The countries of the Americas, with support from the Pan American Health Organization (PAHO), have made extraordinary progress in providing children with an umbrella of protection against basic, vaccine-preventable diseases. Sustained high levels of national immunization coverage, the eradication of polio, the interruption of endemic measles virus transmission, and the more recent progress towards rubella and congenital rubella syndrome elimination are hemispheric benchmarks of this progress.

In our Region, immunization has been responsible for almost one-quarter of the reduction in mortality in children under 5 years old between 1990 and 2002, contributing significantly to progress toward the Millennium Development Goals and the target of the World Health Organization’s Global Immunization Vision and Strategy. These outcomes have been achieved through dedicated country efforts and decades of innovation. Immunization, already regarded as a “best buy” public health intervention, is now believed to have even more far-reaching economic impact, such as in better education outcomes and more years of productive life.

In this context, this book offers national immunization programs continued technical support for the challenges that countries will confront in the years to come. I am delighted to see that issues surrounding combination vaccines, vaccine safety, influenza control, adolescent and adult immunization, BCG vaccine, interpretation of measles and rubella serology, human papillomavirus vaccine, and the approach to the introduction of new vaccines, are all included in this edition. I hope you find the information in this 2nd edition of Recent Advances in Immunization as helpful as the first! I want to personally thank the excellent group of experts who served as authors. I especially want to thank the editors, Drs. Jon Andrus and Ciro de Quadros, for all their initiative, hard work, and commitment in putting this updated PAHO publication together.

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Director
INTRODUCTION

The first edition of *Recent Advances in Immunization* was published by the Pan American Health Organization in 1983. Today, twenty-three years later, the editors are pleased to be able to provide this second edition. We believe this reissue comes at a critical time in the evolution of national immunization programs. Immunization is at a crossroads. The future offers new opportunities to tackle important public health priorities with new technologies. However, new vaccines are much more expensive than the traditional vaccines used in childhood immunization programs. Evidence-based, informed decisions will be critical for sustaining the success of immunization.

The first edition was grounded in the principles of the Expanded Program on Immunization (EPI). The September 1978 Declaration of Alma-Ata highlighted EPI as an essential component of primary and maternal-and-child health care. When it was originally launched in the Americas, EPI spearheaded the following long-term objectives:

- reducing morbidity and mortality from diphtheria, tetanus, pertussis, measles, poliomyelitis, and tuberculosis by providing immunization against these diseases to all children by 1990;
- promoting the countries’ self-reliance in the delivery of immunization services as a part of their general health services; and
- promoting regional self-reliance in the production and quality control of vaccines.

Thanks to the work of immunization programs throughout the Region’s countries, the peoples of the Americas now live free of indigenous polio and measles; neonatal tetanus, diphtheria, and pertussis have been well-controlled; and new vaccines have been added to national immunization programs and their application has been sustained. As a result, high coverage levels have been achieved for the diseases originally covered by EPI, as well as for hepatitis B, rubella, mumps, and *Haemophilus influenzae*. In September 2003, the Directing Council of PAHO launched the regional ini-
tiative to eliminate rubella and congenital rubella syndrome in the Americas by the year 2010.

Undeniably, progress has been extraordinary—diseases have been eradicated or eliminated and the public health infrastructure has been strengthened—but progress has been uneven. Some countries still have a significant proportion of their populations living in districts where coverage remains below 95%. Sporadic outbreaks of diphtheria and pertussis still occur because of an accumulation of susceptibles missed by routine national programs. This accumulation of susceptibles also puts countries at risk for large measles outbreaks when importations of measles virus occur, as has recently happened in Mexico (2003–2004), Venezuela (2001–2002), and Colombia (2002).

These remaining challenges point to the need to complete the unfinished agenda. Reaching children and families who live in low-coverage areas will be essential for sustaining the success of measles elimination and for achieving the targets to eliminate rubella and congenital rubella syndrome. Improving surveillance of vaccine preventable diseases also is a key underpinning of this strategy.

This unfinished agenda also must embrace other global initiatives such as the Millennium Development Goals (MDGs) and the targets outlined in World Health Organization’s Global Immunization Vision and Strategy (GIVS). To reach the targets, some countries will need to seriously consider the introduction of new or underutilized life-saving vaccines. Vaccines targeting diseases caused by pneumococcus, rotavirus, human papilloma virus, and influenza may greatly help in reaching the MDGs and GIVS. Reaching these targets also will require that immunization programs evolve from targeting just children to including the whole family. Including the whole family will enable countries to attain higher vaccination coverage of adolescents and adults for influenza and human papilloma virus, as well as for human immunodeficiency virus and other diseases when future vaccines against them become available.

Some countries will have to overcome extraordinary technical and programmatic challenges if they are to complete this unfinished agenda. The chapters in this 2nd edition attempt to address some of them. Before embarking on the design and preparation of this book, we surveyed the countries of the Americas to compile a list of the most relevant topics that countries face in trying to deliver high-quality immunization services. The information collected provided the framework for the topics addressed by the chapters in this book. To that end, this book is intended to primarily assist national immunization managers and their staff with their program of work. However, we expect many other health professionals and other groups to benefit, including students of schools of public health, medicine, and nursing; epidemiologists and disease control specialists; experts on
surveillance of vaccine preventable diseases; vaccinologists; and infectologists. The first edition was translated into multiple languages and was distributed worldwide. We hope this edition can provide the same degree of support to national immunization programs and any other interested user.

The list of authors and co-authors participating in the writing of this book is impressive. We are honored to have worked with this distinguished group of colleagues who bring with them the necessary scientific expertise, as well as the critical field experience.

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ACKNOWLEDGMENTS

The authors would like to dedicate this book to all the national immunization program managers and their staff, who so tirelessly work on behalf of the world’s children and their families. To have had the chance to work with them over the years around the world has been an honor.

We also want to recognize several people for their support in preparing this book. Dr. Neal A. Halsey reviewed the chapter on combination vaccines and participated in the initial discussions on the book’s format. Dr. Rachel Rodin helped with vaccine literature searches. Ms. Cecilia Parker edited the publication. Ms. Nisha Aravindakshan and Ms. Diana Picón oversaw production and layout of this book.