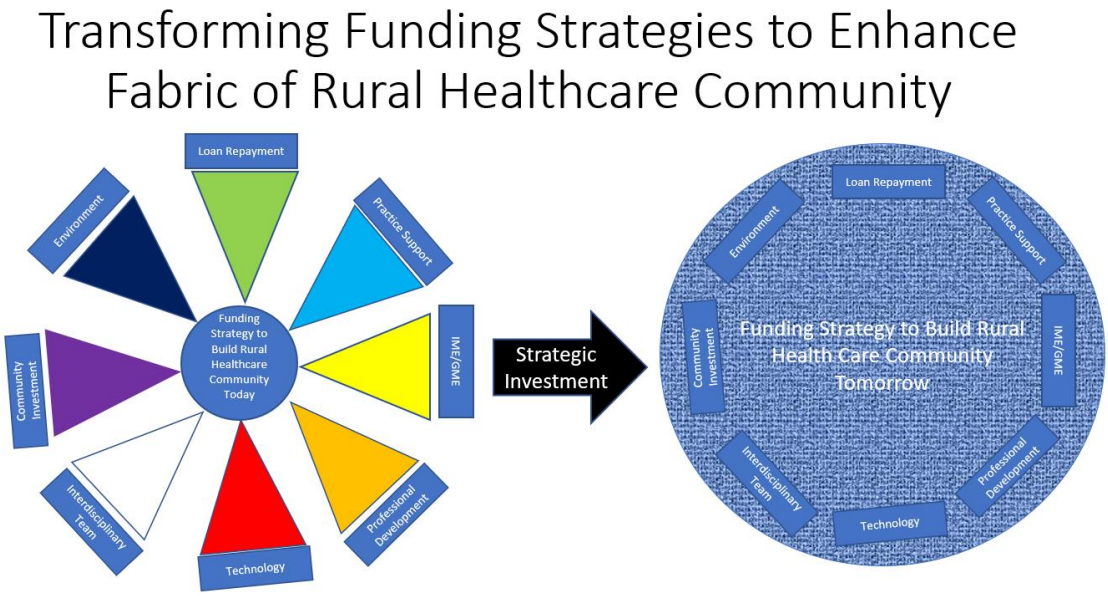
Graduate medical education (GME) training refers to the period of specialized training, known as "residency," between medical school and medical practice. Residency provides physicians clinical training in a branch of medicine and is needed to be eligible for licensure and board certification to practice medicine independently in the United States. The length of a residency depends on the specialty, with most residencies lasting three to seven years. Behind Medicare, Medicaid is the second largest source of GME funding nationally and in North Carolina.[1]

[1] Medicaid Graduate Medical Education Payments: Results from the 2018 50-State Survey. Association of American Medical Colleges. July 2019. https://store.aamc.org/downloadable/download/sample/sample_id/284/

Notably, Medicare and Medicaid only pay for GME training in hospitals. Typically, these public funds only cover a portion of residency positions at large teaching hospitals, which requires hospitals to cover the cost for additional residents.

Providing access to high quality health care in rural North Carolina remains a challenge. While there has been a steady increase in physicians in North Carolina over time, the gap between counties with a shortage of physicians vs. counties with no shortage continues to grow.[2] Although there are many dedicated and excellent providers, many rural areas have high population-to-clinician ratios, the rural clinical workforce is aging, and the infrastructure for alternative payment models in the realm of value-based care are lacking. GME is just one of several policy tools available to increase access to care and recruit and retain physicians in rural and underserved areas. Figure 1 displays GME as one of many strategies that are needed to transform the rural health care ecosystem. In our current environment, there are many inputs to rural communities to strengthen them; however, they are often inconsistent, misaligned, or uncoordinated efforts. To truly transform our rural communities an intentional investment would weave the many resources into a pattern that builds the fabric of a strong rural community.

Figure 1.



[2] Fraher E. North Carolina's Physician Training Programs Are Not Producing the Workforce Needed to Meet Population Health Needs. Cecil G. Sheps Center for Health Services Research, UNC. Joint Oversight Subcommittee on Medical Education Programs and Medical Residency Programs. February 12, 2018. https://www.shepscenter.unc.edu/wp-content/uploads/dlm_uploads/2018/02/Fraher_UMEGMEoutcomes_NCGenAssembly_Feb2018.pdf

B. Formal Legislative Request (SL 2018-88)

In Part I, Section 2 (a) of Session Law (S.L.) 2018-88, in its continued efforts to address the health needs of the State, especially in rural areas, the NCGA directed DHHS to conduct a study to (i) identify rural hospitals that desire to be designated as new teaching hospitals by the Centers for Medicare and Medicaid Services (CMS); (ii) determine the technical assistance those hospitals require in order to be designated as new teaching hospitals by the Center for Medicare and Medicaid Services; and (iii) calculate the expected cost for those hospitals to be designated as new teaching hospitals by the Centers for Medicare and Medicaid Services. Additionally, S.L. 2018-88 requires that the study shall examine:

(1) Expansion of GME payments to outpatient costs and services,
(2) Modifications to cost-finding and reimbursement formulas that incentivize rural hospitals to participate in education programs, and
(3) Options in physician reimbursement to incentivize participation, including a graduate medical education or geographic add-on for rural areas of the State.

This final report completes DHHS's outstanding response to the Joint Legislative Committees with respect to Part I, Section 2 (a) of S.L. 2018-88.

C. Highlights from Past Legislative Reports on GME and Rural Health Needs

In this section, we provide a summary of prior legislative reports from DHHS pertaining to GME, loan repayment programs, and other topics related to meeting rural health needs and medical provider training and retention in rural areas.

Table 2. Legislative Report Title and Highlights.

Report Title	**Highlights**
Report on Medical Education Programs and Medical Residency Programs (Feb 2018)[3]	• Explained current federal and state funding applied to medical education by teaching hospital in SFY 2017-2018 • Showed maps of health professional shortage areas across the state
Interim Report on GME and New Teaching Hospitals (Dec 2018)	• Explained current methodology for funding GME via direct and indirect payments • Provided breakdown of GME funding across programs in NC • Provided number of residents and fellows by institution (as of 2017) • Provided number of residents across specialties, as well as retention in NC after 5 years and retention in rural NC after 5 years. Key finding: 50% of physicians who completed AHEC residency stayed in NC to practice, compared to 38% of physicians who completed non-AHEC residency (as of 2013 data).

[3] Report on Medical Education Programs and Medical Residency Programs in North Carolina. North Carolina Department of Health and Human Services. February 1, 2018. https://files.nc.gov/ncdma/documents/Reports/Legislative_Reports/SL2017-57%20-Sec11J-2c_2018_02.pdf

	• DHHS requested funding for a study to link available datasets to track the outcomes of residency programs for inclusion in the final report. The recommended study did not receive an allocation from the NCGA and therefore is not addressed in this final report.
Interim Report on Target Loan Repayment Programs (Oct 2018)[4]	• Documents how the ORH has maximized appropriations provided by the NCGA by leveraging federal funding and other loan repayment programs • Demonstrates how the ORH is working closely with stakeholders to develop pipeline programs that build interest in healthcare careers and support youth from underserved communities
Final Report on Target Loan Repayment Programs (Oct 2019)	• Summarizes process and program improvements to loan repayment programs, which were informed by extensive stakeholder feedback • Assured that the ORH would continue to optimize loan repayment programs with continuous quality improvement and to maximize federal funds to support loan repayment
Abbreviations: AHEC=Area Health Education Center, DHHS=Department of Health and Human Services, GME=graduate medical education, ORH=Office of Rural Health, NCGA=NC General Assembly,	

3. Potential Approaches to GME Reform

In this section, we will explore three significant potential approaches for GME reform: 1) increasing accountability in existing state GME dollars, and 2) identifying novel sites to develop new residency programs in rural areas, and 3) innovative GME financial reform strategies.

A. Increase Accountability in Existing State GME Dollars

Medicaid is a critical source of GME funding, with national Medicaid funds for GME reaching $5.58 billion in 2018 (North Carolina paid approximately $100 million in Medicaid GME payments in 2017).[5] There is significant interest in tracking NC residency outcomes because of the significant financial support from the Medicaid program, and because residency placement is correlated with eventual practice location.

A 2018 fifty-state survey on Medicaid Graduate Medical Education Payments highlighted the growing national attention on the accountability of programs receiving public GME funding,

[4] Report on Target Loan Repayment Programs. North Carolina Department of Health and Human Services. October 17, 2018. https://www.ncleg.gov/documentsites/committees/JLOCHHS//Reports%20to%20JLOC-HHS/Reports%20Received%20FY%202018-19/SL%202018-88%203b%20Target%20Loan%20Repayment%20Programs%20(Final).pdf

[5] Medicaid Graduate Medical Education Payments: Results from the 2018 50-State Survey. Association of American Medical Colleges. July 2019. https://store.aamc.org/downloadable/download/sample/sample_id/284/

both in terms of costs and social outcomes.[6] In 2018, 35 states collected data on Direct GME costs at teaching programs. Fourteen states routinely audited their Medicaid GME payments to teaching programs, often with the goal of identifying overpayments and underpayments, or to document that the payments were made only for specified allowable costs. Further, three states (Michigan, New Jersey, Virginia) require documentation of the impact of GME payments on their state's health care workforce. North Carolina is not one of the 35 states that requires teaching programs to report Direct GME costs but is one of the 14 states that routinely audits GME payments.

i. GME Monitoring and Reporting

In North Carolina, there is an existing statute (S.L. 1993-321) which requires the UNC Board of Governors (BOG) to annually monitor the number of State-supported medical graduates entering primary care five years after graduation.[7] Currently, the North Carolina Area Health Education Centers (AHEC) Program, in collaboration with the Program on Health Workforce Research and Policy at the UNC Sheps Center, produces a report to the UNC BOG in October of each year, which is then forwarded to the Fiscal Research Division of the NCGA. The most recent report was submitted to the BOG on October 2019.[8]

However, more information is needed to understand the link between state GME funding and how GME funds are deployed, as well as specific outcomes of interest in rural health care. In the 2018 legislative session, a Medical Education and Residency Study bill (H1002/S773) was introduced but did not pass.[9] That bill would have required further tracking of medical school and GME outcomes to inform the legislature on how to most effectively target GME funds. Without transparency and accountability, it will be difficult for the State to target GME investments to ensure the training pipeline produces the workforce needed to meet North Carolina's population health goals. A 2017 study by Erin Fraher, et al. found that in the few states that had published data on GME, transparency spurred reforms.[10]

Recommendation: The NCGA should amend the 1993 legislation to:

- Require medical schools to attest to specialty and location of practice of UME graduates at 10 years post-graduation and GME graduates at 5 years post-graduation.
- Ensure this report summary is made publicly available by institution.

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[6] Medicaid Graduate Medical Education Payments: Results from the 2018 50-State Survey. Association of American Medical Colleges. July 2019. https://store.aamc.org/downloadable/download/sample/sample_id/284/

[7] Senate Bill 27. North Carolina General Assembly. https://www.ncleg.net/Sessions/1993/Bills/Senate/HTML/S27v6.html

[8] Medical Students Entering Primary Care: Tracking Workforce Outcomes to Determine Return on Investment. Spero J, Brown A. UNC Sheps Center. October 10, 2018. https://www.ncleg.gov/documentsites/committees/JLEOC//Reports%20Received/2018%20Reports%20Received/Grads%20Entering%20Primary%20Care%20Education.pdf

[9] House Bill 1002, 2017-2018 Session. North Carolina General Assembly. https://www.ncleg.gov/BillLookup/2017/H1002

[10] Fraher E, Spero J. State-Based Approaches to Reforming Medicaid-Funded Graduate Medical Education. AAMC Health Workforce Research Conference. May 5, 2017. https://www.shepscenter.unc.edu/wp-content/uploads/2018/02/Fraher_MedicaidGME_AAMC_May2017.pdf

ii. GME Oversight Bodies

In addition to the need for more transparency around GME, there is a critical need for an oversight body to review GME trends and inform policy changes. Erin Fraher et al.'s 2017 study with ten states (not including North Carolina) found that oversight bodies play a critical role in reaching consensus on workforce needs, deciding where funds should be targeted, educating the legislature and DHHS on GME, and navigating competing interests of stakeholders.[11] The study found that oversight bodies included a range of GME stakeholders (including representatives from academic health centers, major teaching hospitals, hospital and medical associations, AHECs, and other significant stakeholder groups with an interest in GME reform, such as primary care associations, offices of rural health, and senior state health officials). All ten states in this study had oversight bodies that played an advisory rather than authoritative role. Appendix 1 outlines different states' GME oversight bodies, including composition, appointments, and charge; it shows that the scope of oversight varies widely.

Recommendation: The NCGA should direct DHHS to establish an oversight structure for all Medicaid funding to allow for auditing and accountability. The development of a robust cross-sectional committee in North Carolina is critical to not only assess the use of state and federal dollars for training but to tie them to the overarching goals of the State. This would require clear authority for DHHS to obtain information to meaningfully understand how funding is allocated and used within a GME entity.

B. Identify Novel Sites to Develop New Residency Programs in Rural Areas

First, we analyze novel rural sites that have the potential to develop new residency programs that can recruit and retain clinicians in high-needs rural areas. In this section, we explore the options to 1) identify rural hospitals as potential new teaching hospitals, and 2) identify additional outpatient settings, such as federally qualified health centers (FQHCs), rural health centers (RHCs), and local health departments (LHDs) as new rural teaching sites.

i. Rural Hospitals as Potential New Teaching Hospitals

In North Carolina, there are currently 24 non-teaching rural hospitals (known as "virgin hospitals") that could develop a teaching program to be recognized by CMS to receive dedicated GME funding (see Appendix 2 for list). If these hospitals meet the CMS requirements under 42 C.F.R. 413 Subpart F and 42 C.F.R 415.152, they can receive federal Medicare funds (as well as combined federal and State Medicaid funds) to support new GME residency slots.

Naturally, not every hospital can meet the necessary volume of patients and breadth of specialties to support a broad and robust educational program. However, rural hospitals can partner with academic centers with higher volume rotations to ensure training physicians receive adequate exposure to a wide variety of clinical areas to prepare them for practice in a rural community.

[11] State-Based Approaches to Reforming Medicaid-Funded Graduate Medical Education. Fraher E, Spero JC, Bacon T. UNC Sheps Center. January 2017. https://www.shepscenter.unc.edu/wp-content/uploads/2017/01/ExecSumm_FraherGME_y3_final-1.pdf

New residency programs need to be approved by an accrediting body, such as the Accreditation Council for Graduate Medical Education (ACGME).[12] Hospitals or other institutions develop residency programs must meet core requirements with respect to oversight, personnel, resident appointments, educational programming, resident evaluation, learning and work environment, and achievement of competency-based medical education milestone twice each year. Appendix 3 provides initial requirements from ACGME, and an article summarizing steps needed to start a residency program.

Accreditation is typically a multi-year process with start-up costs, phase-in costs, and ongoing costs. Costs to launch new residency program vary widely based on the foundation from which a program begins, the number of new programs, and the projected residents. In Georgia, the startup cost for five new GME programs (internal medical, family medicine, obstetrics-gynecology, transitional year, and general surgery) at one virgin hospital was around $3.88 million (about $2.50 million in yearly personnel costs and $1.38 million in one-time non-personnel costs).[13]

Rural hospitals are more likely to be successful in developing new residency programs that will meet accreditation requirements if 1) they receive partial or full coverage of start-up and phase-in costs, since Medicare GME funds do not begin until residents are 'on duty', and 2) they develop partnerships with established, high-performing academic centers.

Recommendation: The NCGA should conduct a study to assess the following information regarding the 24 virgin hospitals:

- The number of rural hospitals that are interested in developing a new residency program;
- The number of rural hospitals that are ready to meet accreditation requirements, along various domains (e.g., oversight, personnel, educational programming, etc.); and
- The estimated cost that each rural hospital would incur during start-up and phase-in periods of developing a new residency program.

Based on this information, the NCGA could consider partially or fully funding start-up and phase-in costs for hospitals that are most likely to meet accreditation requirements.

ii. Additional Outpatient Settings (FQHCs, RHCs, LHDs) as Potential Rural Teaching Sites

In addition to rural hospitals, there are robust outpatient settings, such as FQHCs, RHCs, LHDs and other comprehensive physician practices that should be considered as rural residency sites. These outpatient sites can be exceptional training sites for physicians and other

[12] Other accrediting bodies include the American Osteopathic Association, the Commission on Dental Accreditation of the American Dental Association, and the Council on Podiatric Medical Education o the American Podiatric Medical Association.

[13] Nuss, Michelle A, Ben Robinson, Peter F. Buckley. "A Statewide Strategy for Expanding Graduate medical Education by Establishing New Teaching Hospitals and Residency Programs." *Academic Medicine 90: (2015)1264-1268.*

interprofessional health care teams, as many are already operating in a manner that integrates physical health, behavioral health, and practice supports. Though Medicare and Medicaid currently only pay for GME in hospitals, state funds could be made available to build residency programs in outpatient settings in rural areas.

Residency programs embedded in these outpatient settings are most likely to be successful if partnered with an academic center (e.g., medical schools, other health sciences school, AHECs). Partnering with an academic entity can enhance the prestige of residency slots to ultimately recruit talented learners to work in rural settings. Additionally, academic partners can provide the curriculum and academic support to the faculty in the practice. In this model, providers are faculty supported by medical schools and teaching physicians and other learners (e.g., NPs, PAs) embedded in an FQHC, RHC or LHD. Moreover, given the ACGME training requirements for the specialties of interest (e.g. inpatient care, newborn deliveries, surgical and intensive care rotations), these residency sites would need strong affiliation with an academic partner in order to complete requirements and/or nearby inpatient facilities that are willing to provide a high-quality teaching experience.

An example of this model is the recent partnership between three FQHCs (Goshen, the Rural Health Group, and Roanoke Chowan) and the ECU Brody School of Medicine to establish rural residencies in the FQHC environment. The NCGA provided start-up funds for this effort, while some costs are being met through the clinical income of physicians attributable to the enhanced throughput of resident visits that are staffed by attending physicians. Moreover, it is anticipated that some complimentary funding will be available through HRSA rural residency dollars. Many of the interprofessional services available at these health centers are like those of larger programs such as UNC. The partnership with ECU brings several benefits. Inpatient and required specialty rotations are largely provided in Greenville with ECU physicians. ECU provides onsite faculty and faculty development. Finally, ECU branding will be a positive to recruitment.

Recommendation: NCGA should consider providing additional start-up funds to outpatient sites that partner with an academic center or teaching hospital to establish residency programs. Like the ECU and FQHCs partnership, this model has potential to increase the number of providers trained and retained in rural areas.

There are numerous benefits to creating new residency positions in rural hospitals and/or rural outpatient settings. First, the residency positions would provide increased access to care, particularly for preventive services and chronic care management, for the community at large. Further, supporting existing providers as faculty within a rural residency program can serve to enhance their work in training the next generation of clinician leaders and retain them in the community. If associated with the branding of a major university or health care sponsor, residency programs would add to community prestige, the integrated personnel and services would infuse dollars into the local economy, and hopefully, the presence would encourage both related and unrelated businesses to locate in the community. Finally, trainees in rural settings

can gain exposure to clinical experiences without other competing GME and undergraduate medical education (UME) programs (unlike larger teaching centers), allowing them to develop rapport with a smaller medical staff and have an enhanced role in the medical team.

C. GME Financial Reform Strategies

Another key GME reform approach is to rethink how state dollars can be deployed to fund GME in North Carolina in non-traditional ways. In this section, we outline nine strategies to augment or alter current GME funding flows with the ultimate goal of increasing the number of providers who are trained and remain long-term in rural communities. Table 1 outlines each strategy, an estimate of its level of cost, whether federal share can be applied, whether federal funding or involvement is required, and an estimate of implementation burden to the State. These strategies were developed based on research, prior legislative reports, and feedback from stakeholder meetings with partners across the state. The list of strategies in this section is not exhaustive, but comprised of realistic, achievable scenarios with the potential to transform the impact of GME dollars in the state.

Recommendation: The NCGA should appropriate funds to formally study the fiscal impact and effectiveness of the GME reform strategies proposed in this section. A deeper analysis of each proposed strategy is needed to meaningfully understand the fiscal impact to the State and the overall effectiveness.

Table 3. Potential Strategies for GME Financial Reform.

Strategy	Cost	Apply Federal Share	Federal Regulatory Approval	Implementation Burden*
A1: Restructure Indirect GME: Shift to Outpatient Claims	$	+	+	***
A2: Restructure Indirect GME: Add-on to Outpatient Claims	$$$	+	+	**
B: Rural Hospital Teaching Designation Incentive	$$	+	+	***
C: Enhanced PPS Designated “Teaching” RHC/FQHC	$$	+	-	*
D: Tax Deductions for Rural Teaching Clinics	$	-	-	****
E1: Restructure GME based on Performance Criteria: Use Existing Dollars	$	+	+	****
E2: Restructure GME based on Performance Criteria: Use New Dollars	$$$	+	+	*
F. Coordinate Rural Loan Repayment and Retention Strategy	$$$	-	-	*
G: Rural UME Tuition Remission with Designated Medical School Slots	$$	+	-	**

*Implementation Burden includes both the State investments that will be required and potential political impact

Strategy A1: Restructure Indirect GME Funding – Re-allocate to Desired Residencies

This strategy would consider the current methodology for indirect GME dollars as a function of Medicare claims data and shift a percentage of those funds to the ambulatory environment. This could be done in a budget neutral fashion by shifting dollars derived from inpatient costs and attributing those dollars to outpatient costs, creating a funds flow for primary care and more ambulatory-based specialties to sustain their programming.

The risk of this strategy would be the undesirable effect on those areas that lost funding, namely inpatient and procedural specialties. While the result would be a desired shift in funding to support primary care, it would be done at an opportunity cost of creating animosity and adversity amongst the health systems and large teaching hospitals. A study by Fraher et al. looking at ten states (not including North Carolina) pursuing GME reforms similarly identified resistance from teaching hospitals as reason for seeking new funds rather than redistributing existing funds.[14]

Strategy A2: Restructure Indirect GME Funding: Add Funding for Desired Residencies

This strategy would maintain existing indirect GME dollars as a function of Medicare claims data but provide an additional funding stream (using state dollars) based on ambulatory claims. Essentially, rather than taking funds from inpatient and moving to outpatient, it would maintain existing funding while adding net dollars to support ambulatory based primary care teaching slots. While it would avoid the negative impact as noted above on hospital finances, it would require a significant investment on the part of the NCGA. Both strategies A1 and A2 would need to be tied to transparency and accountability mechanisms to ensure that the dollars are producing the desired outcomes.

Strategy B: Rural Hospital Teaching Designation Incentive

Strategy B would incentivize rural hospitals to seek teaching hospital designation with CMS by incorporating all accreditation costs (initial and ongoing) into cost reports as an allowable expense. This would allow rural hospitals to achieve and maintain the status of a teaching hospital in a budget neutral fashion while they develop the necessary infrastructure to sustain future operations. This model would require a process to determine which rural hospitals were best equipped to partner and develop a meaningful, high-quality teaching experience based on volume of patients, case mix, and an enthusiastic medical staff to support the inpatient rotations. However, this strategy would also require a change in the federal requirements around sole community provider designation, because currently a site cannot have both sole community provider designation and a teaching hospital designation. This change to federal requirements significantly increases the implementation burden. If changed, though, this scenario has potential for rural hospitals to receive significant federal resources in new GME dollars and produce a substantial number of residents over time.

[14] Fraher E, Spero J. State-Based Approaches to Reforming Medicaid-Funded Graduate Medical Education. AAMC Health Workforce Research Conference. May 5, 2017. https://www.shepscenter.unc.edu/wp-content/uploads/2018/02/Fraher_MedicaidGME_AAMC_May2017.pdf

Strategy C: Enhanced PPS Designated "Teaching" RHC/FQHC

Strategy C would reimburse FQHCs, RHCs, and Teaching Health Centers which achieve designated "teaching status" to receive a higher relative PPS rate (i.e., apply multiplier 1.x). This strategy could be implemented relatively quickly and may be the simplest strategy to enforce. This strategy would require the establishment of a certifying entity to assure that the requestors were providing enough learning opportunities to justify this funding, as well as periodic audits to confirm participation should continue. These immediate funds could be used to expand teaching access for many health professionals beyond physician training, including medical students, nursing, Physician Assistants (PA), Family Nurse Practitioners (FNP), pharmacy, behavioral health and paraprofessionals. Programmatically, this could expand or contract as needed and desired based on willingness to continue to teach and to add capacity to non-teaching facilities in the future. There is precedent for implementing this type of "multiplier" payment model: critical access hospitals receive Medicare reimbursement that is 101% of costs for inpatient and outpatient services. Important in this model is to not shift dollars resulting in a net neutral impact (i.e., this is an add-on outside of cost-based reimbursement).

Strategy D: Tax Credits for Rural Teaching Clinics

This strategy would incentivize teaching and faculty roles in rural communities and primary care practices by allowing the time spent teaching to be a tax credit on state taxes for the practice and/or individual. While a simple solution in theory, this would require partnership with the North Carolina Department of Revenue. Additionally, it would require development of criteria for what activities are considered meaningful teaching activities. Ideally, this tax deduction would be available to both paid and voluntary preceptors. South Carolina similarly enacted legislation in 2019 (Senate Bill 314) which provides personal state income tax credits and deductions for eligible clinicians in South Carolina if they agree to train students.[15]

Strategy E1: Restructure GME Funding Based on Performance Criteria

Strategy E1 would involve development of a novel algorithmic approach to award GME funds with increased weight placed on four potential factors:

1. Primary Care positions as a percentage of total residency slots; specialty positions could be considered based on workforce needs determined by the local community or by the State;
2. Rural Training Locations for primary care available as a meaningful component in the curriculum;
3. Residency slots embedded in Community Based Residency Training sites including FQHCs; and
4. Historical rate of retaining graduates in-state five years after matriculation from residency.

Based on teaching hospitals' performance against these weighted factors, state GME funds could be re-allocated to residency programs that 1) are focused on primary care, and 2) have a

[15] Senate Bill 341, 2019-2020 Session. South Carolina Legislature. https://www.scstatehouse.gov/billsearch.php?billnumbers=314&session=123&summary=B

high percentage of graduates who remain in the state. This would have a similar opportunity cost to Scenario A relative to the impact on larger health systems. This strategy would require significant historical study to understand baseline outcomes, as well as the need for ongoing tracking that is tied to payment.

Strategy E2: Provide Additional GME Funding Based on Performance Criteria

Strategy E2, like Strategy E1, would leverage the same algorithmic approach to aware GME funds. However, instead of reallocating existing funds, this strategy would provide additional funds to residency programs that meet priorities defined in the algorithm. Like Strategies A1 and A2, the former would be budget neutral but likely result in negative financial impact for certain entities; the latter would require additional state investments but would maintain the existing funds. This strategy may be of interest to health care sites that could compete on the additional GME dollars based on performance measures.

Strategy F. Align Rural Health Investments including Expanding Rural Loan Repayment and Retention Strategy

This strategy would invest in additional loan repayment to create a match between community rural health investments with sites of loan repayment to optimize the spend. It would be important to leverage all available tools to enhance a rural, underserved community and to create an environment that is sustainable for a new physician graduate. Payments should be prioritized for geographic areas with the most need, perhaps with a tiered approach.[16]

Strategy G. Rural UME Tuition Remission with Designated Medical School Slots

Strategy G would create a program to identify a cohort of pre-medical students from rural and/or underserved backgrounds who will receive a guaranteed position in a state-funded medical school (pending satisfactorily completing required components). These students would be awarded free tuition for medical school in the form of a forgivable loan that is satisfied with practicing in a designated shortage specialty and/or community.

A promising model is the Rural Medical Scholars Program in Alabama, which works to recruit and assist rural Alabama college students who want to become physicians and practice in the state's rural communities. Selected students participate in a year of study after undergraduate studies and receive a master's degree in Rural Community Health and early admission to the School of Medicine. Provided students meet entrance requirements and perform well in the pre-matriculation year, they have a slot reserved in the following year's medical school class. After two years of study at the main School of Medicine campus, students return to the Tuscaloosa Regional Campus for their third and fourth years of clinical education. Since its founding in 1996, 200 students have gone through the program, with the vast majority practicing in Alabama, in rural areas, and 65% in primary care.[17]

[16] State Loan Repayment Program. NC Department of Health and Human Services. https://www.ncdhhs.gov/divisions/orh/north-carolina-state-loan-repayment-program

4. Additional Strategies to Support Rural Healthcare Ecosystem

A multi-pronged approach is needed to generate meaningful improvements in rural health care and ultimately, in the health outcomes of rural North Carolinians. GME investments are critically needed to build the rural health care workforce, but these investments alone are insufficient to produce the needed improvements in health outcomes for rural North Carolinians. While innovating in GME, the State must also strengthen programs to drive interest and participation in health careers, recruit and train multidisciplinary teams, loan repayment, leverage technology, and invest in practice supports. Together, these components create an "ecosystem" designed to attract, train and retain physicians and other key providers to rural communities. Much of this work is already underway and showing promise where deployed, but it is not always coordinated and funded adequately to meet statewide needs. In this section, we explore several additional strategies to strengthen the rural health care ecosystem.

A. Invest in Practice Supports

The GME leaders of North Carolina's medical schools and state leaders identified practice supports as a key building block to provide critical infrastructure for providers serving rural communities. Practice supports include capabilities such as:

- Informatics – use of technologies such as electronic health records, billing data, and community data to provide value-based care and improve community health
- Social work/case management – to address factors that enable or obstruct patients from benefiting from medical care
- Telehealth to obtain specialty consultation, home monitoring, and e-visits
- Patient education (live and virtual)
- Pharmacy consultation (for clinician) and patient education,
- Enhanced workflow improvement and quality
- Community outreach – engagement through patient portals, text-based approaches, and community health workers (CHWs).

Very few rural practices are large enough to generate and maintain all these services on their own. Although some of these services will be provided by Clinically Integrated Networks and Prepaid Health Plans under Medicaid Transformation, on average, these practices have less than 25% Medicaid-insured patients. Rural practices need these supports for all patients, regardless of payer (also known as "payer agnostic"). It may be more affordable and sustainable to develop shared practice supports that are provided regionally, rather than on a practice-specific basis. A model like the cooperative extension centers in agriculture could be harnessed through the current AHEC infrastructure to develop "Primary Care Extension Centers" that would be coordinated through regional AHECs and build upon existing investments.

Bolstering practice supports for residency and community practices are likely to be an important factor in residents' decision to stay in the community. These clinicians, after taking advantage of excellent care models during their residency, are likely to have difficulty moving into a rural community devoid of support. Therefore, recruitment will be enhanced by making

these supports available to the rural community as well as to teaching sites. More importantly, when practices can access such supports, there are likely to be improvements in community health through increased access to care, increased patient engagement, and improved care coordination.

B. Invest in Interprofessional Care

An effective rural workforce will be comprised of multidisciplinary teams of professionals working together. Although GME has traditionally focused on training physicians in hospitals, future investments of state funds should also focus on training all health workers needed for current and future models of care. Primary care physicians will continue to be central to this work, but in many areas advance practice practitioners (APPs) including Physician Assistants (PAs) and Nurse Practitioners (NPs) can provide access to high quality care. Moreover, future investments in team-based GME must also include investments in the training of social workers, CHWs, and pharmacists and their effective integration into the health care team. Appendix 4 provides NC AHEC's review of the current curricula and capacity of the Central AHEC program to support the development of rural residency training programs that would achieve such goals of having broad scope of practice and team-based care with multidisciplinary teams.

C. Invest Additional Dollars in Loan Repayment

Loan repayment programs are another powerful tool to attract physicians to rural areas, as they aim to offset significant debt carried by health care providers (the average student leaves medical school with $169,000 in debt). Loan repayment awards include up to $100,000 for physicians and dentists and up to $60,000 for advanced clinical providers. Awards are paid on a graduated scale, over a four-year service commitment. High needs service bonuses are another useful tool to recruit and retain professionals without student debt to rural areas. High needs service bonuses similarly require a four-year service commitment but provide lesser amounts than loan repayment (up to $50,000 for physicians and dentists, and $30,000 for advanced clinical providers).

To this end, the NCGA appropriated recurring funds of $1.5 million to the Loan Repayment Program administered by the ORH. The ORH recruitment activities include working with sites to post employment opportunities and link candidates to those opportunities. Based upon eligibility and funding, the ORH may offer providers loan repayment or high needs service bonus through the ORH or link to loan repayment programs in the federal or public sectors. Though both programs currently exist in North Carolina, expanded and targeted investments are still needed to accomplish the desired goals. The ORH has recently undertaken an in-depth study of these programs and has made recommendations to improve them.

Further, these loan repayment and high needs service bonus programs must be available not only for physicians but for other health professionals with school debt who locate to rural areas. Moreover, loan repayment and service bonuses must be communicated to students, providers and practices early on in their educational journey to entice learners to seek rural training. Creating a loan repayment program that is well-advertised early in medical school, before specialty differentiation, that emphasizes needed rural specialties, emphasize

matriculation at rural residencies, and is designed to provide significant debt relief early in the practice cycle would be attractive to students. In fully leveraging the impact of these funds, the ORH is committed to working with the residency programs to create incentives for teaching with high needs service bonuses for providers and their sites creating high-quality teaching experiences.

Recommendation: In the next budget, the NCGA should strategically invest additional dollars in rural loan repayment in areas with the highest need. Targeted and strategic loan repayment coupled with rural residencies and practice support services is a good investment of North Carolina's resources and substantively improves the return on investment of those funds.

5. Recommendations

DHHS provides the following recommendations to the NCGA to address various goals related to GME reform and bolstering the rural health care ecosystem:

A. In order to attract more providers to practice and stay in rural communities:

1. **The NCGA should appropriate funds to formally study the fiscal impact and effectiveness of the GME reform strategies proposed in this report.** A robust fiscal and outcomes analysis of the proposed scenarios in Section 3.C. is required to meaningfully understand their impact on the provision of high-quality training in rural locations with the ultimate goal of improving access for these vulnerable communities.
2. **The NCGA should assess the readiness of rural hospitals to develop residency programs and consider funding hospitals that are most likely to meet accreditation requirements.** The 24 rural hospitals identified in this report (see Appendix 2) are likely to be at different levels of readiness and capabilities regarding developing new residency requirements.
3. **The NCGA should consider providing additional start-up and ongoing funds to outpatient sites (e.g., FQHCs, RHCs) that partner with an academic center or teaching hospital to establish residency programs.** Given the significant cost to launch new residency programs, it is important to consider supporting outpatient sites that may not have the upfront capital.

B. In order to increase accountability in existing GME dollars, the NCGA should take the following steps:

1. **The NCGA should appropriate funds to conduct a formal study of historical graduates from UME and GME in NC.** While there is currently annual reporting on workforce outcomes, further tracking of medical school and GME outcomes would be valuable. Such a study would help modernize the way the State holds training institutions accountable for investments and ensure that the GME investments made by the State are producing the desired outcomes.
2. **The NCGA should amend legislation to receive meaningful data from formal tracking of UME/GME graduates by institutions receiving state funding.** The

existing 1993 legislation provides a foundation to obtain information from medical schools but should be amended to receive more actionable information to inform future GME investments and to be publicly reported.

3. **The NCGA should direct DHHS to establish an oversight structure for all Medicaid funding to allow for auditing and accountability.** Appendix 1 outlines several models that other states have used to establish oversight bodies for GME.

C. In order to bolster the rural healthcare ecosystem, the NCGA should take the following steps:

1. **The NCGA should strategically invest additional dollars in rural loan repayment in areas with the highest need based on historical health outcomes.** To entice providers to practice in rural communities, the NCGA should allocate more funds to cover rural loan repayment when graduates do not receive federal funding. Currently there is a proposed allocation in House Bill 966 Section 9B.2, Community Health Grant Program currently with the Rules and Operations Committee).[18] As part of that funding, the NCGA should consider attaching a comprehensive package of benefits, including competitive mortgage rates if buying in the rural community, funding to support continuing education with regional AHECs, and free memberships to AHEC digital libraries.
2. **The NCGA should invest in the practice supports, which are vital to the infrastructure of the rural health care ecosystem.** It may be most efficient to build up regional practice supports that can be shared across practices. Practice supports should be developed in a manner that is payer agnostic.
3. **The NCGA should continue to invest in rural economic development, including efforts to bolster broadband, bring jobs to rural areas, etc.** The viability of rural communities is a key driver in recruiting and retaining rural providers. There are significant challenges in recruiting highly trained professionals to areas where schools may not be perceived to be as prestigious, where employment for their spouse may not be available, and where other infrastructure (e.g., high-speed internet, retail) may not be readily available. The efforts of the NCGA to promote rural economic development and vitality will certainly contribute to the efforts outlined in this report. Creative solutions are needed to attract and retain highly trained clinicians to rural communities.

6. Conclusion

In this final report, we lay out a broader picture of GME reform, which is the culmination of several years of study. Through this and prior reports we have endeavored to map out the current state of GME funding in North Carolina, as well as identify various opportunities to

[18] House Bill 966, Ratified Bill. NCGA. https://www.ncleg.gov/Sessions/2019/Bills/House/PDF/H966v7.pdf

modify and strengthen our programming to drive positive outcomes for health care in rural parts of our state. We urge the legislature to think broadly and far beyond that of shifting pass-through dollars. DHHS recommends taking a two-pronged approach with both immediate and long-term steps. Such efforts are needed to strategically steer from our current state, where the legislature does not hold programs accountable for producing primary care physicians or physicians who stay in North Carolina, towards producing long-term providers of primary care in every corner and community of the state. Such investments will have long lasting impacts on the overall health of the state and are likely to improve health and employment, reduce absenteeism, and create opportunities that do not currently exist for young people who leave their community to return after their training in adulthood.

Appendix 1. State Oversight Bodies: Composition, Appointments and Charge

Michigan	
Oversight Body	GME Consortium
Composition	Consortium of state's medical schools, including reps of each medical school except Oakland
Appointed by	Members appointed by each school; no official state level authority
Purpose/Charge	Purpose to create more rural rotations in specialties considered in shortage (primary care, psychiatry, other), to interest more residency grads in practice in rural and underserved communities
Minnesota	
Oversight Body	Medical Education and Research Costs Committee
Composition	Broad representation of teaching sites and education programs
Appointed by	Members appointed by Minnesota Department of Health
Purpose/Charge	Provide guidance on the Medical Education and Research Costs subsidy program and related health professions training and supply/demand issues.
Montana	
Oversight Body	Montana GME Council
Composition	Members include reps from each residency program, teaching hospitals, the university system, hospital association, medical association, primary care association, Office of Primary Care, AHEC, and WWAMI
Appointed by	Self-appointed
Purpose/Charge	Makes GME recommendations on physician workforce needs, types and locations of new residencies, advocacy for and funding for GME residencies in the state and distribution of state GME funds
Nebraska	
Oversight Body	Division of Medicaid Services
Composition	State agency with state staff
Appointed by	The Department of Health and Human Services

Purpose/Charge	Oversight of use of Medicaid funds, but no attention given to how those funds are expended to affect the makeup of the physician workforce
Nevada	
Oversight Body	Task Force for Graduate Medical Education
Composition	13 members, with State Senator serving as chair; 3 deans of medical school; Director of DHHS; CEO of hospital association; Other senior health officials
Appointed by	Appointed by Governor
Purpose/Charge	Charged with making policy and program recommendations regarding GME; 2014 report recommended new residencies and expansion of existing residencies in needed specialties; also recommended accountability measures to assure new funds met priority needs
New Mexico	
Oversight Body	New Mexico Primary Care Training Consortium
Composition	Includes representatives from current and developing family medicine residencies in the state
Appointed by	Self- appointed
Purpose/Charge	Serves as an advocacy organization for primary care training at the community level; is organized as a 501 (c)-3 non-profit, and was funded for development via a contract with the New Mexico Department of Health and Human Services and the Federal Office for Rural Health Policy; also collects and reports data on the graduates of the family medicine residencies
New York	
Oversight Body	New York State Council on GME
Composition	Up to 30 members; Representatives from all academic medical centers and major teaching hospitals; 2 representatives from State Board of Regents; Commissioner of Health
Appointed by	Appointed by Governor, at recommendation of the Commissioner of Health
Purpose/Charge	Charged to monitor the composition, supply and distribution of physicians in the state and how residency and fellowship programs address those issues; foster increased minority representation in GME programs; operates

	programs to increase primary care and to meet the needs of underserved populations
Ohio	
Oversight Body	Graduate Medical Education Study Committee (not an ongoing oversight committee)
Composition	Representative from each of the academic health centers and major teaching hospitals in state; Representative of hospital association; Representative of both the allopathic and osteopathic medical societies
Appointed by	Created by legislation
Purpose/Charge	Charged with making recommendations for re-basing of hospital payments for GME, re-allocation of portion of Medicaid GME funds to incentivize more residency capacity (via new and existing programs) in primary care and needed specialties, and other initiatives to make GME more responsive to the needs of the state
South Carolina	
Oversight Body	Medical Education Advisory Council
Composition	15 members: 1 university president; Deans of each medical school; 5 representatives from major teaching hospitals; 1 director of a FM residency; Representative from South Carolina Medical Association; 3 additional members
Appointed by	Appointed by Governor
Purpose/Charge	Mission to advise DHHS in efforts to improve accountability of Medicaid GME in promoting a "physician pipeline" that better meets the needs of rural and other underserved communities; oversees process for creating a new payment methodology for GME to incentivize meeting the goals above
Virginia	
Oversight Body	Virginia Health Workforce Development Authority (VHWDA) GME Task Force
Composition	Members of the Virginia legislature and other delegates
Appointed by	Appointed by legislative leadership

Purpose/Charge	Develop policy recommendations relating to the health workforce; in 2015 made series of recommendations to reform GME, including re-basing payments to teaching hospitals, expanding primary care residencies, and increasing emphasis on practice in underserved communities

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Fraher E, Spero J, Bacon T. State-Based Approaches to Reforming Medicaid-Funded Graduate Medical Education. Carolina Health Workforce Research Center. Cecil G. Sheps Center for Health Services Research. January 2017. https://www.shepscenter.unc.edu/wp-content/uploads/2017/01/ExecSumm_FraherGME_y3_final-1.pdf

Appendix 2. Rural North Carolina Hospitals Without CMS Teaching Hospital Designation

1. Carolinas Health Care System Anson
2. Carolinas HealthCare System Cleveland
3. Carolinas HealthCare System Kings Mountain
4. Carolinas HealthCare System Stanly
5. Carteret General Hospital
6. Central Carolina Hospital
7. Columbus Regional HealthCare System
8. FirstHealth Moore Regional Hospital
9. Granville Health Systems
10. Halifax Regional Medical System Inc.
11. Hugh Chatham Memorial Hospital
12. Lenoir Memorial Hospital
13. Maria Parham Medical Center
14. Northern Hospital of Surry County
15. Rutherford Regional Medical Center
16. Sandhills Regional Medical Center
17. Scotland Memorial Hospital
18. Sentara Albemarle Medical Center
19. The McDowell Hospital
20. Vidant Beaufort Hospital
21. Vidant Duplin Hospital
22. Watauga Medical Center
23. Wilkes Regional Medical Center
24. Wilson Medical Center

Appendix 3. Common Residency Program Requirement of the Accreditation Council for Graduate Medical Education

ACGME Common Program Requirements (Residency):

https://www.acgme.org/Portals/0/PFAssets/ProgramRequirements/CPRResidency2019.pdf

Starting a New Residency Program: a step-by-step guide for institutions, hospitals, and program directors:

https://www.tandfonline.com/doi/full/10.3402/meo.v21.32271

Appendix 4. AHEC Response to State of Rural Training in North Carolina

NORTH CAROLINA
AREA HEALTH EDUCATION CENTERS

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AHEC Rural Residency Curricula

In Part I, Section 1 (a) of Session Law 2018-88 (House Bill 998) the North Carolina General Assembly (NCGA) directed the North Carolina Department of Health and Human Services (DHHS) to conduct a study to identify options for modification, enhancements, and other changes to graduate medical education (GME) payments to hospitals, as well as any other reimbursements, to incentivize health care providers in rural areas of the State to (i) participate in medical education programs exposing residents to rural areas, programs and populations and (ii) support medical education and medical residency programs in a manner that addresses the health needs in the State. Furthermore HB 998 directs DHHS to collaborate with the North Carolina Area Health Education Centers (NC AHEC) program to examine:

(1) Changes in Medicaid graduate medical education reimbursement and funding sources after the 1115 waiver,
(2) Options to coordinate North Carolina Area Health Education Centers (NCAHEC) funding to create incentives for attracting residents and students to rural areas of the State,
(3) Any other issues the Department deems appropriate.

The NC DHHS Response to the General Assembly to the required reporting in HB 988 included the following "Recommended Next Steps:

1. Review and, if necessary modify, Residency Curricula to better meet the needs of rural residencies:

a. By May 31, 2019, Central AHEC will create a report to DHHS containing a review of the current curricula and capacity in the Central AHEC program to support the development of rural residency training programs in rural communities - broad scope of practice, team-based care, behaviorally integrated care, population health, and quality improvement, with close linkage to community resources. The report will include recommendations to standardize programs across AHEC to support the development of a curricula to meet the needs of rural residencies…"

NC AHEC respectfully submits the following report:

Over the last almost 50 years, the North Carolina Area Health Education Centers Program (AHEC) has operated programs designed to recruit, train and retain health workforce, with a focus on primary care in rural and underserved communities. Residencies are an important part of these programs and include numerous rural rotations, largely for primary care (Internal Medicine and Family Medicine) and Psychiatry residents. These rotations have emphasized the rural experience, understanding rural communities, and the breadth of services that rural physicians often provide. Although, these rotations generally do not provide a formal, fully developed, "rural" curriculum, AHEC has a long track record of training medical professionals in rural areas, placing them in those communities and supporting them once there. Data show that medical professionals receiving these AHEC supports are more likely to locate and remain in rural communities.

The AHEC Program was established to operate through regions to ensure that local needs were better identified and met. A review of the NC AHECs' approach to rural residency programs indicates that there is not a standardized rural residency strategy nor a formally adopted rural residency curriculum.

Existing AHEC Rural Residency Programs:

The Mountain AHEC's Family Medicine Residency practice in Hendersonville is an AHEC rurally based residency whose mission to train physicians to serve in rural NC. Residents from this program experience a rural-centric curriculum specialized in training full-scope physicians for community-based practice in underserved areas. The curriculum is unique in that it is highly procedural, involves surgical obstetrics, includes intensive ICU experience, in addition to longitudinal rural clinic continuity experiences. This training philosophy built on the concept of a broad scope of practice allows these young physicians to meet the acute needs of a rural population for which many acute care services are at least tens of miles away. Important components of training include a minimum of three (3) months of obstetrical training or an equivalent longitudinal experience, a minimum of four (4) months of pediatric training to include neonatal, ambulatory, inpatient and emergency experiences through rotations or an equivalent longitudinal experience, a minimum of two (2) months of emergency medicine rotations or an equivalent longitudinal experience, and a minimum of one (1) month of intensive care rotations or an equivalent longitudinal experience. Community involvement, substance abuse training, with emphasis on opiates, and geriatrics are also highly recommended curricular elements.

Nearly 60 % of the graduates from this program enter practices serving rural or underserved NC regions. This program started with 2 residents each year (6 total) in 1994 and has grown to a 5-5-5 model (5 each year) for a total of 15 residents over the course of 3 years. A similar residency to the Hendersonville model with an identical curriculum will begin in 2020 in

partnership with Appalachian Regional Medical Center in Boone using a 6-6-6 (18 total) residency structure. No other AHEC residencies have this specific rural-focused curriculum.

The Hendersonville and other AHEC Family Medicine residency programs already collaborate with AHEC's practice support structure to enhance the use of team-based protocols, interprofessional teams, and the incorporation of population health and quality improvement strategies. This combination forms the template of a Central AHEC rural curriculum.

AHEC is working with the UNC School of Medicine's Family Medicine Department and the UNC Sheps Center to support the deployment of rural residencies. AHECs are also partnering with other academic medical centers, FQHCs, RHCs and other ambulatory settings to provide residency experiences, including experiences outside the traditional hospital-based setting.

Limitations to development of standardized curricula include:

Curricular structure and local implementation. Each residency program is responsible for its own curricular structure and local implementation and innovation. Every residency must comply with ACGME requirements – AHEC residencies are well-known as high quality across the GME community. A central AHEC curriculum could only serve as a model for any rural residency but would build on AHEC's long-standing commitment to and delivery of excellence.

Health system consolidation. Another limitation on the development of rural residencies is health system consolidation. As consolidation has occurred, many health systems have limited the privileges (and therefore the scope of practice) for Family Medicine physicians, instead having many procedures including obstetric deliveries referred to specialist physicians who are more common in urban residencies. A comprehensive, broad scope of practice is an important issue when training to specifically serve a rural community since those specialists are not always available in rural settings, including some rural hospitals that are part of the health systems. It is also important for recruiting and retaining Family Physicians.

Team-based rural system strategy. It is essential that rural residencies be part of a team-based, rural system strategy, and be well versed in a population-based, team approach with some form of mental health integration. Otherwise, enhanced rural residency training is not as likely to fulfill the work force needs envisioned in their design. Many excellent rural practices in North Carolina have failed to attract or retain young physicians because supports needed for value-based care, population health, and community outreach are lacking. Therefore, as AHEC develops model curricula for rural residencies of the future, these practice supports need to be available not only to the modern rural residency but also to the modern rural practice. Examples include IT support, data reporting and interpretation, quality improvement coaching, population health techniques,

patient educational resources, social work, telehealth, community health workers, and firm connections to community resources.

Central AHEC limited scope of funded work. Many of these services have already been established by Central AHEC and are available through the AHEC Practice Support Program and other AHEC programs. However, the provision of these services by AHECs is often limited by the scope of work as defined by the grants or contracts that fund this work. To be most effective, especially for small physician practices, these supports cannot be limited to one payer (e.g. Medicaid which, on average, makes up less than 20% of these practices) and must be a resource for multiple practices.

Conclusion

In conclusion, most AHEC residency curricula are not specifically targeted to include many of the unique training needs particular to a rural clinical work force. For rural residencies to succeed and rural practices to recruit new physicians and be sustainable in an era of value-based care, a more comprehensive population-based curriculum and a more comprehensive set of rural practice supports needs to be developed and deployed. These residencies must be deployed intentionally as part of a coordinated set of investments specifically designed to recruit, train and retain primary care physicians and other health professionals and in close alignment with loan repayment and other programs. AHEC has already started a dialogue with the State's Medical Education Deans and the Office of Rural Health to further define these needs and will present a comprehensive proposal as described in HB 998, this fall.

Appendix 5. Abbreviations

Below are the abbreviations used in this report.

ACGME: Accreditation Council for Graduate Medical Education

AHEC: Area Health Education Center

BOG: Board of Governors

CHW: Community Health Worker

CMS: Centers for Medicare and Medicaid Services

DHB: Division of Health Benefits

DHHS: Department of Health and Human Services

DMHDDSAS: Division of Mental Health, Developmental Disabilities, and Substance Abuse Services

FQHC: Federally Qualified Health Center

FNP: Family Nurse Practitioner

FTE: Full Time Equivalent

DGME: Direct Graduate Medical Education

GME: Graduate Medical Education

HRSA: Health Resources and Services Administration

IME: Indirect Medical Education

LHD: Local Health Department

NCGA: North Carolina General Assembly

PA: Physician Assistant

PCP: Primary Care Provider

PPS: Prospective Payment System

RHC: Rural Health Center

S.L.: Session Law

UME: Undergraduate Medical Education

UNC: University of North Carolina