Mapping the Healthcare Delivery in Bangladeshi Cities: Challenges and Opportunities

Demographic megatrends in Asia and Eastern Europe
Challenges and Opportunities for Health and Social Protection
Hanoi, Vietnam

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Urban Health Landscape...
The Urban Health Scenario in Bangladesh

- By mid-century 52% of population will live in urban areas
- Urbanization especially rapid in Dhaka – “the fastest growing megacity in the world,” 1500 new migrants arrive daily; 2/3 of which become slum dwellers
- Increasing health hazards related to sub-standard housing, inadequate water and sanitation, overcrowding etc.
- Huge and unregulated growth of private sector; formal and informal
- No institutionalized urban primary care system; managed by local government on project basis
Urban health system

Donor Government Service provider Media & other

Primary Secondary

MoLGRD DCC MoHFW

MoSW MoHA MoR MoD MoF MoFDM

DGHS DGFP

UPHC

SSFP, MANOSHI, Marie Stopes

Public NGO Private Charity/Trust

Formal Informal

- MoSW – M. of Social Welfare
- MoHA – M. of Home Affairs
- MoR – M. of Railway
- MoD – M. of Defense
- MoF – M. of Finance
- MoFDM – M. of Food and Disaster Management
- MoHFW – M. of Health and Family Welfare
- MoLGRD – M. of Local Government, Rural Development and Cooperative

Source: DFID Report, icddr,b 2012
WHY map?

- **Equity concerns:** little is known about health service availability within or proximate to poor urban settlements where health needs are greatest

- **Urgent need for planning and coordination:** mapping health services can assist in identifying gaps and referral systems, strengthen HIMS, support urban policy and implementation

- **Overwhelming density of urban services limits choice:** attraction of qualified medical providers to cities, rapid increase in demand, mushrooming growth of private sector
Objectives

Funded by GIZ, icddr,b conducted a mapping study in Sylhet city corporation (SCC)

- To identify all the health service providers in SCC and document their institutional profile including geo-spatial information.
- To devise an interactive user interface for geospatial and other health system analysis.
- To support the use of maps by various stakeholders including local government, NGOs and the private sector through focused training and advocacy.
Sylhet City Corporation (SCC)

- Divisional City
- Wards: 27
- Area: 26.50 Sq. km.
- Population: 500,000 (approximately)
Method

Census (take all) approach to sampling employed

Facility Listing
- Make comprehensive inventory
- Collect GPS coordinates

GIS Mapping
- UPPR maps as base map
- Ground truth and update map
- Map road network

Facility Survey
- Type of facility, management entity, Public/NGO/Private
- Facility focus, target population, service hours
- Staffing pattern, qualifications and training, services offered, selected service costs
- Provision for poor, availability of selected utilities
Facility Listing and GIS mapping
## Operational definitions for facilities

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital</td>
<td>Formal institution providing both outdoor and indoor services with &gt;30 beds.</td>
</tr>
<tr>
<td>Clinic</td>
<td>Formal institution with or without indoor services having &lt;30 beds.</td>
</tr>
<tr>
<td>Diagnostic Centre</td>
<td>Institution performing various diagnostics may/may not have limited outpatient services.</td>
</tr>
<tr>
<td>Drop in Centre (DIC)</td>
<td>Institutions with target population as sex workers, intravenous drug users and street children. Services include health education plus 1 or 2 days a week clinic.</td>
</tr>
<tr>
<td>Blood Bank</td>
<td>Institutions collect and preserve donor’s blood, may or may not have clinical services.</td>
</tr>
<tr>
<td>Delivery Centre (DC)</td>
<td>Informal MNCH facilities run by BRAC where poor women can receive ANC and PNC services and have normal deliveries assisted by trained birth attendants or midwives.</td>
</tr>
<tr>
<td>EPI centre</td>
<td>Facilities providing immunization services on behalf of GoB (contract out).</td>
</tr>
</tbody>
</table>
GIS data collection

- Hand-held GPS machines used to collect GIS locations
- Road network updated on base maps and point-to-point coordinates collected from poor settlements
Tool innovation

Android Tab based facility listing tool to facilitate easy update of service delivery points;

- Enables data collectors to collect GIS information along with the facility survey
- On site correction of geo-spatial distortion
- Live tracking for traffic and week day analysis
- Generates list/sampling frame for survey
Combo: Listing and GIS Tool
Facility Survey
Survey variables

Questionnaire includes:

- Facility name, GPS coordinates, address etc.
- Human resources: number, qualifications, assistance in service delivery, full or part time
- Hours and days of service
- Types of service provision
- Cost of tracer services
- Provision for the poor
Update on the survey tool

- Survey form shortened
- Web based: MySQL (open access)
- Can be accessed through PC or Tab (android, windows, apple)
- Used for both data entry and management
- Output – Excel, SPSS etc.
Findings
Static health care facilities by provider type in SCC

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Government</th>
<th>UPHCP</th>
<th>Other</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical Shop with Doctor Chamber</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Optical Shop</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacy with Doctor Chamber</td>
<td>168</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pharmacy</td>
<td>596</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doctor Chamber</td>
<td>151</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delivery Centre</td>
<td>15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood Bank</td>
<td>1</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DIC</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnostic Centre</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clinic</td>
<td>1</td>
<td>8</td>
<td>17</td>
<td>53</td>
</tr>
<tr>
<td>Hospital</td>
<td>6</td>
<td></td>
<td></td>
<td>15</td>
</tr>
</tbody>
</table>
Distribution of beds in SCC by provider type

n = 105

Bed (Median)

<table>
<thead>
<tr>
<th>Provider Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>50</td>
</tr>
<tr>
<td>NGO</td>
<td>0</td>
</tr>
<tr>
<td>Private</td>
<td>20</td>
</tr>
</tbody>
</table>

Bed (Total)

<table>
<thead>
<tr>
<th>Provider Type</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>1266</td>
</tr>
<tr>
<td>NGO</td>
<td>91</td>
</tr>
<tr>
<td>Private</td>
<td>2691</td>
</tr>
</tbody>
</table>
Availability of doctors by provider type in SCC

<table>
<thead>
<tr>
<th>Type</th>
<th>24 hours</th>
<th>Morning</th>
<th>Evening</th>
<th>Morning-evening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>0.9</td>
<td>64.4</td>
<td>34.7</td>
<td>0.9</td>
</tr>
<tr>
<td>NGO</td>
<td>14.8</td>
<td>40.7</td>
<td>11.1</td>
<td>33.3</td>
</tr>
<tr>
<td>Government</td>
<td>85.7</td>
<td>14.3</td>
<td>0.9</td>
<td>0.9</td>
</tr>
</tbody>
</table>

Legend:
- 24 hours
- Morning
- Evening
- Morning-evening
Minimum distance traveled from the centre point of each SCC ward for general healthcare
Minimum distance traveled from the centre point of each SCC ward for Maternal Healthcare
Mean cost of MNCH services by provider type in SCC*

*Excluding private doctor’s chambers and pharmacies
Mean cost of diagnostic tests by provider type in SCC*

<table>
<thead>
<tr>
<th>Test</th>
<th>Government</th>
<th>NGO</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pregnancy Test</td>
<td>87</td>
<td>61</td>
<td>131</td>
</tr>
<tr>
<td>Ultrasound (W/A)</td>
<td>470</td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-ray chest</td>
<td>88</td>
<td>2</td>
<td>389</td>
</tr>
<tr>
<td>ECG</td>
<td>80</td>
<td>80</td>
<td>264</td>
</tr>
</tbody>
</table>

*Excluding private doctor’s chambers and pharmacies
Percentage of preferred referral points by various service providers in SCC

<table>
<thead>
<tr>
<th>Condition</th>
<th>Government</th>
<th>NGO</th>
<th>Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Transfusion</td>
<td>65%</td>
<td>14%</td>
<td>35%</td>
</tr>
<tr>
<td>EMOC N=44</td>
<td>70%</td>
<td>16%</td>
<td>14%</td>
</tr>
<tr>
<td>C/S n=53</td>
<td>64%</td>
<td>21%</td>
<td>15%</td>
</tr>
<tr>
<td>Child Health n=547</td>
<td>78%</td>
<td>8%</td>
<td>13%</td>
</tr>
<tr>
<td>Diabetes n=227</td>
<td>61%</td>
<td>2%</td>
<td>13%</td>
</tr>
<tr>
<td>Heart Disease n=163</td>
<td>82%</td>
<td>2%</td>
<td>17%</td>
</tr>
<tr>
<td>Respiratory Disease n=163</td>
<td>83%</td>
<td>2%</td>
<td>12%</td>
</tr>
<tr>
<td>Major Trauma n=104</td>
<td>93%</td>
<td>1%</td>
<td>6%</td>
</tr>
<tr>
<td>ICU n=16</td>
<td>75%</td>
<td>1%</td>
<td>25%</td>
</tr>
</tbody>
</table>
Facilities providing special services to the poor (%) in SCC

- Limited to government and NGOs
- No standard targeting criteria between providers
- Different cards with different benefits: discounts on medicine, low consultation fees
Urban mapping as a means of supporting good governance

- Rule of Law
- Transparency
- Consensus Oriented
- Participation
- Accountability
- Effectiveness & Efficiency
- Equity & Inclusiveness

- Licensing, over pricing
- Community Provider Policy makers
- Quality services, HHR skill, pricing
- Resource allocation monitoring, expansion of services
- To the community To the provider
- Resource allocation monitoring, expansion of services
- To the community To the provider
Challenges...

- Road networks and huge volume of providers
- Accuracy of GPS coordinates; tall buildings, cloudy days
- Access to the facilities; registration and trade license information
- Updating- road network, facilities, landmarks
  - how often?
  - by whom?
- Avoiding duplication; facility and personnel
Current and future activities

Current sites
- Rajshahi
- Sylhet

Future sites
- Gazipur
- Dhaka
- Narayanganj
- Khulna
- Barisal
- Chittagong
Discussion...

- Is mapping a way forward in planning for better health in high density urban settings?
- How can mapping strengthen planning and implementation for universal coverage especially for the poor?
- How can these information/geo maps be updated?
- How we promote uptake among government and the private sector?
- How can they be linked to HMIS to capture the demand side?
- How can they be used as a monitoring tool to improve quality?
Potential applications of the Interface

- Examine density of service provision
- Calculate distance to emergency care
- Establish referral linkages
- Identify emergency transport routes
- Minimize duplication of services
- Visualize service gaps
- Locate new services
- Customize by integrating other layers of data
Thank you