Epidemiology Capacity in 27 Big Cities Health Departments: Results from the 2017 Assessment & Implications for Practice

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Deputy Director, Big Cities Health Coalition
Outline of Session

- Who are BCHC and CSTE?
- What is the ECA?
- Overview of BCHC results
- Interesting differences between BCHC and 2017 state ECA
- Q/A discussion
About BCHC

• **Founded** in 2002
  - Operated out of NYC until 2012 when it moved to National Association of County and City Health Officials

• **Mission**: Advancing equity and health for present and future generations

• **Vision**: Healthy, more equitable communities through big city innovation and leadership
30 Member Cities

- Austin
- Baltimore
- Boston
- Charlotte (Mecklenburg Cty)
- Chicago
- Cleveland
- Columbus
- Dallas
- Denver
- Detroit
- Fort Worth (Tarrant Cty)
- Houston
- Indianapolis (Marion Cty)
- Kansas City
- Las Vegas (S. NV Hlth District)
- Los Angeles (Cty)
- Long Beach
- Miami (Miami-Dade Cty)
- Minneapolis
- New York City
- Oakland (Alameda Cty)
- Philadelphia
- Phoenix (Maricopa Cty)
- Portland (Multnomah Cty)
- San Antonio
- San Diego (Cty)
- San Francisco
- San Jose (Santa Clara Cty)
- Seattle (Seattle-King Cty)
- Washington, D.C.

Over 55 million – or 1 in 6 – Americans covered by BCHC-member LHDs
About CSTE

• Formed in 1951, the Council of State and Territorial Epidemiologists (CSTE) works to advance public health and epidemiologic capacity. Comprised of State Epidemiologists from all 50 states and the U.S. territories, the Council works to define and recommend nationally notifiable diseases and conditions for CDC.
• Our nearly 2000 members form communities of practice on issues of surveillance and informatics, infectious diseases, substance use and injury and more.

CSTE’s Vision: Using the power of epidemiology to improve the public’s health
Epi Capacity Assessment (ECA)


- ECA Objectives
  - Enumerate the epidemiology workforce at State and Territorial health departments
  - Describe epi capacity by subject area and Essential Public Health Services (EPHS)
  - Describe the funding supporting the epi workforce
  - Identify areas of concern among epi leadership
EPHS most relevant to epidemiology:

#1 – Monitoring health status
#2 – Investigating community health problems and hazards
#9 – Evaluating the effectiveness of public health interventions
#10 – Conducting research
Epidemiologist: “An investigator who studies the occurrence of disease or other health related conditions or events in defined populations. The control of disease in populations is often also considered to be a task for the epidemiologist.”

Capacity: The ability to lead activities, provide subject matter expertise, and apply for, receive, and manage resources to conduct key activities.
Why Assess Big Cities?

- Prior limitation is focus on state HDs, not capturing numeric and functional capacity of locals
- Partnered with BCHC to assess the local epidemiology capacity in large urban health departments
- CSTE and BCHC solicited input from local epidemiologists to tailor the ECA to locals
BCHC Epidemiology Capacity Assessment Results
Structure & General Organization

- 48% indicated the epi workforce decentralized
- 37% indicated centralized within one division or office
- 15% reported the epi workforce is a hybrid structure
- 82% indicated the presence of one or more lead epis
- 78% indicated they have “generalists” supporting multiple program areas
Number of Epidemiologists by Program Area

- Infectious disease: 474
- Environmental health: 90
- Vital statistics: 46
- Substance abuse: 40
- MCH: 35
- Preparedness: 31
- Oral health: 5
- Genomics: 1

Number of Epidemiologists

0 100 200 300 400 500
## Unmet Staffing Needs

<table>
<thead>
<tr>
<th>Program area</th>
<th>Current</th>
<th>Additional</th>
<th>Ideal (Current + Add’l)</th>
<th>Unmet Need (%)</th>
<th>Increase Needed to Reach Ideal (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infectious disease</td>
<td>474</td>
<td>138</td>
<td>612</td>
<td>22%</td>
<td>29%</td>
</tr>
<tr>
<td>General epidemiology</td>
<td>201</td>
<td>40</td>
<td>241</td>
<td>17%</td>
<td>20%</td>
</tr>
<tr>
<td>Environmental health</td>
<td>90</td>
<td>30</td>
<td>120</td>
<td>25%</td>
<td>34%</td>
</tr>
<tr>
<td>Vital statistics</td>
<td>40</td>
<td>24</td>
<td>64</td>
<td>37%</td>
<td>58%</td>
</tr>
<tr>
<td>Chronic disease</td>
<td>40</td>
<td>29</td>
<td>69</td>
<td>42%</td>
<td>72%</td>
</tr>
<tr>
<td>Substance abuse</td>
<td>40</td>
<td>20</td>
<td>60</td>
<td>34%</td>
<td>51%</td>
</tr>
<tr>
<td>Informatics</td>
<td>38</td>
<td>24</td>
<td>63</td>
<td>39%</td>
<td>63%</td>
</tr>
<tr>
<td>MCH</td>
<td>35</td>
<td>30</td>
<td>65</td>
<td>46%</td>
<td>86%</td>
</tr>
<tr>
<td>Mental health</td>
<td>34</td>
<td>15</td>
<td>49</td>
<td>31%</td>
<td>46%</td>
</tr>
<tr>
<td>Preparedness</td>
<td>31</td>
<td>21</td>
<td>52</td>
<td>40%</td>
<td>66%</td>
</tr>
<tr>
<td>Injury</td>
<td>16</td>
<td>20</td>
<td>36</td>
<td>55%</td>
<td>121%</td>
</tr>
<tr>
<td>Oral health</td>
<td>5</td>
<td>9</td>
<td>15</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Occupational health</td>
<td>1</td>
<td>4</td>
<td>4</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Genomics</td>
<td>0.2</td>
<td>1</td>
<td>1</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>Other</td>
<td>46</td>
<td>29</td>
<td>75</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1091</strong></td>
<td><strong>434</strong></td>
<td><strong>1525</strong></td>
<td><strong>28%</strong></td>
<td><strong>40%</strong></td>
</tr>
</tbody>
</table>
Means and range of percentage of funds for epidemiology activities and personnel provided by federal, state, local, and other sources, 27 jurisdictions, BCHC ECA, 2017*

- **Federal**
  - Activities: 27%
  - Personnel: 29%

- **State**
  - Activities: 24%
  - Personnel: 24%

- **Local**
  - Activities: 47%
  - Personnel: 44%

- **Other**
  - Activities: 1%
  - Personnel: 3%
Essential Public Health Services Capacities

- Monitoring health status: 93%
- Diagnosing/investigating problems: 78%
- Evaluation: 41%
- Research: 33%

Categories:
- Minimal to none
- Partial
- Substantial to full
### Priority to improve EPHS capacity by program area, 27 jurisdictions, BCHC ECA, 2017*

<table>
<thead>
<tr>
<th>Program Area</th>
<th>High Priority</th>
<th>Medium Priority</th>
<th>Low or Not a Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic diseases</td>
<td>48%</td>
<td>26%</td>
<td>26%</td>
</tr>
<tr>
<td>Substance abuse</td>
<td>44%</td>
<td>30%</td>
<td>26%</td>
</tr>
<tr>
<td>Infectious disease</td>
<td>41%</td>
<td>26%</td>
<td>33%</td>
</tr>
<tr>
<td>Informatics</td>
<td>37%</td>
<td>30%</td>
<td>33%</td>
</tr>
<tr>
<td>Preparedness</td>
<td>26%</td>
<td>22%</td>
<td>52%</td>
</tr>
<tr>
<td>Mental health</td>
<td>26%</td>
<td>37%</td>
<td>37%</td>
</tr>
<tr>
<td>MCH</td>
<td>26%</td>
<td>37%</td>
<td>37%</td>
</tr>
<tr>
<td>Injury</td>
<td>26%</td>
<td>30%</td>
<td>44%</td>
</tr>
<tr>
<td>Environmental health</td>
<td>22%</td>
<td>33%</td>
<td>44%</td>
</tr>
<tr>
<td>Oral health</td>
<td>11%</td>
<td>33%</td>
<td>74%</td>
</tr>
<tr>
<td>Vital statistics</td>
<td>7%</td>
<td>37%</td>
<td>56%</td>
</tr>
<tr>
<td>Occupational health</td>
<td>4%</td>
<td>19%</td>
<td>77%</td>
</tr>
<tr>
<td>Genomics</td>
<td>4%</td>
<td>96%</td>
<td>0%</td>
</tr>
</tbody>
</table>

*High priority, medium priority, and low or not a priority represent the percentage of jurisdictions where each program area was considered as a priority.
Top training needs identified, 27 jurisdictions, BCHC ECA, 2017

- Data analytics: 13
- Systems thinking: 9
- Persuasive communication: 7
- Software skills: 6
- Continuing education: 6
- Leadership development: 5
- Assessment/evaluation: 3
- Team building: 2
- Cultural competency: 1
- Fiscal management: 0
- Other: 2

Number of times cited
## BCHC Salary Ranges by Degree and Title

<table>
<thead>
<tr>
<th>Category*</th>
<th>Median minimum</th>
<th>Range, minimum</th>
<th>Median maximum</th>
<th>Range, maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>By degree</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Associate (5)</td>
<td>$44K</td>
<td>$31K - $71K</td>
<td>$71K</td>
<td>$50K - 123K</td>
</tr>
<tr>
<td>Bachelor's (14)</td>
<td>$51K</td>
<td>$30K - $71K</td>
<td>$73K</td>
<td>$60K - $123K</td>
</tr>
<tr>
<td>Master's (27)</td>
<td>$58K</td>
<td>$32K - $75K</td>
<td>$101K</td>
<td>$65K - $162K</td>
</tr>
<tr>
<td>Doctorate (18)</td>
<td>$71K</td>
<td>$44K - $92K</td>
<td>$117K</td>
<td>$77K - $200K</td>
</tr>
<tr>
<td>Veterinarian (5)</td>
<td>$71K</td>
<td>$60K - $95K</td>
<td>$130K</td>
<td>$123K - $162K</td>
</tr>
<tr>
<td>Physician (13)</td>
<td>$100K</td>
<td>$46K - $186K</td>
<td>$150K</td>
<td>$85K-$277K</td>
</tr>
<tr>
<td><strong>By title</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entry level (21)</td>
<td>$56K</td>
<td>$31K - $72K</td>
<td>$77K</td>
<td>$39K - $101K</td>
</tr>
<tr>
<td>Mid level (23)</td>
<td>$70K</td>
<td>$44K - $92K</td>
<td>$94K</td>
<td>$55K - $112K</td>
</tr>
<tr>
<td>Senior level (23)</td>
<td>$80K</td>
<td>$50K - $98K</td>
<td>$120K</td>
<td>$80K - $270K</td>
</tr>
</tbody>
</table>
• BCHC Median: 1.4 epis per 100,000 people
  ▪ Range of 0.4 to 7.5

• State Median: 1.0 epis per 100,000 people
• 47% of funding for BCHC epi activities are from local sources
  ▪ State: 24%
  ▪ Federal: 27%

• More than three-quarters of funding for state epi activities are from federal sources
  ▪ State: 20%
<table>
<thead>
<tr>
<th>Top Training Needs</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BCHC</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Data Analytics (48%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Systems Thinking (33%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Persuasive Communication (26%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>States</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Data Analytics (38%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Systems Thinking (12%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Persuasive Communication (12%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Leadership Development (12%)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Current Capacity

<table>
<thead>
<tr>
<th>BCHC</th>
<th>States</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adequate Current Program Capacity</strong></td>
<td><strong>Adequate Current Program Capacity</strong></td>
</tr>
<tr>
<td>- ID 100%, MCH 93%, CD 89%, Injury 89%</td>
<td>- ID 96%, CD 78%, MCH 73%, Prep 57%</td>
</tr>
<tr>
<td><strong>Need to Improve Capacity</strong></td>
<td><strong>Need to Improve Capacity</strong></td>
</tr>
<tr>
<td>- CD 93%, ID 89%, EH 89%, MH 89%, Injury 88%</td>
<td>- MH 94%, SA 93%, Infx 93%, Injury 90%</td>
</tr>
<tr>
<td><strong>High/Medium Priority to Improve Capacity</strong></td>
<td><strong>High/Medium Priority to Improve Capacity</strong></td>
</tr>
<tr>
<td>- CD 74%, SA 74%, ID 67%, Infx 67%</td>
<td>- SA 94%, Infx 79%, MH 78%, CD 78%, ID 74%</td>
</tr>
</tbody>
</table>
Limitations

• Report is limited to 27 (of 30) BCHC members

• Functional definition of epidemiologist

• Questions about needed staffing were limited to MPH-level and above trained epis
• With nearly 1,100 epis, BCHCs contribute substantially to national capacity

• The ratio of epis per 100,000 population varies widely
  • Some departments understaffed
  • Even in well staffed departments, need for increased capacity

• Need to improve capacity to evaluate population-based health services and research innovations
Key Findings and Conclusions

- Lack of predictable, sustainable funding hinders capacity building
- Role of epis not well understood
- Have epis for 20th century, not necessarily 21st century, PH challenges
- Technology/new tech remains a challenge
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Q/A & Audience Discussion
Big Cities Health Coalition Epidemiology Capacity Assessment, 2017
Contact Information

2017 BCHC CSTE ECA Report

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