Session 5: Yellow Fever

SAGE will receive the report of the SAGE working group on yellow fever vaccines and recommendations for endorsements.
Members SAGE Working Group on YF vaccines

C. Akoua-Koffi, Virologiste, Cote d'Ivoire
A. Barrett, Virologist, USA
L. Dixin, Virologist, China
E. Gotuzzo, Clinician and YF specialist, Peru
P. Kusmiaty, Laboratory specialist, Indonesia.
M. Neil, Health Information System, USA
M. Niedrig, Virologist, Germany.
E. Staples, Epidemiologist, USA
C-A. Siegrist Immunologist, Switzerland.
P. Tharmaphornpilas. Epidemiologist, Thailand
O. Tomori Nigeria, Virologist, Nigeria
P. Vasconcellos, Virologist & Epidemiologist, Brazil
To review evidence & prepare recommendations for SAGE endorsement on the use of YF vaccines in order to update the 2003 WHO position

Specifically, the WG was to review the
- need for booster doses every 10 years to maintain protection against YF disease
- Interference between YF and other co-administered vaccines
Task & TORs of Working Group

• safety of YF vaccine in selected special populations, *(persons >60 years old, HIV-infected, or with other immunocompromising conditions, pregnant women, lactating women, specifically the safety of vaccine exposure in their breastfed infants)*

• Impact of vaccination strategies on control of yellow fever *(routine vaccination versus outbreak control, combined routine immunizations and preventive campaigns)*

Held 2 face-to-face meetings (Apr. 2012 & Jan. 2013) and a final teleconference in Mar. 2013

The WG reviewed published, peer-reviewed studies as primary source of data, and relevant unpublished data, available to WHO.
4 Presentations

I. Introduction and status report on yellow fever control
   *O. Tomori*

II. Evidence review with respect to the duration of protection and vaccine safety in special populations,
   *E. Staples*

III. Other evidence reviewed by the SAGE working group.
   *A. Barrett*

IV. Proposed recommendations. *O. Tomori,*
Introduction and status report on yellow fever control

O. Tomori
YF Endemic zones

SOUTH AMERICA

AFRICA
YF Incidence & Geographical Distribution
1948-2012
YF: A never-ending re-emerging disease

- YF re-emerged, mid ‘80s
  - Nigeria, ‘87-’92: >116,000 cases
  - Niger, 1990

- Epidemics in newly affected areas
  - KEN - 1992
  - GAB - 1994
  - CAR - 2008
  - UGA - 2010/2011
  - CAE, DRC, CHA, SUD - 2012

Reported YF outbreaks, 1980-2010

Source: Imperial College London, 2012  WHO
1987: >116,000 cases
1992: >5,000 died
In Darfur - 2012

Darfur, Yellow Fever epidemic, 2012

849 cases - 171 deaths
YF - 34 Endemic Countries 2005 GAVI Initiative

12 countries covered by mass vaccination campaigns

22 countries in red remain at risk of YF epidemics
Achievement of the 2005 Initiative - 1

- 90 million people vaccinated
- No YF epidemics in WA since 2006

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Vaccinated (in million)</th>
<th>Coverage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Togo</td>
<td>2007</td>
<td>3.6</td>
<td>98</td>
</tr>
<tr>
<td>Senegal</td>
<td>2007</td>
<td>3.1</td>
<td>99</td>
</tr>
<tr>
<td>Mali</td>
<td>2008</td>
<td>5.9</td>
<td>99</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>2008</td>
<td>7.6</td>
<td>99</td>
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<tr>
<td>Cameroon</td>
<td>2009</td>
<td>7.5</td>
<td>99</td>
</tr>
<tr>
<td>Benin</td>
<td>2009</td>
<td>6.3</td>
<td>99</td>
</tr>
<tr>
<td>Liberia</td>
<td>2009</td>
<td>2.9</td>
<td>99</td>
</tr>
<tr>
<td>Sierra Leone</td>
<td>2009</td>
<td>4.1</td>
<td>96</td>
</tr>
<tr>
<td>Guinea</td>
<td>2010</td>
<td>6.0</td>
<td>89</td>
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<td>Côte d'Ivoire</td>
<td>2011-12</td>
<td>15.4</td>
<td>84</td>
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<td>Ghana</td>
<td>2011-2</td>
<td>7.6</td>
<td>88</td>
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<tr>
<td>CAR</td>
<td>2010-11</td>
<td>2.7</td>
<td>90</td>
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YF Preventive campaign achieved
Achievement of the 2005 initiative - 2

*Increase vaccine production and supply*

Vaccine demand and supply

<table>
<thead>
<tr>
<th>Year</th>
<th>Production capacity</th>
<th>Vaccine demand</th>
<th>Vaccine production</th>
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<tbody>
<tr>
<td>2001</td>
<td>40, 34.2</td>
<td></td>
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<tr>
<td>2009</td>
<td>115, 105</td>
<td>73</td>
<td>62</td>
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<td>2010</td>
<td>120, 132</td>
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<td>120, 67</td>
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<tr>
<td>2012</td>
<td>120, 87</td>
<td>69</td>
<td></td>
</tr>
</tbody>
</table>

Two manufacturers | Four manufacturers
YF Strategic Framework 2013-2020

- Identify & prioritize at risk areas through Field Risk Assessment
- Define target population
- Plan and conduct mass vaccination campaign
- Strengthen EPI
- Vaccine Forecast
- Vaccine Production & supply

- Endorsed by TFI in December 2012
- AFRO to submit a YF Control resolution to 2014 RC
YF Strategic framework 2013-2020

- Objective: to protect 155 m people and eliminate YF epidemics for next 30-40 years

- Estimated cost: $290 million USD
  - $160m already committed (Nigeria),
  - $130m needed
Specifically, SAGE will be asked to:

- Reconsider the need for booster doses every 10 years;

- Review the safety profile of the vaccines and update the recommendations on safety issues with respect to immunization of HIV infected and other immunocompromised populations, pregnant or lactating women, people over 60 years old and in context of viscerotropic and neurological diseases;

- Review the role of RI versus outbreak control;

- Review the impact of the combined vaccination strategy (routine immunization and preventive campaigns);

- Review of interference between yellow fever and other vaccines and co-administered vaccination & identify critical research questions.