Using Implementation Science to Address Prevention of Mother to Child Transmission of HIV

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The role of Implementation Science in PMTCT

• The scientific and medical advancements in the field of PMTCT over the last decade have been extraordinary

• However, the translation of results obtained in carefully controlled clinical trials into routine services in the field has been met with considerable barriers along the way

• This provides the opportunity and the critical need for implementation research in PMTCT across many disciplines and topics
  – PMTCT programming, integration with MCH services, counseling and testing, infant feeding, community engagement, family planning, primary prevention, stigma, access to health care, health system strengthening, and many more
Estimated Number of Perinatally Acquired AIDS Cases, 1985-2003, United States

Note. Data adjusted for reporting delays and for estimated proportional redistribution of cases in persons initially reported without an identified risk factor.

This bar indicates the range

Year

www.pedaids.org
New WHO guidelines: 2009-2010
The Pearl Study: Coverage Cascade in HIV+ Women

Coetzee D et al. IAS, Capetown, South Africa, July 2009, Abs. WeLBD101
(Study conducted in Cameroon, Cote d’Ivoire, South Africa, Zambia)

Apr 07 – Oct 08

- HIV-positive deliveries (100%)
- Services documented (92%)
- HIV test offered (84%)
- HIV tested (81%)
- Received positive result (74%)
- Mother received NVP (71%)
- NVP in cord blood (57%)
- Completed prophylaxis (50%)
Individual treatment facilities

- Successful Prophylaxis
- PMTCT not documented
- Testing not offered
- Testing not accepted
- Positive result not received
- Maternal NVP not dispensed
- Not adherent
- Infant dose not administered
PMTCT Cascade: Most Critical Thing for PMTCT is Number of Women Completing Cascade

P. Barker, WHO Mtg Nov 2008

100 HIV+ mothers

Enter into program

Missed - no PMTCT

Overall Program Effectiveness (early MTCT)

attend ANC clinic 92%

Counseled and tested for HIV, CD4 75%

Get ARVs (pre- and perinatal) 50%

Enter into program

92

68

34

8

32

66

sdNVP alone: 22.5% tx

sdNVP +ART: 19.5% tx

AZT/sdNVP: 17.5% tx

HAART: 17.1% tx

CD4 >200 / CD4 <200
sdNVP / HAART (8% MTCT): 3 infected
AZT+sdNVP/ HAART (3% MTCT): 1 infected
HAART all (2% MTCT): 0.6 infected

No ARV (25% MTCT): 16.5 infected
PMTCT Cascade: Most Critical Thing for PMTCT is Number of Women Completing Cascade

Change cascade efficiency

attend ANC clinic 95%

Counseled and tested for HIV, CD4 95%

Get ARVs (pre- and perinatal) 95%

100 HIV+ mothers

Enter into program

95

90

86

Missed - no PMTCT

5

10

14

Overall Program Effectiveness (early MTCT)

sdNVP alone: 17.3% tx

sdNVP + ART: 10.4% tx

AZT/sdNVP: 6.1% tx

HAART: 5.2% tx

No ARV

(25% MTCT): 3.5 infected

sdNVP / HAART (8% MTCT): 6.9 infected

AZT+sdNVP/ HAART (3% MTCT): 2.6 infected

HAART all (2% MTCT): 1.7 infected
Follow-up rates

![Bar graph showing follow-up rates for different groups (Total HIV Positive, Women ARV, Infant ARV, Infants tested at 6 weeks, Infants tested at 9 months, Infants tested at 18 months). The graph indicates that the number of infants tested at 18 months exceeds 100%, likely due to multiple tests or follow-up visits.](http://www.ped AIDS.org)
Photos by:
Jon Hrusa
James Pursey

Couples Counseling ANC

Infant Nutrition Support

Family Care and Support

Peer Psychosocial Support
<table>
<thead>
<tr>
<th>Step</th>
<th>Count</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed infants</td>
<td>4226</td>
<td></td>
</tr>
<tr>
<td>EID drawn</td>
<td>4099</td>
<td>97%</td>
</tr>
<tr>
<td>Results returned from lab</td>
<td>2895</td>
<td>70%</td>
</tr>
<tr>
<td>Tested positive</td>
<td>449</td>
<td>15%</td>
</tr>
<tr>
<td>Received results</td>
<td>230</td>
<td>51%</td>
</tr>
<tr>
<td>Enrolled in Care</td>
<td>200</td>
<td>87%</td>
</tr>
<tr>
<td>Initiated on ARV</td>
<td>178</td>
<td>89%</td>
</tr>
</tbody>
</table>

Overall, 633 infected children = 71% identified, 28% treated.
Areas of need for research

- How to reach all HIV infected pregnant women with PMTCT services?
- How to maximize maternal and infant PMTCT retention in services and adherence to PMTCT regimens
- How to most effectively deliver the PMTCT regimens
- How to best integrate PMTCT services with MCH services
- What is the effectiveness of PMTCT programs on HIV free survival in infants and survival of their mothers
UNICEF OR Consultation

- UNICEF and WHO, in collaboration with GWU and EGPAF held a technical consultation on operational research on the PMTCT and paediatric HIV/AIDS care, support and treatment (CST) on 9-11 September 2009 in Washington DC.

- More than 70 representatives from international and donor organizations, government, highly impacted countries, implementing organizations, foundations, and academic institutions participated.

- Objective - to define the highest priority operational/implementation research questions that need to be addressed to promote the rapid global scale up of PMTCT and Paediatric HIV CST programs
Top Five priority Research questions

1. What are effective strategies for provision and monitoring of CD4 testing and antiretroviral treatment, if eligible, for pregnant and breastfeeding women?

2. For post partum prophylaxis during breast feeding: What are effective strategies for implementation; and what is the comparative effectiveness of infant vs maternal prophylaxis?

3. What is the feasibility and impact of providing HAART for eligible pregnant women in ANC?

4. Task shifting: What is the effect and impact of tasking shifting on PMTCT & Paed CST scale up in various settings, at various levels of the health care system and amongst different cadres of health workers

5. What are the interventions at the program, facility, community and household levels that have greatest impact on retention in care, especially in the first 12 months of life?
Top Five priority Research questions- Ped C&T

1. What is the optimal model for delivery of comprehensive care and treatment of HIV-infected infants and children?

2. What are the best models to provide services to exposed infants?

3. What are the interventions at the program, facility, community and household levels that have greatest impact on retention in care, especially in the first 12 months of life?

4. What are the best interventions to support infant feeding recommendations?

5. How can the maximum number of HIV-infected infants and children be identified early?
Top Five priority Research questions- MNCH integration

1. What is the feasibility and impact of integrating PITC services and care for HIV-exposed infants into routine MCH services?

2. What is the feasibility and impact of providing HAART for eligible pregnant women in ANC?

3. What is the appropriate timing, content and setting/MCH service for FP services to provided to HIV+ women?

4. How can community health workers and peers increase utilization of MNCH and HIV/AIDS services?

5. What are the benefits, challenges, cost-effectiveness, and effects on service utilization of integrating PITC into EPI services for children <5?
Top Five priority Research questions- Health Systems

1. **Task shifting:** What is the effect and impact of tasking shifting on PMTCT & Paed CST scale up in various settings, at various levels of the health care system and amongst different cadres of health workers?

2. **Data:** What is the effect of different approaches / models to data collection on data quality and data use at all levels of the health care system?

3. **Governance:** What is the effect of innovative approaches for improving sub-national planning and management of health services, using PMTCT and Paed CST as tracer interventions?

4. **Financial accountability and management:** What are cost-efficient models for delivering PMTCT and paed CST within the broader context of MNCH services?

5. **Logistics:** What is the impact of various approaches to supply chain management on PMTCT services / scale up (availability .... outcome)?