

Increasing Access to Vaccines Through Technology Transfer and Local Production



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**World Health
Organization**

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Abbreviations

DCVMN	Developing Countries Vaccine Manufacturers Network
DTP3	three-dose diphtheria, tetanus and pertussis vaccine
EPI	Expanded Programme on Immunization
GAVI	Global Alliance for Vaccines and Immunisation
GPO	[Thai] Government Pharmaceutical Organization
GSK	GlaxoSmithKline
HBV	hepatitis B virus
Hib	<i>Haemophilus influenzae</i> B
HPV	human papilloma virus
IFPMA	International Federation of Pharmaceutical Manufacturers and Associations
IVI	International Vaccine Institute
JPRI	Japanese Poliomyelitis Research Institute
LMIC	low- or middle-income country
MVP	Meningitis Vaccine Project
NGO	nongovernmental organization
NIH	National Institutes of Health
NVI	Netherlands Vaccine Institute
PATH	Program for Appropriate Technology in Health
PCV	pneumococcal conjugate vaccine
R&D	research and development
SII	Serum Institute of India Ltd.
WHO	World Health Organization

Executive summary

This report presents an overview of technology transfer and local production of vaccines in developing countries, and analyses emerging trends in this area and how technology transfer affects access to vaccines in developing countries.

Immunization is considered to be one of the greatest health interventions to prevent infectious diseases. According to World Health Organization (WHO)/ United Nations Children's Fund (UNICEF) estimates, global immunization coverage of children is at least 80% for the six Expanded Programme on Immunization (EPI) vaccines, against diphtheria, pertussis, tetanus, polio, measles and tuberculosis. However, there are huge inequalities in access to newer vaccines, such as Haemophilus influenzae B (Hib), rotavirus, pneumonia and human papilloma virus (HPV), between developed and developing countries. In addition, there are many poverty-related diseases for which vaccines do not exist, due to a lack of research and development (R&D) by industry. Technology transfer and local production can be an effective and sustainable strategy to address some of these issues, but they must be undertaken with planning and caution to ensure sustainability and success.

This report examines past and current trends and models of technology transfer and local production for vaccines; identifies barriers, challenges and opportunities; and presents some points to take into consideration for the future.

To provide evidence of the barriers and drivers of technology transfer for vaccines, and the benefits that arise from this, WHO commissioned a survey of technology transfers that have taken place over the past two decades. This survey identified and analysed over 100 technology transfers and was supplemented by a workshop with stakeholders in late 2010 where case studies were presented and stakeholder views expressed. The following main conclusions were identified:

- Technology transfer to developing countries has contributed significantly to increasing vaccine supply, and increased access to many vaccines has been documented. In several cases this technology transfer has also resulted in lower prices of vaccines, but this is not always so. For several basic (EPI) vaccines there is a risk that supply may soon outstrip demand, and establishment of new manufacturers for these vaccines could be counterproductive, potentially leading to some established manufacturers leaving the market.
- Establishing local vaccine manufacturing is not necessarily cost effective; however, vaccines should not be seen purely as commodities, and factors such as national health security need to be considered. The establishment of a vaccine policy by countries may assist countries in identifying how and when to consider local production.
- There is a changing dynamic in vaccine technology transfer, with joint ventures, acquisitions and establishment by multinational manufacturers of subsidiaries in developing countries becoming more frequent. The

establishment of research-based entities developing and providing new vaccines may also squeeze existing generic manufacturers out of the market. The latter will need to invest in R&D to remain competitive.

- The biggest barrier to vaccine technology transfer, perceived by both technology recipients and donors, is lack of R&D capacity in developing countries. Failure by manufacturers to invest in R&D, and failure by governments to create an enabling local environment of research infrastructure, make technology transfer less likely to succeed.
- For technology transfer to be attractive and successful, a win-win condition is required, which is facilitated by a commitment from the government to support the technology transfer or a large local or regional market.

As the public sector seeks to promote technology transfer for vaccines, the above points need to be considered.

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