Leveraging Existing Sentinel Systems for monitoring safety and effectiveness of vaccines in resource-limited countries

Alex Dodoo

Director, WHO Collaborating Centre for Advocacy and Training in Pharmacovigilance, Centre for Tropical Clinical Pharmacology & Therapeutics, University of Ghana Medical School, Accra, Ghana
Outline

• The challenges to safety studies in RLC
• HDSS Sites
• INDEPTH Network  
  – History, Funding, Potential
• The INESS model
• Conclusions
The issues and the challenges

• Increasing number of vaccines being deployed in resource limited countries (RLC)
  – Sometimes used alone in those settings
  – Different immunization schedules
  – Vaccine usually pre-qualified and procured through UNICEF/GAVI
  – Focus on maintenance of cold chain
  – Rarely is there a focus on safety
    • Vaccine associated paralytic polio the exception

• What is the state of pharmacovigilance and AEFI monitoring in these settings?
Country classification (by income)

http://maps.grida.no/go/graphic/country-income-groups-world-bank-classification
Global PV map (www.who-umc.org)

104 Official Member Countries (dark blue)
30 Associate Members (medium blue)
Income status vs. pharmacovigilance activity
Summary of the issues according to conventional wisdom

- Large numbers of vaccines deployed
- Weak or absent safety monitoring activities
- Lack of funds and technical expertise
- Little experience in safety studies and almost no experience in long term follow up studies
  - Health system and constant migration make long term studies very difficult
- New vaccines (e.g. RTS) in the pipeline need rigorous monitoring
Despite this ...

• Experience exist on safety studies across Africa

• Some vaccine safety work undertaken
  – Safety monitoring of sulphadoxine-pyrimethamine during IPTi in 6 districts of the Upper East Region of Ghana
    • Active follow-up to collect events post routine EPI immunization
Your report of any suspected adverse events to any medicine or vaccine will go a long way to help us keep our children healthy and make all medicines and vaccines used in Ghana as safe as possible.

All reports will be treated as confidential information.

Please return this form to:

.................................................................

.................................................................

.................................................................

Or University of Ghana Medical School

In case of any queries please contact the Centre for Pharmacovigilance University of Ghana Medical School
P. O. Box 4236, Accra
Telephone (daytime): 021-675885 (daytime)
(24 hour answer phone and fax) 021-668219
Email: info@pharmacovigilanceafrica.org

<table>
<thead>
<tr>
<th>Name of child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Folder Number</td>
</tr>
<tr>
<td>Date of Birth</td>
</tr>
<tr>
<td>Mother’s name</td>
</tr>
<tr>
<td>Father’s name</td>
</tr>
<tr>
<td>Contact details</td>
</tr>
</tbody>
</table>

In strict confidence
### Diary/AE Card - Inner Fold

<table>
<thead>
<tr>
<th>Date:</th>
</tr>
</thead>
</table>

#### Vaccine Given

- Penta 2 [ ]
- Penta 3 [ ]
- Measles [ ]

#### Was SP given for IPTi?

- Yes [ ]
- No [ ]

**Symptoms recorded - by Parent**

**Tick/thumb-print/tick when you see any of these**

<table>
<thead>
<tr>
<th>Vomiting</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Crying</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fever</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Injection Site Abscess</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other</th>
<th></th>
</tr>
</thead>
</table>

#### Details of Adverse Event - Health Worker’s Entry

- **Date event started:** ............
- **Date event stopped:** ............

**Adverse reaction observed** (please tick all that apply)

- [ ] Vomiting
- [ ] Nausea
- [ ] Itching
- [ ] Skin rashes
- [ ] Diarrhoea
- [ ] Headache
- [ ] Mouth sores
- [ ] Abdominal pains
- [ ] Dizziness
- [ ] Insomnia
- [ ] Dark-coloured urine
- [ ] Other (please specify):

**Description of event:**

**Treatment or action taken:**

**Outcome** (please tick all that apply)

- [ ] Recovered
- [ ] Ongoing
- [ ] Required/prolonged hospitalisation
- [ ] Permanent disability
- [ ] Life Threatening
- [ ] Death
- [ ] Other outcome (please specify)

**Name of Reporter:**

**Tel:**

**Health Facility & District:**

**Date:**

**Signature:**
Similar studies elsewhere..

• PV activity is increasing across Africa
• Most countries have relatively young and maturing systems
• Several countries undertaking cohort studies
• Some countries deployed “active monitoring” systems for H1N1 vaccine
• Potential exists for rigorous studies in several resource-limited countries
• HDSS/Sentinel sites have huge potential
• Health demographic surveillance system (HDSS)
  
  – Set **field** and **computing** operations to handle the **longitudinal** follow-up of well-defined entities or primary subjects (individuals, households, and residential units) and all related demographic and health outcomes within a clearly circumscribed geographic area.

  – DSS follows up the entire population of such a geographic area (mostly in administrative health districts.
INDEPTH
www.indepth-network.org

• The International Network for the Demographic Evaluation of Populations and Their Health in Developing Countries

• A global network of members who conduct longitudinal health and demographic evaluation of populations in low- and middle-income countries (LMICs).

• Aims to strengthen global capacity for Health and Demographic Surveillance Systems (HDSS), and to mount multi-site research to guide health priorities and policies.
Brief History of INDEPTH

• **1997-1998**: Series of meetings (Wits University and London School; Heidelberg University; Rockefeller Foundation, Bellagio; Ghana MOH, Navrongo)

• **1998**: 9-12 Nov – Dar es Salaam, Tanzania – formal constitution. Coordinating Committee

• **2000**: First Mortality Data Analysis Workshop, Ouagadougou

• **2000**: 1\textsuperscript{st} AGM Johannesburg

• **2001**: Development of Strategic Plan 2002-2004 (BCG)

• **2002**: 21-25 Feb – Addis Ababa, Ethiopia (2\textsuperscript{nd} AGM) – 1\textsuperscript{st} strategic plan adopted (incorporated body)

• INDEPTH – not-for-profit international NGO registered in Ghana; Has US 501(c)3 charity status
Currently 42 sites in 19 countries
29 sites in Africa
12 sites in Asia
1 site in Oceania

Over 2,000,000 people under surveillance

Countries with Demographic Surveillance System (DSS)
Field Sites participating in the INDEPTH Network
What INDEPTH brings to the table

• The strength of numbers
  – INDEPTH has 42 health and demographic surveillance system (HDSS) members in 19 countries - 29 in Africa, 12 Asia and 1 in Oceania.
• Existing well-established network
• Potentially large participant population
• Intervention comparisons in different sociological, cultural and ecological settings
• A platform for evaluation of new intervention strategies across wide range of conditions
What INDEPTH brings to the table

• Mutual strengthening of capacity and sharing experiences and human resources across sites
• Commitment to working together in a standardized way
• Well-developed capacity to conduct longitudinal studies on defined individuals and populations
• Single entry point for funders to conduct multi-centre studies
Leveraging existing sentinel sites for vaccine safety studies Fondation Merieux Annecy 29th March 2011
INDEPTH’s Mission

To harness the collective potential of the world's community-based longitudinal demographic surveillance initiatives in resource constrained countries to provide a better, empirical understanding of health and social issues, and to apply this understanding to alleviate the most severe health and social challenges.
It is all about making people count....
Funding

• INDEPTH is currently funded by
  – National Governments (through their support for the DHSS sites)
  – Bill & Melinda Gates Foundation
  – DFID
  – Hewlett Foundation
  – IDRC
  – Rockefeller Foundation
  – Sida/GLOBFORSK
  – Wellcome Trust
  – NIH/WHO
  – Other Funders....
INDEPTH and Safety and Effectiveness Studies

• INDEPTH sites provide opportunity for several studies

• INESS represents first major opportunity to prove the utility of DHSS for safety studies

• Discussions also being held currently on developing the protocols for using INDEPTH sites for phase IV studies for RTSS and other vaccines
INESS GOAL

• The INESS **platform** aims to provide national, regional and international health decision makers with independent and objective evidence on the **safety** and **effectiveness** of new antimalarial drugs as a basis for malaria treatment policy in Africa.
INESS Objectives

• Develop and maintain a Phase IV effectiveness and safety studies platform in Africa

• Assess the effectiveness and safety of new malaria treatments – and the factors that determine effectiveness and safety – in real life settings in Africa

• Undertake research in line with comprehensive pharmaco-vigilance in the context of African health systems
Map showing countries under INESS study in Africa

1- Tanzania
2- Ghana
3- Mozambique
4- Burkina Faso
Safety Monitoring in INESS

• Spontaneous reporting ("Yellow card system")
  – Spontaneous Adverse Event Reporting System (SAERS)

• Active follow-up
  – Cohort Event Monitoring

• Linked database approach
  – In collaboration with London School of Hygiene and Tropical Medicine

• Pregnancy
  – Pregnancy Registers [Using protocol developed by WHO/TDR]
Where are we?

- INESS modules on efficacy, access, targeting accuracy, provider compliance, adherence, acceptability, cost and cost effectiveness, safety in progress
  - Symposium at ASTMH 2011
- Two products being evaluated. Two new products to be deployed shortly
- Dissemination and publication
- INESS platform to be used for RTSS
Conclusion

• INDEPTH DHSS sites have well developed systems and procedures for vaccine safety studies
• DHSS under regular continuous studies and can be utilised for retrospective studies
• Existence of “background data”
• DHSS taking part in INESS all (being) linked together (biometrics)
• Ability to conduct longitudinal studies on whole populations
• Ability to undertake data linkage studies
Leveraging existing sentinel sites for vaccine safety studies Fondation Merieux Annecy 29th March 2011

Thank You

Contact details:
alexooo@yahoo.com Or alex.dodoo@who-umc.org

Leveraging existing sentinel vaccine safety studies Fondation Merieux Annecy 29th March