SPECIAL EDITION OF THE IB-VPD BULLETIN
Independent Strategic Review of the Global Surveillance Network

The World Health Organization (WHO) produces this Global Invasive Bacterial Vaccine Preventable Diseases (IB-VPD) Information and Surveillance Bulletin twice a year to share activities and data from the WHO-coordinated global sentinel hospital surveillance network with partners. This special edition summarizes the conclusions and recommendations of a strategic review of the surveillance network that was conducted during 2013.

New format for global IB-VPD information and surveillance bulletin
In collaboration with the International Vaccine Access Center at Johns Hopkins University, WHO has been working to improve this global bulletin and the WHO surveillance website. This edition of the bulletin introduces a new format; additional changes will be made in 2014.

The strategic review meeting, Geneva, Switzerland, September 2013

TABLE OF CONTENTS

- Strategic Review of the WHO-Coordinated Global IB-VPD Sentinel Surveillance Network
  - Purpose of the review..................................................2
  - Key findings........................................................................2
  - Categorization of sentinel sites.......................................3
  - Key conclusions and recommendations from the Strategic Review...............................5
- Surveillance Data Reporting Calendar ..................7
- Acknowledgements.........................................................7
- WHO IB-VPD Surveillance Website ......................7
Strategic Review of the WHO-Coordinated Global IB-VPD Sentinel Surveillance Network

Purpose of the review
In 2008 existing local and regional surveillance networks were brought together into a WHO coordinated global sentinel hospital surveillance network. The network’s objectives were to document presence of disease, describe disease epidemiology, provide data for inclusion in disease burden estimation in the prevaccine introduction period, as well as to assess disease trends over time and to monitor vaccination programme impact during the post-vaccine introduction period. In February 2013, WHO under the oversight of its informal Technical Advisory Group for new vaccines surveillance (iTAG), initiated a strategic review of both surveillance networks to determine whether the objectives were met, determine what measures were needed to fill gaps and enhance performance, and to consider how the networks could be made more fit-for-purpose to meet the evolving surveillance objectives. Since many countries have now introduced Hib and/or pneumococcal conjugate vaccine, the focus is shifting from having data for vaccine introduction decisions to documenting impact. The review consisted of surveillance data analyses; questionnaires to obtain national perspectives on the value and performance of the surveillance system; independent reviews of the laboratory activities and the data management; review of the published literature and GAVI applications to evaluate whether national surveillance data had been used in vaccine introduction decision making; internal review of WHO activities and resource availability to support activities.

Key findings
In 2008, the IB-VPD network comprised 36 reporting countries (69% GAVI-eligible) with 91 sites (60% in GAVI countries) that enrolled 16,124 children with meningitis and 20,098 children with pneumonia/sepsis. By 2012 the network expanded to include 58 reporting countries (79% GAVI-eligible) with 150 sites (70% in GAVI countries) that enrolled 20,098 children with meningitis and 35,480 children with pneumonia and sepsis (Figure 1.). Sixty-one of 65 countries that reported data during 2008 to 2012 documented presence of pneumococcus (Figure 2.).

Figure 1. WHO Member States that reported to the global Invasive Bacterial Vaccine Preventable Disease sentinel surveillance network, 2012
Categorization of Sentinel Sites

In order for the strategic review to uniformly assess all sites, sites were categorized based on the following:

- **New sites:** site began reporting in 2011 or 2012;
- **A Sites:** met both of the following criteria:
  - Reported data in ≥ 11 months per year for at least two years during 2010-2012; and
  - Enrolled ≥ 100 suspected meningitis cases per year for at least two years during 2010-2012 (tier 1) or enrolled ≥ 500 suspected meningitis/pneumonia/sepsis cases per year for at least two years during 2010-2012 (tier 2).
- **B Sites:** met both of the following criteria:
  - Reported data in ≥ 10 months per year for at least two years during 2010-2012; and
  - Enrolled a total of ≥ 100 suspected meningitis cases during 2010-2012 (tier 1) or enrolled ≥ 500 suspected meningitis/pneumonia/sepsis cases during 2010-2012 (tier 2).
- **C Sites:** Sites that improved in consistency of reporting and case enrolment between 2011 and 2012 but did not meet the criteria of A or B sites.
- **D Sites:** All other sites.

Sites that received financial support (e.g., sites in GAVI-eligible countries), in general, enrolled more cases and reported more regularly to WHO. Excluding the 37 new sites, 48 (52%) of the 93 GAVI sites conducting meningitis surveillance were categorized as A, B, or C sites while only 10 (20%) of the 51 non-GAVI sites were in these three categories (Table on following page). Among the 34 category A sites conducting meningitis surveillance, 32 (94%) were located in GAVI-eligible countries.

1 Year-to-year variability in the number of reporting countries and sites exists due to reasons including in-country conflict, and political change.
The strategic review assessed in detail data from the Category A sites. Figures 3-5 present examples of data from these sites including the:

- monthly distribution of cases which shows evidence of some seasonal variability;
- percentage of probable bacterial meningitis cases with a vaccine preventable organism identified; and
- percentage of suspect pneumonia cases with a known clinical outcome that died.
Key Conclusions and Recommendations from the Strategic Review

The findings of the strategic review indicated that the IB-VPD network met the original 2008 objectives for documenting presence of disease, a few countries notably Mongolia and Brazil, used surveillance as a platform to conduct special studies, and several countries used the surveillance data to inform vaccine introduction decisions. Capacity for conducting surveillance had been strengthened for invasive bacterial diseases, including for diseases that were not the focus in this initial phase of surveillance, such as typhoid detection. Some countries had at least 2 years baseline data of pneumococcal isolates and 1 year post-PCV introduction data and were considered to have the potential to document the impact of vaccination through the surveillance system. In others the capacity built for systematically enrolling cases as well as collecting clinical and laboratory information may be used to design and implement special studies to document the impact of vaccination. The laboratory network assessment suggested that countries, regions and HQ were not working together as a network. It was felt that while the technical support provided to the sentinel site laboratories was adequate and the external quality assurance programme was a commendable step, that overall laboratory network management could be improved.

The IB-VPD programme is at a critical juncture in its development, and decisive changes will be necessary to produce high-quality data to make informed decisions and to document the impact of vaccination. It was recognized that building a strong and effective IB-VPD surveillance network is both complex and challenging. The overall opinion amongst all partners was a strong desire to continue strengthening the network; however, it was agreed that the quality of the network must be urgently improved, and that both technical and financial support should be targeted to a smaller number of sites, selected using defined quality criteria and whose performance is regularly monitored using a performance monitoring framework.

Furthermore, it was agreed that collection and sharing of case-based data is essential to conduct the necessary data analysis, interpret the results and to monitor and evaluate performance.
Recommendations for the IB-VPD Network Size and Scope

- Network participation requires meeting minimum data quality standards regarding consistent reporting, enrolment of cases, laboratory, and surveillance performance indicators. In principle, all (GAVI and non-GAVI eligible) countries should be encouraged to participate in the network; however, network size may need to be limited as WHO support to is subject to financial and human resource constraints;
- In the coming year, the current number of sites in each country should not be expanded unless there is a compelling reason to do so and only sites that meet the established funding criteria should receive funding in 2014;
- During early 2014, additional work is required to clearly define longer-term network objectives, as well as performance and funding criteria. Detection of a minimum number of pneumococcal cases per site per year in countries which have not introduced PCV should be included as a metric. Additionally, sites should be further categorized as:
  - ‘Fully recognized site’: site has been assessed within the past 2 years using the WHO standardized assessment tool, and is providing quality data for measuring vaccine impact (in pre-PCV introduction countries) or for monitoring serotype epidemiology (post-PCV introduction countries);
  - ‘Supported site’ site receives funding from WHO, agrees to share case-based data on a quarterly basis, and is either a fully recognized site or working towards that; and
- Networking should be strengthened to share resources and to enhance laboratory collaboration with measles/polio surveillance efforts.

Recommendations for sentinel sites

- Ensure sites meet a definition of a sentinel site so surveillance objectives can be met;
- Initiate zero reporting to enable differentiation between no cases enrolled or no report submitted to WHO;
- Develop strategies to improve performances at all sites (GAVI and non-GAVI) based on findings from monitoring and evaluation of the surveillance system; and
- Prioritize site assessments using external reviewers, MoH, local institutions, etc.

Recommendations for data management and dissemination

- Institute a common case-based data system that shares standardized data across sites/regions/reference labs/HQ, with real-time verification and analysis capacity, and with improved data quality;
- Strengthen data management capacity for data analysis, interpretation and dissemination at all levels; and
- Modify the WHO Global Bulletin to show all reporting countries but limit analysis to a subset of sites reporting quality data, including reporting for at least 12 months and enrolling a minimal number of cases.

Recommendations for the IB-VPD laboratory network:

- Conduct in-depth Regional reviews of laboratory networks function and output to identify region-specific issues and provide region-appropriate priority activities;
- Reduce the number of participating network laboratories to more closely match programme capacity to fully support and supervise these laboratories to an extent that guarantees confidence in reported laboratory results;
- Review and revise the roles and responsibilities of WHO Regional and Global laboratory coordinators to place more emphasis on active management of network performance;
- Every effort should be made to assess every laboratory at least once each year;
- Continue the external quality assurance, and ensure quality control (all positive specimens and 10% sample of negative specimens should be submitted in a ‘blinded’ fashion for RRL testing) with data analysis to validate test and laboratory performance;
- Report serotype/serogroup data at least twice yearly to WHO HQ and more frequently to ROs to enable more prompt detection of problems with subsequently actions to improve quality;
- Standardize sample selection for serotyping/grouping; and
- Link case-based clinical and epidemiological data from sentinel sites to local laboratory results and polymerase chain reaction results as well as serotype/group data from RRLs, which may require modification of existing data management systems.

In January 2014, WHO will develop a Performance Management Framework for the implementation of these recommendations from the strategic review.
# Surveillance Data Reporting Calendar

Following the recommendations from the strategic review, data reporting to WHO headquarters (HQ) will increase from twice annually to quarterly during 2014. The new reporting calendar for the WHO coordinated global sentinel hospital surveillance networks is below:

### Global Invasive Bacterial Vaccine Preventable Disease (IB-VPD) Sentinel Hospital Surveillance Network

## Data Reporting and Dissemination Schedule

<table>
<thead>
<tr>
<th>Data Reporting Schedule</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Report from</td>
<td>Report to</td>
</tr>
<tr>
<td>Sentinel site</td>
<td>National Level and WHO Regional Office</td>
</tr>
<tr>
<td>Regional Reference Laboratory</td>
<td>WHO Regional Office</td>
</tr>
<tr>
<td>WHO Regional Office</td>
<td>WHO Headquarters</td>
</tr>
</tbody>
</table>

## Detailed Quarterly Reporting Schedule of Regional Offices to WHO Headquarters

<table>
<thead>
<tr>
<th>Submission Date</th>
<th>Data for the period of*</th>
<th>RRL Serotype/Serogroup data by*</th>
</tr>
</thead>
<tbody>
<tr>
<td>31-Jan</td>
<td>PY and PPY</td>
<td>CY and PY</td>
</tr>
<tr>
<td>30-Apr</td>
<td></td>
<td>CY and PY</td>
</tr>
<tr>
<td>31-Jul</td>
<td></td>
<td>CY and PY</td>
</tr>
<tr>
<td>31-Oct</td>
<td></td>
<td>CY and PY</td>
</tr>
</tbody>
</table>

## Data Dissemination by WHO Headquarters

<table>
<thead>
<tr>
<th>IB-VPD data summary prepared and feedback provided to ROs by</th>
<th>Global NUVI bulletin published by</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st week of March</td>
<td>31-Jul</td>
</tr>
<tr>
<td>1st week of June</td>
<td></td>
</tr>
<tr>
<td>1st week of September</td>
<td></td>
</tr>
<tr>
<td>1st week of December</td>
<td>31-Jan</td>
</tr>
</tbody>
</table>

*Each reporting period should include updated/revised data from previous months.

Note: PPY = Previous Previous Year, PY = Previous Year, CY = Current Year

## Acknowledgements

WHO gratefully acknowledges the dedicated efforts of the numerous individuals and organizations involved with compiling this surveillance information, including Ministries of Health, sentinel hospitals, as well as the network of global, regional and national reference laboratories. WHO also gratefully acknowledges the financial support from GAVI that is provided to GAVI-eligible countries to conduct this surveillance.

Please email comments to Dr. Mary Agócs (agocsm@who.int).

## WHO IB-VPD Surveillance Website