Medical Education in North Carolina: Using Data to Inform Public Policy Decisions

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Cecil G. Sheps Center for Health Services Research

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Presentation Overview

- Describe effort to establish a new medical school in Charlotte, NC; use as case study to show power of data to inform policy
- Present results of a new report done on the physician workforce in North Carolina
- Describe policy levers most likely to achieve the physician workforce to meet the needs of NC communities
Proposal for New Medical School in Charlotte: A Case Study

- 2014-2015 group of business leaders proposed a new medical school for Charlotte
- Charlotte is largest city in U.S. without a medical school; viewed by leaders as major driver of economic development and point of prestige
- Private consultant hired in 2015 to do study of needs for more MDs in the state and in Charlotte region
- Consultant used Sheps data to show the value of new med school to produce the physicians needed, especially in primary care; drew conclusions not supported by data
Proposal for New Medical School (Cont.)

- Already major medical education presence in Charlotte
- Carolinas Medical Center is major teaching hospital and site of regional campus of UNC School of Medicine; over 250 residents and equal number of full-time faculty
- Proposed new medical school viewed by UNC and CMC as unnecessary and a drain on state resources
- Anticipating an active policy debate, Sheps quickly produced report on the state of the physician workforce in NC, and the role of UME and GME
The State of the Physician Workforce in North Carolina: Overall Physician Supply Will Likely Be Sufficient but Is Maldistributed by Specialty and Geography

Policy Issue: whether state faces physician shortage and needs new medical school

Key Findings:

- NC growth in physician supply outpacing national average
- Physician supply is maldistributed by location and specialty
- Physicians who complete medical school and residency in NC are more likely to stay in NC
- The supply of non-physician clinicians (NPs, PAs, pharmacists, etc.) is growing and taking on new roles


August 2015
Fears of physician shortages create headlines but we see steady increase in supply

Physicians per 10,000 population, North Carolina and United States, 1980 - 2013

The real issue is maldistribution

Physicians per 10,000 population by Persistent Health Professional Shortage Area (PHPSA) Status, North Carolina, 1980 - 2013

Where can we intervene?
Multiple points of intervention to promote a physician workforce to meet NC’s population health needs

- Colleges & Universities: Recruit students from rural and underserved communities
- Medical School: Create tracks from NC medical school to NC residency to increase retention
- Residency Training: Support recruitment and loan repayment programs
- Initial Practice Location: Fund practice support programs through AHEC, Office of Rural Health and Community Care, Community Practitioner Program
- Ongoing Practice: Support programs like UNC’s Kenan Primary Care Medical Scholars Program
  Actively target training funds to needed specialties and geographies; Support community-based residency training
Medical School
NC has recently expanded Medical School Enrollments

- North Carolina expanded medical school enrollment
  - UNC expanded from 160 to 180 positions with regional placements in Charlotte and Asheville for 3rd and 4th year students
  - ECU expanded from 73-80 students
  - Campbell admitted first class of 160 students in September 2013; will graduate in 2017

- These expansions are not likely to improve workforce supply and distribution in the state

**Why not?**
2003 Medical School Graduates: Retention in Primary Care in NC’s Rural Areas 10 years later

Total number of 2003 NC med school grads in training or practice in 2013
354

Initial residency choice in primary care in 2004
209 (59%)

In training or practice in primary care in 2013
120 (34%)

In primary care in NC in 2013
65 (18%)

In primary care in rural NC in 2013
12 (3%)

Produced by the Program on Health Workforce Research and Policy, Sheps Center for Health Services Research, University of North Carolina at Chapel Hill. Source: North Carolina Health Professions Data System with data derived from the Association of American Medical Colleges, and the NC Medical Board, 2015.
Our rural definition: OMB’s Core Based Statistical Areas

Metropolitan Status*
North Carolina, 2013

*Note: “Core Based Statistical Area” (CBSA) is the OMB’s collective term for Metropolitan and Micropolitan Statistical areas. Here, nonmetropolitan counties include micropolitan and counties outside of CBSAs.
Produced By: Program on Health Workforce Research and Policy, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.
Only 45 NC counties represented in 3 UNC-CH medical school classes, average class drawn from just 27 counties

Matriculants by North Carolina High School County
UNC-CH Medical School Classes 2010, 2011 and 2012

Matriculants by NC High School County
(# of Counties)

- 25 to 54: (4)
- 5 to 24: (6)
- 3 to 4: (10)
- 2: (9)
- 1: (16)
- No Matriculants: (55)

N = 331

Source: OME, UNC-CH SOM.
Produced By: Program on Health Workforce Research & Policy, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.
Which means you go to UNC-CH medical school if you live near an interstate

Matriculants by North Carolina High School County
UNC-CH Medical School Classes 2010, 2011 and 2012

Matriculants by NC High School County
(# of Counties)
- 25 to 54 (4)
- 5 to 24 (6)
- 3 to 4 (10)
- 2 (9)
- 1 (16)
- No Matriculants (55)

N = 331

Source: OME, UNC-CH SOM.
Produced By: Program on Health Workforce Research & Policy, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.
Only 14 matriculants attended high school in a Tier 1 (most economically distressed) county

Matriculants by Economic Tier of High School County

<table>
<thead>
<tr>
<th>Tier</th>
<th>2010</th>
<th></th>
<th>2011</th>
<th></th>
<th>2102</th>
<th></th>
<th>Total</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td>#</td>
<td>%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>7</td>
<td>7%</td>
<td>1</td>
<td>1%</td>
<td>6</td>
<td>5%</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>16</td>
<td>15%</td>
<td>20</td>
<td>18%</td>
<td>10</td>
<td>9%</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>81</td>
<td>78%</td>
<td>89</td>
<td>81%</td>
<td>101</td>
<td>86%</td>
<td>271</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>100%</td>
<td>110</td>
<td>100%</td>
<td>117</td>
<td>100%</td>
<td>331</td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>County</th>
<th># matriculants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beaufort</td>
<td>2</td>
</tr>
<tr>
<td>Burke</td>
<td>2</td>
</tr>
<tr>
<td>Caswell</td>
<td>1</td>
</tr>
<tr>
<td>Cleveland</td>
<td>2</td>
</tr>
<tr>
<td>Edgecombe</td>
<td>1</td>
</tr>
<tr>
<td>Lenoir</td>
<td>3</td>
</tr>
<tr>
<td>Rockingham</td>
<td>1</td>
</tr>
<tr>
<td>Rutherford</td>
<td>1</td>
</tr>
<tr>
<td>Tyrrell</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>14</strong></td>
</tr>
</tbody>
</table>

*Note: Used 2011 definitions. Tier 1 is most distressed.*

Source: OME, UNC-CH SOM.
Produced By: Program on Health Workforce Research & Policy, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.
Only 7% of incoming classes from rural counties

### Students who attended a North Carolina High School by Rural/Urban Status

<table>
<thead>
<tr>
<th>Status</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban</td>
<td>307</td>
<td>93%</td>
</tr>
<tr>
<td>Rural</td>
<td>23</td>
<td>7%</td>
</tr>
<tr>
<td>Total</td>
<td>330</td>
<td>100%</td>
</tr>
</tbody>
</table>

*Note: 35 students missing high school state.*

### Rural counties represented in 2010, 2011 and 2012 classes

<table>
<thead>
<tr>
<th>County</th>
<th># matriculants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avery</td>
<td>1</td>
</tr>
<tr>
<td>Beaufort</td>
<td>2</td>
</tr>
<tr>
<td>Caswell</td>
<td>1</td>
</tr>
<tr>
<td>Cleveland</td>
<td>2</td>
</tr>
<tr>
<td>Harnett</td>
<td>1</td>
</tr>
<tr>
<td>Lenoir</td>
<td>3</td>
</tr>
<tr>
<td>Moore</td>
<td>3</td>
</tr>
<tr>
<td>Rutherford</td>
<td>1</td>
</tr>
<tr>
<td>Sampson</td>
<td>2</td>
</tr>
<tr>
<td>Stanly</td>
<td>2</td>
</tr>
<tr>
<td>Tyrrell</td>
<td>1</td>
</tr>
<tr>
<td>Watauga</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
</tr>
</tbody>
</table>

Source: OME, UNC-CH SOM.
Produced By: Program on Health Workforce Research & Policy, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill.
Residency
Need to develop NC training tracks: Retention much higher for physicians completing both UME and GME instate

As of 2012:

- 39% of NC medical graduates remain in state
- 42% of NC residency graduates remain in state
- 67% of Physicians completing BOTH NC Med School & Residency remain in state

Source: AAMC 2013 State Data Book, with data derived from the 2012 AMA Physician Masterfile.
Need to target expansions to community-based and AHEC residencies
Completing an AHEC residency increases in-state retention

50% (n=1,420) of physicians who complete an NC AHEC residency stay in North Carolina to practice compared to 38% (n=5,879) of physicians who complete a non-AHEC residency stay in North Carolina to practice.

Source: NC Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, with data derived from the American Medical Association Masterfile, 2013. "Active" includes federal, as well as non-patient care activities such as teaching, research, administration, etc.
For primary care physicians, in-state retention of AHEC residents is greater than non-AHEC residents.

Primary Care Physicians Practicing in NC who Completed an NC Residency, AHEC vs. Non-AHEC Residency, 2013

- **Total for Primary Care:**
  - AHEC Residency in NC: 57% (n=1,194)
  - Non-AHEC Residency in NC: 42% (n=2,284)

- **Family Medicine:**
  - AHEC Residency in NC: 60% (n=691)
  - Non-AHEC Residency in NC: 43% (n=627)

- **Internal Medicine:**
  - AHEC Residency in NC: 57% (n=244)
  - Non-AHEC Residency in NC: 41% (n=810)

- **Pediatrics:**
  - AHEC Residency in NC: 57% (n=118)
  - Non-AHEC Residency in NC: 44% (n=565)

- **OBGYN:**
  - AHEC Residency in NC: 45% (n=141)
  - Non-AHEC Residency in NC: 41% (n=282)

Source: NC Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, with data derived from the American Medical Association Masterfile, 2013. "Active" includes federal, as well as non-patient care activities such as teaching, research, administration, etc.
81 residents in 2012 NC physician workforce trained in community-based residencies

<table>
<thead>
<tr>
<th>Institution</th>
<th>Not community-based</th>
<th>Community-based</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMC</td>
<td>664</td>
<td>0</td>
<td>664</td>
</tr>
<tr>
<td>Cabarrus</td>
<td>0</td>
<td>64</td>
<td>64</td>
</tr>
<tr>
<td>Cone</td>
<td>283</td>
<td>0</td>
<td>283</td>
</tr>
<tr>
<td>Duke</td>
<td>1,753</td>
<td>0</td>
<td>1,753</td>
</tr>
<tr>
<td>ECU</td>
<td>714</td>
<td>0</td>
<td>714</td>
</tr>
<tr>
<td>Hendersonville</td>
<td>0</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Lejeune</td>
<td>4</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>MAHEC</td>
<td>166</td>
<td>0</td>
<td>166</td>
</tr>
<tr>
<td>Monroe</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>SEAHEC</td>
<td>158</td>
<td>0</td>
<td>158</td>
</tr>
<tr>
<td>SR-AHEC</td>
<td>68</td>
<td>0</td>
<td>68</td>
</tr>
<tr>
<td>UNC</td>
<td>1,756</td>
<td>0</td>
<td>1,756</td>
</tr>
<tr>
<td>Wake</td>
<td>1,491</td>
<td>0</td>
<td>1,491</td>
</tr>
<tr>
<td>Womack</td>
<td>18</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7,075</strong></td>
<td><strong>81</strong></td>
<td><strong>7,156</strong></td>
</tr>
</tbody>
</table>

Note: 1 resident missing data.

Source: NC Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, with data derived from the NC Medical Board, 2012.
Residents trained in community-based settings more likely to practice in rural counties

Urban versus rural location for community-based vs. non-community-based residents

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th></th>
<th>Percent</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Urban</td>
<td>Rural</td>
<td>Urban</td>
<td>Total</td>
</tr>
<tr>
<td>Not Community -</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Based</td>
<td>6,363</td>
<td>711</td>
<td>90%</td>
<td>100%</td>
</tr>
<tr>
<td>Community -Based</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>68</td>
<td>14</td>
<td>83%</td>
<td>100%</td>
</tr>
<tr>
<td>Total</td>
<td>6,431</td>
<td>725</td>
<td>90%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Note: 2 residents missing information. Pearson chi2(1)=4.3902, Pf=0.036

Source: NC Health Professions Data System, Cecil G. Sheps Center for Health Services Research, University of North Carolina at Chapel Hill, with data derived from the NC Medical Board, 2012.
Medical School Plans in Charlotte: Next Steps

Task Force with broad representation formed to study educational, financial and economic development issues associated with new med school

• Contracting with Sheps to do analysis of supply, demand, and distribution of physicians in Charlotte region
• Report will focus on primary care, general surgery, psychiatry and geriatrics
• Sheps will also develop physician projection model to simulate the impact of a new medical school on the supply of physicians in the Charlotte region, based on a set of assumptions
• Study will also look at potential growth for residency training
Conclusions: Medical School Plans in Charlotte

• Sheps’ report on medical education in NC has had major impact on thinking regarding a new med school in Charlotte

• Having timely and accurate data forced the city leaders to step back and take more comprehensive look at the costs and benefits of new med school

• Sheps researchers now fully engaged in the policy discussions regarding potential school and will be able to continue to inform the policy discussions going forward
Questions?

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