

Meeting report
Developing Country Vaccine Manufacturers Network (DCVMN),
26–27 April 2001, Bandung, Indonesia

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1. GAVI, vaccine supply and local production

The Global Alliance for Vaccines and Immunization (GAVI) [1], launched in January 2000, has as central mission to protect children of all nations and of all socio-economic levels against vaccine-preventable diseases by globally achieving sustainable national immunization programs with vaccines of known good quality.

To raise new resources to this end, a Global Fund for Children's Vaccines (GFCV) was created early 2000, which now totals more than US\$ 1 billion for 2001–2005 [2]. This substantial Fund is predominantly used to purchase new and under-used vaccines for low-income countries, in particular, vaccines against hepatitis B (HBV) and *Haemophilus influenzae* type b (Hib), procured mainly from the international pharmaceutical industry.¹

The Alliance has accomplished much in its first year of operation [3], but it is now also increasingly recognized that GAVI has yet to resolve two major impediments to achieve its mission: (1) work out specific arrangements for the three largest countries India, China and Indonesia, together representing over 40% of the world population, and (2) develop a policy to ensure sustainable supply of quality

vaccines once the initial Fund, established with a 5-year commitment, is exhausted.

For both challenges, local production of vaccines in developing countries will be an essential mechanism, as was concluded at a meeting of the Developing Country Vaccine Manufacturers Network (DCVMN) held on 26–27 April 2001 in Bandung, Indonesia.

This meeting was hosted by PT Bio Farma, Indonesia's sole producer of vaccines. As one of the several DCVMN which has obtained a WHO pre-qualification status for bacterial and viral EPI vaccines, Bio Farma has gained worldwide recognition as a vaccine supplier to the global market.

The meeting was attended by participants from 17 countries and included vaccine producers from developing countries² as well as international vaccinology research institutions such as the International Vaccine Institute (IVI), South Korea and the National Institute for Public Health and the Environment (RIVM), The Netherlands. Staff from WHO's Access to Technologies Team (V&B/ATT) played an important role as mediators and facilitators among the participants.

2. Origins of the DCVM Network

DCVMN began to meet in 2000 after several meetings organized by the WHO regarding local vaccine production. In March 2000, WHO convened a meeting of International Public Sector Vaccinology Institutions in Geneva to discuss the recent and future public sector roles in fulfilling global

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¹ The international pharmaceutical industry is represented in the GAVI Board by the International Federation of Pharmaceutical Manufacturers Associations (IFPMA).

² China, India, Indonesia, Brazil, Cuba, Iran, Egypt, Vietnam, Tunisia, and Thailand.

vaccine demand and its mechanisms. During this meeting, participants expressed to GAVI and WHO their concern that without maintaining and strengthening collaboration among public sector institutions, it would be difficult to ensure the sustainability of vaccine supply. WHO pledged to organize an annual meeting for public sector producers to discuss the recent progress in combination vaccines, and also agreed to assist in the identification process to seek qualified partners to enable strategic collaboration between public and private sectors.

In November 2000, a subsequent WHO meeting for Developing Country Vaccine Producers at RIVM, Bilthoven, The Netherlands, booked further progress: a common identity was established, strategic goals were formulated and a Network format for further collaboration was agreed upon. Membership-criteria were formulated such that in addition to public sector producing institutes, the Network now also includes vaccine manufacturers from the private sector in developing countries.

The GAVI Board recently acknowledged the growing importance of developing country producers by appointing Dr. Luis Herrera Martinez (CIGB, Cuba) as DCVM Representative in the Board. The significant role in global vaccine supply DCVM plays today is illustrated by the fact that UNICEF presently procures from developing country producers more than two-thirds of the total of non-OPV EPI vaccines, such as DTP, destined for developing countries.³

3. The meeting in Bandung, April 2001

After the November 2000 meeting in Bilthoven, Bio Farma took the initiative together with Instituto Butantan (Sao Paulo, Brazil), to organize a third meeting of DCVM. The main purpose of the meeting was to elect a steering committee and to formulate a strategic plan to implement the Network's key mission, which is upgrading health conditions of newborn babies and children globally, by a consistent and sustainable supply of quality vaccines at an affordable price.

Another objective of the meeting was to encourage all vaccine manufacturers categorized as DCVM to produce vaccines that meet the standards and requirements set by WHO. More than 31 vaccine manufacturers (from public and private sectors) from developing countries have expressed their interest in the Network, which will meet annually.

³ For GFCV-funded vaccines (notably Hib and HBV), DCVM receive at this moment only a low fraction of the international supply contracts: an initial amount of approximately US\$ 130 million was allocated early 2001 by the Fund to 15 countries approved by GAVI; about 90% of this total supplies value is used for purchase of combo's DTP-HBV, DTP-HBV-Hib or Hib from the pharmaceutical industry. The remaining 10% represents HBV purchase from (amongst others) producers in developing countries or middle income countries (notably South Korea). UNICEF expects though that, after allocation of remaining funds, expenditure on GFCV funded vaccines (Hib, rHBV and DTP based combo's) will eventually reach up to 30% for DCVM (Steve Jarett, UNICEF, 2001, personal communication).

Dr. Herrera Martinez indicated in the meeting that the GAVI Board has asked early 2001 for a comprehensive policy regarding the capacity of DCVM, including technology transfer. In his opinion, to ensure sustainability, the development of local vaccine production is required to strengthen national vaccination programs once the financial support coming from GAVI comes to an end. Dr. Herrera Martinez concluded that capacity building is needed in terms of human resources and quality vaccine production in developing countries to fulfil GAVI's mission. Therefore, the GAVI Board should consider providing funds to the Network for research of new vaccines for use in developing countries, for new development projects on existing vaccines and for improvement of quality of existing vaccines.

During the meeting, information regarding production capacity and demand of vaccine in each country was exchanged, experiences in vaccine development and with WHO's pre-qualification process to become a vaccine supplier to UNICEF were shared.

A draft strategic plan was drawn up to develop and produce DTP-based combination vaccines (DTP-HBV, DTP-Hib, DTP-HBV-Hib) in developing countries. Involvement in regional programs co-ordinated by the IVI for accelerated development of vaccines against cholera and typhoid fever (known as "diseases of the most impoverished" (DOMI)) was considered.

Participants agreed that vaccines produced by DCVM must follow WHO's international guidelines, as there have been a few cases in the past where a vaccine administered in developing countries may have been of substandard quality. In this respect, the important role of WHO's global training Network to strengthen National Regulatory Authorities in vaccine producing countries was clearly recognized. The meeting further accepted WHO's approach to use seven elements as indicators for vaccine manufacturers for long-term viability: economic scale, product consistency, access to new technology, production, quantity and quality, structure of management, and legal status [4]. The future relation between the DCVM Network and GAVI was discussed and is summarized in Box 1

The meeting elected and appointed a Steering Committee for a 3-year term (2001–2003), with the following composition:

- President: Dr. Thamrin Poeloengan (Bio Farma, Indonesia)
- Vice President: Dr. Isaias Raw (Instituto Butantan, Brazil)
- General Secretary: Dr. Mohamed El-Abbadi (Vacsera, Egypt)
- Vice General Secretary: Dr. Ali A. Mohammadi (Razi Institute, Iran)
- Representative to GAVI: Dr. Luis Herrera Martinez (CIGB, Cuba)
- Working Group on R&D: Dr. Zhi Sheng Bai (Lanzhou Institute of Biological Products, China)

Box 1. The Developing Country Vaccine Manufacturers Network (DCVM) and GAVI

The DCVM Network is a public health-driven alliance of vaccine producing institutions located in those developing countries, which account for the majority of newborns in the world.

DCVM manufacture quality vaccines and are responsible for approximately 60% of the world's vaccine supply.

Full members are developing country manufacturers, that are WHO pre-qualified for sale by UN agencies or that have taken demonstrable steps towards doing so. Associated members are developing country manufacturers that are seriously committed to become viable and have the necessary level of government commitment for appropriate regulation of local production. Key to this alliance is that members of this entity are committed to GAVI's mission to achieve sustainable supply of quality vaccines for national immunization programs.

The strategic goals of the Network are (1) to obtain recognition that developing country vaccine manufacturers have an essential role in assuring availability of vaccines to immunize every child, especially newer products and (2) to develop and implement a strategic plan for DCVM to contribute to sustainable vaccines in developing countries at an affordable price, respecting IPR. While WHO's Access to Technologies Team (ATT) plays a co-ordinating role, vaccinology institutes such as the IVI and RIVM may act as resource providers to assist the Network meeting its objectives.

The Network's first priority is to offer at an affordable price to GAVI all EPI vaccines including HBV and Hib, meeting WHO GMP and product-specific requirements. The DCVM in the Network will produce these vaccines in large quantities at a price, which will ensure sustainable supply of these vaccines for their own countries and for UNICEF without major financial contributions from GAVI, especially after 2005. The second priority is to research and develop other vaccine-preventable diseases relevant for developing countries, in particular, vaccines against rotavirus, cholera, and typhoid fever.

The Network needs up front financial support to speed up the upgrade of the current DTP to meet WHO requirements, and the development of combined vaccines with HBV and Hib. Firm supply agreements from GAVI would hasten the assured availability of WHO pre-qualified DTP based combination vaccines as soon as possible after they are licensed. The return on this investment will be a sustainable supply of all EPI vaccines including HBV and Hib combinations at an affordable price. GAVI's support is also requested to negotiate a business agreement between the DCVM Network and IFPMA about critical patent issues, which are a bottleneck for the development of some vaccines.

- Working Group on GMP: Ms. Mahima Datta (Biological E. Ltd., India)

Ms. Susan McKinney (ATT) will act as a co-ordinator on behalf of WHO.

The Steering Committee will now develop a plan of action for the coming 3 years, which will entail the following objectives and activities:

- ensure that all vaccines in developing countries will meet UN pre-qualification criteria and WHO requirements,
- collaborative efforts between full and associate members to help ensure that research and development will be efficient and applicable for developing countries, especially for DTP-based combination vaccines, DOMI vaccines (cholera, typhoid), and rotavirus vaccines,
- installment of a working group on GMP to stimulate all vaccine manufacturers to produce high quality vaccines which meet WHO requirements,
- promotion of exchange of know-how in the field of vaccines (technology transfer), and
- promotion of Network-partnership collaborations, which may include production-sharing agreements to make efficient use of vaccine production capabilities in developing countries, to meet national demands, especially for EPI vaccines.

RIVM and IVI were asked to participate as a "vaccinology resource institutes", to fulfil a supportive role to the Network,

e.g. by the transfer of expertise to producers in developing countries.

In conclusion, this meeting served as a well-timed platform to exchange information and know-how and to discuss technology transfer options, vaccine development and experiences in the international vaccine arena.

Participants were excited about the prospect of working together in a Network format with a strategic plan, and strongly felt that the chosen direction of the DCVM Network will be instrumental in achieving GAVI's mission.

It is hoped that GAVI/GFCV will now provide financial support for the further development of the Network to reach the goal of sustainable access to safe, effective and affordable vaccines for all children in the world.

References

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