Social Factors, Environmental Hazards, and Racial Health Disparities

The Case of Stress, Lead, and Hypertension

Margaret Hicken, MPH, PhD
Robert Wood Johnson Foundation Health & Society Scholar
Department of Epidemiology
University of Michigan
Hypertension Disparities & Social Factors

Blood lead levels over time

Blood lead, geo mean (µg/dL)

<table>
<thead>
<tr>
<th>Year</th>
<th>Black</th>
<th>White</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>1988</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>1999</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>2001</td>
<td>8</td>
<td>4</td>
</tr>
</tbody>
</table>

Blood lead & blood pressure

Predicted mean SBP (mmHg)

Blood lead (mg/dl)

-0.69 0.17 0.53 0.92 2.15

115 120 125 130 135

***p<0.001 for group differences


Figure 2 (right): Results shown are for men, aged 20 years and older. Data source: NHANES 2001-2008.

***p<0.001 for group differences
Stress, Blood Lead & Hypertension

Stress modifies association

Blacks experience more stress

- More social stressors
- More economic stressors
- More psychosocial stress
- More discrimination

Figure adapted from: Peters et al. Environmental Health Perspectives 2008.
* p<0.05 for group difference
Conclusions

- A fundamental shift in approach to racial health disparities
  - Integrate social factors, environmental exposures, and health
  - Interdisciplinary research
  - Inter-agency policy development