China Rural Health Initiative: Innovation and Policy Translation

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Professor of Global Health, University of Oxford
Presentation outline

• The challenge of chronic diseases in emerging economies and rural China
• An innovative response: the China Rural Health Initiative (CRHI)
• The “translational” network and model
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Chronic diseases

- Cardiovascular disease, mainly heart disease, stroke
- Cancer
- Chronic respiratory diseases
- Diabetes

Projected main causes of death, worldwide, all ages, 2005

- Communicable diseases, maternal and perinatal conditions, and nutritional deficiencies 30%
- Cardiovascular diseases 30%
- Injuries 9%
- Other chronic diseases 9%
- Diabetes 2%
- Chronic respiratory diseases 7%
- Cancer 13%

TOTAL DEATHS 2005
58 million

预防慢性疾病
一个至关重要的投资

World Health Organization
The economic impact: billions

Projected foregone national income due to heart disease, stroke and diabetes in selected countries, 2005–2015

World Health Organization

Preventing CHRONIC DISEASES: a vital investment
Leading causes of death: China, 2008

Urban

Rural

<table>
<thead>
<tr>
<th>Cause</th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cerebrovascular Disease</td>
<td>19.62</td>
<td>21.73</td>
</tr>
<tr>
<td>Heart Disease</td>
<td>19.65</td>
<td>14.11</td>
</tr>
<tr>
<td>Malignant Neoplasms</td>
<td>12.23</td>
<td>10.45</td>
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<tr>
<td>Diseases of the Respiratory System</td>
<td>5.08</td>
<td>16.88</td>
</tr>
<tr>
<td>Endocrine, Nutritional &amp; Metabolic Diseases</td>
<td>3.43</td>
<td>1.79</td>
</tr>
<tr>
<td>Injury &amp; Poisoning</td>
<td>1.01</td>
<td>1.06</td>
</tr>
<tr>
<td>Other</td>
<td>11.86</td>
<td>8.59</td>
</tr>
</tbody>
</table>

A B
Potential challenges in control of chronic diseases in China

- Low levels of awareness and policy support
- Very few prevention-oriented interventions
- Low levels of economic and social development in rural areas
- Under-insurance
Potential challenges in control of chronic diseases in China

• Scarce and poorly allocated healthcare resources
• Limited healthcare facilities and equipment
• Primary care providers and community health workers: minimal training in controlling chronic diseases
Presentation outline

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Background

*Rural China:*

- an enormous burden of premature cardiovascular disease
- low awareness, poor control and limited resources
- evidence-based clinical guidelines for the management of hypertension and cardiovascular disease well established, but not implemented in rural areas
Rural China:

• ample scientific evidence on the effects of high salt intake on hypertension, cardiovascular disease and other health problems

• salt reduction programs absent in rural China
High cardiovascular risk management and sodium reduction in rural villages in China: a cluster-randomized controlled complex pragmatic trial
Study goal:
To develop, implement, and evaluate effective, low-cost, and sustainable interventions for cardiovascular disease prevention and management suitable for widespread implementation in rural China
Specific aims:

To evaluate the effects of 2 interventions:

- Simple, low cost standardized management of CVD high-risk patients, delivered by primary care providers

- A community-based sodium reduction program, delivered by community health educators with local supply of low-sodium salt
**Study design:**

- Cluster-randomized, controlled trial
- 120 rural villages from:
  - 120 townships
  - 10 counties
  - 5 provinces
### CRHI

**Standardized Management (A)**

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>A and B</td>
<td>B only</td>
</tr>
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</table>

**Sodium Reduction (B)**

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>A only</td>
<td>Neither A nor B</td>
</tr>
</tbody>
</table>

120 clusters (townships), 30 in each group
CRHI

• Principles
  – Evidence-based (efficacious)
  – Low-cost
  – Simplified (tailored to village doctors)

• Long-term goals
  – Sustainable
  – Can be promoted to and adopted by other areas (once proven effective)
CRHI: standardized management

- Standardized management of high risk patients
  - Train village doctors to screen, manage, follow-up, and refer high-risk patients
  - Village doctors implement the management after the training

- Performance feedback
  - Centralized web-based database on digitization of CMR
  - Key performance indicators (KPI)
  - Performance feedback regularly

- Incentives to providers
  - Performance based
  - In cooperation with local health authority
CRHI: sodium reduction

- Community health education and promotion
  - Delivered by community health educators
  - Multi-channel dissemination
  - Targeting the general population and high-risk individuals
  - Promotion of low-sodium salt use (65% sodium, 25% potassium, 10% magnesium)

- Local supply of low-sodium salt
  - Making low-sodium salt available at village convenience store
  - One village in each county to have price subsidy to make low-sodium salt the same price as regular salt
Proportion of High-Risk Individuals among Older Adults (men $\geq 50$/women $\geq 60$) Results from the baseline survey

<table>
<thead>
<tr>
<th>Province, County</th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N= %H-R</td>
<td>N= %H-R</td>
<td>N= %H-R</td>
</tr>
<tr>
<td>Liaoning, Zhangwu</td>
<td>243 34.57</td>
<td>244 57.38</td>
<td>487 46.00</td>
</tr>
<tr>
<td>Liaoning, Fengcheng</td>
<td>247 32.79</td>
<td>233 43.78</td>
<td>480 38.13</td>
</tr>
<tr>
<td>Hebei, Luqian</td>
<td>255 26.67</td>
<td>256 38.67</td>
<td>511 32.68</td>
</tr>
<tr>
<td>Hebei, Anguo</td>
<td>246 34.96</td>
<td>245 44.49</td>
<td>491 39.71</td>
</tr>
<tr>
<td>Shanxi, Yangcheng</td>
<td>258 24.03</td>
<td>259 37.07</td>
<td>517 30.56</td>
</tr>
<tr>
<td>Shanxi, Gaoping</td>
<td>271 27.68</td>
<td>268 37.31</td>
<td>539 32.47</td>
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<tr>
<td>Shaanxi, Chang’an</td>
<td>256 26.56</td>
<td>257 33.46</td>
<td>513 30.02</td>
</tr>
<tr>
<td>Shaanxi, Lintong</td>
<td>247 23.48</td>
<td>250 31.20</td>
<td>497 27.36</td>
</tr>
<tr>
<td>Ningxia, Pingluo</td>
<td>238 19.75</td>
<td>232 35.78</td>
<td>470 27.66</td>
</tr>
<tr>
<td>Ningxia, Qingtongxia</td>
<td>253 21.74</td>
<td>257 48.25</td>
<td>510 35.10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2514 27.21</strong></td>
<td><strong>2501 40.66</strong></td>
<td><strong>5015 33.92</strong></td>
</tr>
</tbody>
</table>

High-risk: History of coronary heart disease, stroke, diabetes, or stage II hypertension (systolic blood pressure $\geq 160$ mm Hg)
CRHI: Current Status of the Intervention

- **Standardized management**
  - Central training of county cardiologists in Oct 2010
  - County-wide training of village doctors in November and again December 2010
  - A total of 1,600 high-risk patients currently being managed by the village doctors

- **Sodium reduction**
  - Central training of county health educators in April 2011
  - County-wide training of township health educators in May and again June 2011
  - All intervention villages have low-sodium salt now and 56 villages have initiated the health education programs (the other 4 will do so by June 4th).
• Timelines
  – Intervention of the current phase to end in Sep 2012
  – Ongoing process evaluations

• Future plans
  – Utilisation of the network as a research platform for other studies
  – Promotion to wider areas by Ministry of Health, if proven effective
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• The “translational” network and model
• Flagship project of the China International Centre for Chronic Disease Prevention
• Flagship project of the China International Centre for Chronic Disease Prevention (CICCDP):
  – Chronic Disease
  – Prevention
  – International
  – China
CICCDP: Program of Work

The George Institute, China to provide in-kind and infrastructure support.
Acknowledgements

- Sponsors:
  - The US NIH NHLBI
  - The UnitedHealth Group
- Additional funding provided by:
  - The US CDC
  - Medtronic Foundation
  - Bayer China