Improving Water, Sanitation and Health at the Grassroots

Global Issues in Water, Sanitation and Health
Forum on Microbial Threats
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“While others are reaching the moon, we are trying to reach the villages.” – Julius Nyerere
TRACHOMA

- Chronic bacterial infection caused by *Chlamydia trachomatis*
- Leading cause of preventable blindness in the world (540 million, or 10% of world’s population, is at risk)
TRACHOMA

- 8 million blind
- 16% of global burden of blindness
- 75% of blind are women
Trachoma is spread by flies, fingers, and fomites.
SAFE Strategy

Surgery
Antibiotics
Face washing
Environment (water/sanitation)
• Ethiopia is the country most highly affected by trachoma in the world
• Amhara Region (population 19 million) has 31% of active trachoma in Ethiopia
ETHIOPIA

Historical & Technical Factors

- Ethiopia has long distinguished history, including poverty and poor sanitation
- Geology and ecology enable dug latrines, cheap available wood
Local health and administrative leaders
Local Lions Club members got on board
Pushed by women’s groups who mobilized their husbands to dig latrines, which became competitive status symbol
Women focused on old tradition that let men defecate in open during the day, but forced women to wait until dark so no one could see them
• Cost of materials: negligible
Commitment vs. Corruption

- Feminist mobilization a barrier
- Kinship mobilization
Originally planned 10,000 in 2004; built more than 89,000 that year and cumulative total of 611,997 up to mid 2008

*2008 data are provisional, January-August
Behavioral Change

- “We’ll never go back [to defecating in the field]!”
• Latrines also reduce spread of ascaris, hookworm, schistosomes, diarrheal diseases
Left: Mare Alehegn of Ethiopia led by her daughter, Enatnesh, following trichiasis surgery.


Right: Three years later, Alehgn’s condition has reversed. Now she describes her surgery as a “second birth” and calls it an “end to the isolation...”
• >50% of a village could be infected simultaneously
• Average incapacitation is 8.5 weeks
• 65% peak school absenteeism
- 1 year incubation
- No animal reservoir
- No vaccine, cure or immunity
- Health education, cloth filters, ABATE®, clean water, case containment
Safe Drinking Water

• Prevents Guinea worm disease, improves school attendance and agricultural productivity
• Prevents diarrheal diseases, trachoma
• If accessible, reduces caloric expenditure and time to gather household supply
**GHANA Historical Factors**

- Northern Ghana neglected since colonial times began (1877), continued after independence (1957):
  - 20% have safe water (1987)
  - 30% literacy (1995)
  - 25% population has access to health services (1995)
GHANA Historical Factors
GHANA Historical Factors

“The past is never dead, it is not even past.”
–William Faulkner
GHANA  Technical Factors

Patterns of Guinea Worm Infestation in Ghana
Guinea Worm Disease in the Physical Environment
(rates per 1,000, Ghana, 1989)

GHANA Guinea Worm Eradication Program
Distribution of 179,556 Cases of Dracunculiasis in 1989
and 3,358 Cases of Dracunculiasis in 2007*

* Provisional
• Ruling vs. Opposition Party

President Jerry Rawlings of Ghana, 1988
Political Factors
• Lawyers of 2 UN agencies
• Major African water project spent US$55 million
  • Got 593 new wells
  • 99 rehabilitated (>75,000 per bore hole well)
• Pressure to “announce” projects for political gain
• Lack of government capacity to monitor water projects
Economic Factors

- Wells are expensive
- Consider alternative strategies (cloth filters, sand filters, etc., if only as interim measures)
Commitment vs. Corruption

- Sham borehole wells 2 feet deep, old parts and pumps
- Monitor new wells and functioning of old
- Fairness in fee for service
Behavioral Factors

- Use the wells (or cloth filters):
  - Tradition
  - Taste
  - Convenience
- Mobilize for hand dug wells
• Put health in the picture, with politics, geology and economics
• Challenge fraud, corruption and indifference
• Keep your eye on the right ball (monitor!)
• Some improvement now trumps perfection later
Guinea Worm Reduction Over Time

1986

2007
Distribution by Country of 9,570 Indigenous Cases of Dracunculiasis Reported during 2007*

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sudan</td>
<td>5,815</td>
</tr>
<tr>
<td>Ghana</td>
<td>3,358</td>
</tr>
<tr>
<td>Mali</td>
<td>313</td>
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<tr>
<td>Nigeria</td>
<td>73</td>
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<tr>
<td>Niger</td>
<td>11</td>
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<tr>
<td>Togo</td>
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</tr>
<tr>
<td>Burkina Faso</td>
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</tr>
<tr>
<td>Cote d'Ivoire</td>
<td>0</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>0</td>
</tr>
<tr>
<td>Benin</td>
<td>0</td>
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<tr>
<td>Mauritania</td>
<td>0</td>
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<tr>
<td>Uganda</td>
<td>0</td>
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<tr>
<td>Cent. African Rep.</td>
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<tr>
<td>Chad</td>
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<tr>
<td>Cameroon</td>
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<td>Senegal</td>
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<td>India</td>
<td>0</td>
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<tr>
<td>Kenya</td>
<td>0</td>
</tr>
<tr>
<td>Pakistan</td>
<td>0</td>
</tr>
</tbody>
</table>

* Excludes 15 cases exported from one country to another, and 4 alleged imported cases of GWD reported by Northern Sudan.

^ Year last indigenous case reported.

Pakistan and India were certified free of the disease in 1996 and 2000, respectively. Senegal and Yemen were certified free of the disease in 2004, and Cameroon and Central African Republic in 2007.
Distribution by Country of 3,313 Indigenous Cases of Dracunculiasis Reported: 2008*

- Sudan (7): 2,518 cases
- Ghana (8): 459 cases
- Mali (8): 259 cases
- Ethiopia^ (8): 38 cases
- Nigeria (8): 38 cases
- Niger: 0 cases

* Provisional: excludes 3 cases imported from one country to another.

(8) Numbers in parentheses indicates monthly reports received, i.e. (8) = January - August

^ The origin of 36 of the cases reported in Ethiopia is unresolved but under investigation. One case was imported from Southern Sudan
Certification of Dracunculiasis Eradication
Status as of January 2008

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

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“Those who say it can’t be done should not interrupt the people doing it.”

--Chinese Proverb