Routine Immunization: Anything but Routine for Child Health

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The Maternal and Child Health Integrated Program (MCHIP)

• USAID Bureau for Global Health’s flagship maternal, newborn and child health program

• Working in well over 30 countries worldwide

• MCHIP supports programming and opportunities for integration in:
  • Maternal, Newborn and Child Health
  • Immunization, Family Planning, Malaria, HIV/AIDS
  • Wat/San, Urban Health, Health Systems Strengthening
Overview of the Presentation

- Major killers of children in developing countries
- Contributions of VPDs to under 5 child deaths
- Traditional, new and under-used vaccines, plus potential vaccines
- Technical elements to sustain routine immunization systems
- Challenges in strengthening routine immunization and new vaccine introduction
- Opportunities to introduce new vaccines smoothly and strengthen immunization programs
- Working groups
The potential of currently available “new vaccines” to prevent major killers of children is greater than ever.

In addition to traditional vaccines, new and under-used vaccines have the potential to prevent a high proportion of these diseases.

A high proportion of pneumonia, meningitis and acute diarrhea with severe dehydration can, today, be prevented through vaccination.
Global U5 Mortality: Role of Vaccine Preventable Diseases (Provisional 2008 data)

8.8 million under five deaths

20% (1.7 million) from vaccine preventable diseases

* WHO/IVB provisional estimates based on Global Burden of Diseases estimates
** WHO/IVB estimates for 2004 based on Global Burden of Diseases estimates
Immunization 101: “Traditional” Vaccines in National Immunization Programs

- **BCG vaccine** – against tuberculosis
- **DTP vaccine** – against diphtheria, tetanus, pertussis (whooping cough)
- **OPV** – against polio
- **Measles vaccine** – against measles
- [Yellow fever vaccine]
- [Hep B vaccine]
“New and Under-Used” Vaccines

- Yellow fever
- Rubella
- Hepatitis B
- Hib (haemophilus influenzae type b)
- Pneumococcal (conjugate)
- Rotavirus
- Meningococcal A (conjugate)
- HPV (human papillomavirus)
- Typhoid
- JE (Japanese encephalitis)

- Someday: Malaria, TB, HIV
- and.....?
Vaccine Pipeline

General scientific/technical certainty

Size of circle indicates number of deaths (400,000 deaths, 2002 data) Left side of circle aligned with expected introduction date

Year/anticipated year of introduction
WHO “Standard” Schedule for Routine Immunization

<table>
<thead>
<tr>
<th>Age of Contact</th>
<th>Vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birth</td>
<td>BCG, OPV-0, Hep B*</td>
</tr>
<tr>
<td>6 weeks</td>
<td>DTP1, OPV1, Hep B*</td>
</tr>
<tr>
<td>10 weeks</td>
<td>DTP2, OPV2, Hep B*</td>
</tr>
<tr>
<td>14 weeks</td>
<td>DTP3, OPV3, Hep B*</td>
</tr>
<tr>
<td>9 months</td>
<td>Measles, Hep B*, YF</td>
</tr>
</tbody>
</table>

* total of 3 doses with timing dependent upon local epidemiology
Global Immunization 1980-2009, DTP3 coverage

global coverage at 82% in 2009

Example of Fluctuating Coverage at Country Level

DPT3 and Measles Coverage Rates, 1985-2007, Uganda

Uganda reported immunization coverage
“Developing”* countries with all districts achieving at least 80% DTP3 coverage, 2008

* 155 developing countries and economies in transition per UN World Economic & Social Survey, 2008 classification

Scenario 1: Low Herd Immunity

Low population immunity
Chance for contagious to meet susceptible is high
Disease spreads fast. Transmission is sustained. Outbreaks are frequent.

- Source: WHO
Scenario 2: High Herd Immunity

High population immunity

Above a certain threshold of population immunity (95% for measles), chance for contagious to come into contact with susceptible is low. Disease spread is limited. Outbreaks are small. This population has herd immunity.

- Source: WHO
Is the immunization coverage enough?

- No,…coverage isn’t enough! Babies and women must be reached with **potent** vaccines in a **timely, safe, effective, efficient** and **affordable** way, before exposure to disease, and with good **quality** services, so that they’ll want to return to complete all their doses.
- As long as kids are born, they need to be vaccinated; so the job’s never finished. **Therefore, we must build sustainable immunization services.**
Challenges for Routine Immunization in Developing Countries

- Access to immunization services – geographical, cultural and financial access
- Capacity building – training and supportive supervision
- Cold chain and logistics – especially for new vaccine introduction
- Injection safety & waste management
- Communication and links with communities
- Funding, mostly for new vaccine introduction
Challenges to Sustain Immunization Services – Access to RI Services

Formative supervision in hard-to-reach area

Poor road conditions
Fast Track to Global Disaster
Newer Vaccines Increase Vaccine Costs Exponentially
The “Hidden” Costs of New Vaccines

- Dry storage space at all levels
- Vehicles, personnel, fuel, and per diem for significantly increased vaccine distribution within the country
- Additional syringes to administer vaccine and, in some cases, for reconstitution
- Additional waste collection and disposal
Pentavalent vaccine in a typical, fully-loaded refrigerator at district level costs 30 times as much (~$45,000) as the refrigerator itself.

Preventive maintenance, timely repair, and replacement of malfunctioning cold chain equipment protects investments in expensive vaccines.

- Source: IMMUNIZATIONbasics, 2008
Impact on Cold Chain: Rotavirus Vaccine

- Source: PAHO
Opportunities to Take Advantage of Special Initiatives to Strengthen Immunization Systems

- GAVI funding for new vaccine introduction, immunization services support and health system support
- Inter-Agency Coordinating Committees and NITAGs
- Technical and financial support from traditional EPI partners and other sources
- Opportunities given by other EPI initiatives to improve routine immunization systems (polio eradication initiative, measles mortality reduction / elimination initiative and neonatal tetanus elimination initiative)
- Integration of some high impact public health interventions
Framework for Prevention & Control of Pneumonia

PROTECT
Children by providing a healthy environment
- Exclusive breastfeeding for six months
- Adequate nutrition
- Reduce indoor air pollution
- Hand washing

PREVENT
Children becoming ill with pneumonia
- Vaccination against measles, pertussis, Spn and Hlb
- Prevention of HIV in children
- Cotrimoxazole prophylaxis for HIV-infected and exposed children
- Zinc supplementation for children with diarrhea

REDUCE PNEUMONIA MORTALITY AND MORBIDITY

TREAT
Children who become ill with pneumonia
- Case management in community, health centre and hospital

Source: Global Action Plan for Prevention and Control of Pneumonia (GAPP), UNICEF/WHO, November 2009
Prevention & Treatment of Childhood Diarrhoea

**REDUCE RISK FACTORS**
Prevent stunting

**PREVENTION**
- Measles and rotavirus vaccination
- Handwashing with soap
- Improved drinking water supply
- Community-wide sanitation
- Promote breastfeeding
- Vitamin A supplementation
- Zinc

**REDUCTION OF DIARRHOEA MORBIDITY AND MORTALITY**

**TREATMENT**
- Oral rehydration therapy
- Zinc
- Continued feeding (including breastfeeding)

Source:
WHO/UNICEF
Report: Diarrhoea: Why children are still dying and what can be done, 2009
USAID Roles in Supporting EPI

- Major contribution to the GAVI Alliance
- Direct contributions to countries through its projects
- Given that, how can it help to shape and implement global immunization agenda?
Work Groups: Directions

- Break into … groups
- With the sheet you are assigned, brainstorm two issues that need to be addressed
  - A. Introduce a new vaccine into a routine Immunization programs in developing countries
  - B. Strengthen and sustain routine immunization systems in developing countries
- You have … minutes
- When you are finished, use the tape provided to attach your paper on the wall.
“Vaccines don’t deliver themselves: any vaccine is only effective as the health system that delivers it”
Thank you!

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