Understanding Child Health in the Context of COVID-19: Experiences from Bangladesh, Pakistan, & Zambia

April 23, 2020
COVID-19 Pandemic

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Economist March 2020
Origin of the nCoV-2019?

Bat virus?

Many species of bats harbor coronaviruses
• 2017: a coronavirus 96% identical to the Wuhan coronavirus was identified in a horseshoe bat in Yunnan cave

Pangolin virus?

Did pangolins spread the China coronavirus to people?

Genetic sequences of viruses isolated from the scaly animals are 99% similar to that of the circulating virus – but the work is yet to be formally published.
Figure 1. Onset of Illness among the First 425 Confirmed Cases of Novel Coronavirus (2019-nCoV)–Infected Pneumonia (NCIP) in Wuhan, China.

Qun Li et al. Early transmission dynamics in Wuhan, China of novel coronavirus-infected pneumonia. NEJM 2020
WHO Situational Report
April 22, 2020

• WHO risk assessment: global - very high
• US>Spain>Italy>China>Iran
• Globally – 2,471,136 confirmed cases (73,920 new)
  • 169,006 deaths (6058 new)
Figure 1. Countries, territories or areas with reported confirmed cases of COVID-19, 22 April 2020

Countries, areas or territories with COVID-19 cases reported in the last 7 days
(From 16 April 2020, 10:00AM to 22 April 2020, 10:00AM (CEST))

Number of cases of Serbia and Kosovo (UNSCR 1244, 1999) have been aggregated for visualization purposes.

data source: World Health Organization
map production: WHO Health Emergencies Programme
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Global Trajectory of COVID-19 in Africa and India vs. High-Income Countries

COVID-19 in Africa
United Nations

Source: Based on data from Johns Hopkins University and Africa CDC, 12 April 2020
Enhancing capacity for COVID-19 diagnostics in Bangladesh

Child Health Research Foundation, Bangladesh
Prof. Samir K Saha and Dr. Senjuti Saha
23 April 2020
Child Health Task Force Webinar
COVID-19 in Bangladesh

Data from ourworldindata.org

First 3 cases

Death Cases

3,772 cases, 120 deaths
The figure below is showing age distribution of reported confirmed COVID-19 cases (n=1,902), including deaths (n=58), Bangladesh.

Age distribution of COVID-19 cases in Bangladesh

~7%
Gaps in knowledge

• Like many other places, there is a general assumption that children are “resistant” to COVID-19

• No data on
  • symptoms
  • duration of illness
  • hospitalization
  • contact history
  • risk factors (comorbidities, nutritional status)

• No data on asymptomatic carriage
The objectives of our semi-national surveillance are:

- to describe epidemiology and estimate burden of vaccine-preventable disease
  - Meningitis, sepsis, pneumonia, diarrhea
- to establish a platform to measure vaccine needs and impact
- to characterize circulating bacterial and viral types – AMR, serotypes, etc
CHRF’s journey during the COVID-19 era – in progress

• March 24 – Gov. of Bangladesh requested that we prepare to serve as a COVID-19 diagnostic lab
• March 24 – 29 – We converted our primary research lab into COVID-19 diagnostic lab
• March 29 – Official letter from GoB to become a COVID-19 lab
  – COVID-19 testing starts
• April 02 – 6 phone lines were set up for suspect COVID-19 patients and report delivery/guidance
• Currently
  • Test ~250/day (7% of Bangladesh COVID-19 data)
  • Provide onsite and offsite trainings to hospital on biosafety (PPE use), sample collection and transportation
  • Provide collection logistics (tubes, media/RNA shield/flocked swab) for swab collection
Overview of samples tested to date

(Preliminary data)

No. of cases

31-Mar 1-Apr 2-Apr 3-Apr 4-Apr 5-Apr 6-Apr 7-Apr 8-Apr 9-Apr 10-Apr 11-Apr 12-Apr 13-Apr 14-Apr 15-Apr 16-Apr 17-Apr 18-Apr 19-Apr 20-Apr 21-Apr

Second PCR machine broke

Second PCR machine fixed

Samples tested  Positive cases

CHRF
Prevent Infections, Save Lives
Age distribution of CHRF COVID-19 +/- cases

- 0-4: 19% of all positives, 3.3% of all cases
- 5-9: 21% of all positives, 2.8% of all cases
- 10-14: 14% of all cases, 2.1% of all positives
- 15-19: 14% of all cases, 2.8% of all positives
- 20-24: 34% of all cases, 3.3% of all positives
- 25-29: 38% of all cases, 3.3% of all positives
- 30-34: 38% of all cases, 3.3% of all positives
- 35-39: 38% of all cases, 3.3% of all positives
- 40-44: 44% of all cases, 3.3% of all positives
- 45-49: 23% of all cases, 2.1% of all positives
- 50-54: 32% of all cases, 2.1% of all positives
- 55-59: 18% of all cases, 2.1% of all positives
- 60-64: 21% of all cases, 2.1% of all positives
- 65-69: 19% of all cases, 2.1% of all positives
- >70: 3% of all cases, 2.1% of all positives

No. of cases
Future plans (funded by the Bill and Melinda Gates Foundation)

Objective: To collect data on hospitalization, severity and long-term outcome of pediatric COVID-19 patients admitted in the two largest children’s hospitals in Bangladesh

- Immediate-future plans
  - From 24 April, sample collection forms for symptoms and duration will be filled in majority of the collection sites
  - For children admitted in our hospital, we will conduct daily follow-up
  - From 26 April, we are starting a phone follow-up for pediatric cases prospectively
    - Data on comorbidity, duration of illness, contact history, hospitalization
    - Follow-up calls will continue to gather data on outcome up to 90 days following test results
We shall overcome
COVID-19 in Pakistan
Pediatric Perspective

Global Child Health Task Force

Dr. Asad Ali
Professor, Pediatric infectious Diseases

&

Dr. Faisal Mahmood
Section Head, Adult Infectious Diseases

AGA KHAN UNIVERSITY
KARACHI, PAKISTAN
### COVID-19 Dashboard

**Confirmed Cases:** 10,513

**Active Cases:** 7,952

**Deaths:** 224 (2.1%)

**Recoveries:** 2,337 (22.2%)

#### Case Distribution by Province:

<table>
<thead>
<tr>
<th>Province</th>
<th>Confirmed Cases</th>
<th>Active Cases</th>
<th>Deaths</th>
<th>Recoveries</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJK</td>
<td>51</td>
<td>28</td>
<td>0</td>
<td>23</td>
</tr>
<tr>
<td>Balochistan</td>
<td>552</td>
<td>376</td>
<td>8</td>
<td>168</td>
</tr>
<tr>
<td>GB</td>
<td>290</td>
<td>86</td>
<td>3</td>
<td>201</td>
</tr>
<tr>
<td>Islamabad</td>
<td>204</td>
<td>175</td>
<td>3</td>
<td>26</td>
</tr>
<tr>
<td>KPK</td>
<td>1,453</td>
<td>956</td>
<td>83</td>
<td>414</td>
</tr>
<tr>
<td>Punjab</td>
<td>4,590</td>
<td>3,742</td>
<td>58</td>
<td>790</td>
</tr>
<tr>
<td>Sindh</td>
<td>3,373</td>
<td>2,589</td>
<td>69</td>
<td>715</td>
</tr>
</tbody>
</table>

[Map showing case distribution across provinces]
COVID-19 | Overview

- Total Tests
- Total Confirmed Cases
- Total Deaths
- Total Recoveries

COVID-19 | Daily Tests, Zaieen & Non-Zaieen Distribution

- Zaieen
- Non-Zaieen
- New Deaths
- Tests Done
Challenges/Opportunities

• Limited infrastructure if the disease turns more virulent in children

• Community pediatricians remain at high risk – Need revised Standard Operating Procedures in busy outpatient clinics

• Children as a portal of community transmission, even if the disease is relatively less severe

• Inclusion of children in the vaccine trials.
Rise of COVID-19 in Africa

Africa CDC Dashboard

Cases 25,131
Deaths 1,205
Recoveries 6,576

Map of Cumulative Cases  Map Legend  Citation

Cases by Region

Central  Eastern  Southern  Western  Northern
Figure 1.3 Proportion of urban population living in slums, percent

Source: Based on data from UN Habitat, 2016

Figure 1.4 Access to household handwashing facilities

Source: Based on WASH data from WHO/UNICEF, 2017
**Figure 1.8** HIV/AIDS, prevalence

**Source:** Based on data from Global Burden of Disease Study, 2016

**Figure 1.9** With 1.8 average hospital beds per 1,000 people, hospital beds capacity across Africa is weak

**Source:** Index Mundi from World Health Organization, 2020

**Figure 1.6** Chronic respiratory diseases, prevalence
**Table 1.2** Cost of COVID-19 medical supply response (gap) across Africa, by pandemic scenario

<table>
<thead>
<tr>
<th></th>
<th>A - Unmitigated</th>
<th>B - Mitigation using moderate physical distancing</th>
<th>C - Suppression using intense physical distancing</th>
<th>D - Suppression using intense and early physical distancing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of COVID-19 medical supply response (gap) across Africa, 2020 ($ billion)</td>
<td>$446</td>
<td>$335</td>
<td>$189</td>
<td>$44</td>
</tr>
<tr>
<td>Africa’s current health expenditure allocation, 2020 ($ billion)</td>
<td>$138.87</td>
<td>$138.87</td>
<td>$138.87</td>
<td>$138.87</td>
</tr>
<tr>
<td>Projected percentage increase in required health spending (%)</td>
<td>321.16</td>
<td>240.89</td>
<td>136.09</td>
<td>31.83</td>
</tr>
</tbody>
</table>

*A: Unmitigated (worst case) - no intervention  
B: Mitigation using moderate social distancing - Optimal outcome when epidemic is mitigated through interventions to limit contacts in general population including social distancing (45% reduction in contact rate)  
C: Suppression using intense social distancing (1.6) - Introduce intense social distancing measures that reduce the contact rate in the general population by 75% once 1.6 deaths per million per week trigger is reached  
D: Suppression using intense social distancing (0.2) - Introduce intense social distancing measures that reduce the contact rate in the general population by 75% once 0.2 deaths per million per week trigger is reached  
Source: ECA cost estimates using Imperial College demand figures and various sources for prices (see annex I below)
Potential Impact on GDP in Africa

Figure 2.1 Expected drop in growth from COVID-19 impact, ECA estimates

Source: ECA estimates, 2020