



TECHNICAL ADVISORY GROUP

ON VACCINE-

PREVENTABLE

DISEASES

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Immunization Services*

Celebrating 100 Years of Health

CONCLUSIONS AND RECOMMENDATIONS
(FINAL REPORT)

Technical Advisory Group on Vaccine Preventable Diseases of the Pan American Health Organization

The Technical Advisory group on Vaccine Preventable Diseases of the Pan American Health Organization (TAG) continues to be impressed by the very capable and imaginative programs now in progress to deal with the vaccine preventable diseases in the Americas. The programs have been pioneering efforts that other countries and regions are now striving to emulate. Indeed, the pace of progress over the past 25 years in controlling these diseases and in decreasing childhood morbidity and mortality rates is unprecedented. The remarkable successes achieved reflect an extraordinary partnership of efforts on the part of country governments and health staff; public and private donors; with exceptional leadership being provided by the Pan American Health Organization.

It is important that these efforts be sustained and, to this end, TAG reaffirms the importance of the target of 95% vaccination coverage with all antigens in every municipality, and the need for countries to have functioning surveillance systems that generate reliable and timely information. It recommends, as well that all countries implement and verify compliance with school immunization laws that make it mandatory for children entering pre-school and school to have their vaccination records checked for completeness in meeting the national immunization schedule recommendations.

Measles

Progress in the interruption of measles transmission

Remarkable progress has been made in the Americas towards reaching the goal of interrupting indigenous measles transmission. Sustained political, financial and social commitment and sound strategies have made the interruption of endemic measles transmission in the Americas an achievable goal.

During 2001, endemic measles transmission occurred in only three countries in the Western Hemisphere: the Dominican Republic, Haiti, and Venezuela, with a record low of 541 confirmed measles cases. In May and September 2001, respectively, the Dominican Republic and Haiti interrupted measles transmission, effectively ending known indigenous transmission of the D6 measles virus. This genotype had circulated widely in the Region since at least 1995, causing a Regional outbreak in the following countries: Brazil, Argentina, Bolivia, the Dominican Republic and Haiti. In September, 2001, after an importation from Europe, a new measles genotype, d9, was introduced in Venezuela. The epidemic spread to neighboring Colombia in January, 2002. As of November 2002, a total of 2,495 cases have been confirmed in Venezuela and 128 in Colombia. After substantial vaccination efforts in both countries, the last reported confirmed cases in Colombia and Venezuela had onset on September 6 and October 30, 2002, respectively.

Efforts in the coming years will need to focus on achieving and maintaining high routine measles vaccination coverage in all municipalities, and reaching high population immunity among high-risk groups to avoid resumption of endemic transmission after importations. The goal remains achieving and maintaining 95% coverage in all municipalities of all countries.

The full implementation of PAHO's recommended strategy in all countries remains the keystone of efforts towards the interruption of indigenous measles transmission. Countries that have failed to either conduct timely *follow-up* vaccination campaigns, or to sustain high-levels of vaccine-induced measles immunity, have experienced large outbreaks following measles introductions.

Global Measles Efforts

TAG commends the joint efforts of the World Health Organization and UNICEF, with the collaboration of the Centers of Diseases Control and Prevention, in launching the Strategic Plan 2001-2005, aimed at global measles mortality reduction and regional elimination.

Lessons Learned

Given that measles is highly endemic in other regions of the world, the Americas continue to be under constant threat of importation of measles virus from other regions where the disease remains endemic. Measles importations have been responsible for outbreaks in Argentina, Bolivia, and the Dominican Republic in 1998-1999, in Haiti in 2000-2001, and in Venezuela in 2001-2002. Measles importations are unavoidable; therefore, the main strategy to prevent the re-initiation of endemic measles transmission is to maintain the highest population immunity possible through high vaccination coverage in all municipalities.

Lessons learned from recent outbreaks following importations have highlighted that densely populated and underserved peri-urban areas with high rural-to-urban migration are at highest risk for measles outbreaks, primarily because of the accumulation of large number of susceptible persons, especially unvaccinated young children. Some areas have had a false sense of security because coverage obtained through the administrative method has been substantially higher than coverage obtained through house-to-house monitoring.

Another critical lesson emerging from recent outbreaks calls for the need to develop strong and accountable supervisory methods and tools to improve the assessment of vaccination and surveillance efforts, particularly at the local level. Experience from the Americas shows that programs with systematic and thorough supervision, including active case finding, house-to-house monitoring and follow-up can successfully interrupt measles transmission.

Outbreak investigations performed in the Region continue to show that the group at highest risk for measles is unvaccinated young children. Another group at high risk of acquiring and/or transmitting the disease is health care workers, especially those who work in emergency rooms or who treat acutely ill children.

Another important finding has been the persistent late reporting of cases in some areas, as well as insufficient participation by private sector providers in surveillance efforts. These have affected a country's ability to detect measles outbreaks and implement control measures in a timely fashion.

Of greatest concern are the large municipalities in the Region, which because of high population density and large numbers of migrants from rural areas are at greatest risk for sustaining measles transmission, should it be introduced. Within these municipalities, there are likely to be high risk sub-populations (characterized by poor access to health services, poverty, high-population density, and large numbers of migrants).

Recommendations

Recognizing the important advances made in the Americas towards the interruption of endemic measles transmission, and based on the lessons learned from recent outbreaks, TAG reaffirms its recommendations issued during the 2000 meeting.

- Vaccine program managers should identify areas at high-risk for outbreaks, such as those of extreme poverty, underserved, as well as densely-populated areas in the outskirts of large cities with high rural to urban migration, as well as border areas with high movement of people. Administrative vaccination coverage in these areas should be assessed using PAHO's standardized supervisory tools. Vaccination interventions should be implemented in areas with low coverage. In order to improve overall immunization coverage, countries should identify municipalities falling below the national average coverage and implement strategies to improve coverage in those areas. Efforts should include reducing missed opportunities, supplemental (*mop-up*) vaccination and other outreach efforts. Progress should be evaluated through regular supervision and validation of coverage levels through rapid house-to-house monitoring. Model demonstration projects should be undertaken to develop valid and operationally feasible methods to identify these high risk populations, and to develop effective means to improve coverage. The impact on center and community specific coverage levels should be assessed pre- and post- intervention. Results from these demonstration projects should be presented at the next TAG.
- Countries should especially target vaccination of health care workers who work in emergency rooms, or who see acutely ill patients, and other at-risk population groups based on a country's epidemiology.

- Special efforts should be made to better understand the epidemiology of measles importations, and factors that contribute to sustaining large outbreaks, including the chief settings of transmission.

Rubella

Benefits have already accrued as a result of the heightened attention given to rubella and congenital rubella syndrome in the Region, following the 1997 TAG recommendations that called for the prompt implementation of a regional initiative to strengthen rubella and CRS prevention efforts by reducing widespread circulation of rubella virus. At the 1999 TAG held in Canada, an accelerated rubella control and CRS prevention strategy was developed for the Americas, which followed the successful adult mass vaccination campaigns against rubella in the English-speaking Caribbean and Cuba. The strategy includes vaccinating both adult men and women, along with introduction of rubella vaccine into national childhood immunization programs. The principal rationale of an accelerated vaccination strategy is to reduce the time it takes to interrupt rubella virus circulation and prevent CRS occurrence. Most countries in the Region have already implemented routine childhood rubella vaccination, which is protecting children as they reach their first year of life. Nevertheless, this vaccination strategy is likely take over 20 years to control CRS, as several cohorts of childbearing women will remain susceptible to rubella virus.

Chile, Costa Rica, Brazil and Honduras have conducted adult mass vaccination campaigns for accelerated rubella control and CRS prevention: Brazil and Chile have targeted these campaigns to women only; Costa Rica and Honduras have carried out rubella campaigns that included men and women. Critical knowledge to guide further development of successful ($\geq 90\%$ coverage) and sustainable strategies for vaccination of adults is being gained. CRS is now recognized as a serious public health problem, but limited surveillance data remain a source of concern, because they underestimate the true disease burden and complicate assessment of the initiative's success. Furthermore, few clinical cases of rubella are being confirmed by laboratory testing, and few virologic specimens are being submitted for molecular typing. Efforts to follow up on pregnant women who have contracted rubella need to be strengthened.

Recommendations

Vaccination Strategies

- All countries are encouraged to prevent circulation of rubella virus, which will lead to a reduction in CRS. This is best accomplished by reducing the number of susceptible persons which will result in decreased rubella transmission. Accordingly, countries should conduct a one-time mass campaign vaccinating both males and females. The age group to be vaccinated should be determined based on the country's epidemiology. However, groups to be targeted include children who may not have been vaccinated in the routine program, e.g., children ≥ 5 years of age, and adults of both sexes. The upper age limit should be determined from known patterns of fertility and expected susceptibility. Countries conducting successful campaigns have used upper age limits ranging from 29 to 39 years.

- Additional targeted efforts are needed to reduce the number of rubella susceptible women of childbearing age. Immunization strategies, targeting post-partum women, those attending family planning clinics, as well as those in schools and the workplace can be used to protect them.

Surveillance

- Rubella surveillance should be completely integrated with measles surveillance.
- CRS surveillance should be strengthened throughout the Americas through collaboration with the regional Perinatal Information System (SIP 2000) from the Latin American Center for Perinatology and Human Development (CLAP) and the Congenital Malformation Latin-American Collaborative Study (ECLAMC). Special emphasis should be placed on ensuring that thorough investigations of pregnant women with rubella are conducted and that their newborns receive detailed follow-up evaluations.

Measles and Rubella Laboratory Network

The vast majority of suspected measles and rubella cases in the Region have adequate serum samples taken. In general, regional laboratory indicators demonstrate that the laboratory network is functioning at a high level of performance. In addition, testing results of quality control panels demonstrate a very high level of laboratory competence. However, several areas of concern are noted. First, few countries have been able to ensure that 80% of specimens arrive to the laboratory in a timely manner. Second, far too few samples for viral isolation are being collected and tested for measles by the network. Even fewer specimens are being tested for rubella virus isolation. This may, in part, be due to the need for increased coordination and communication between clinicians, epidemiologists and laboratorians. Regardless, viral isolation is critical to ensure determination of genotypes, for evaluation of the measles program in the approaching post-elimination phase, as well as to determine the extent of rubella transmission in the hemisphere.

Finally, it is important to keep in mind that countries should expect to see laboratory false-positive cases. To this end, laboratory procedures to establish which laboratory results are false-positives are available. In addition, confusion continues to exist on the proper management of recently vaccinated cases that are found, as could be expected, to be IgM-positive. PAHO has also published guidelines on the proper management of such cases.

Recommendations

- National managers should ensure that the guidelines recommended by PAHO for evaluation of rash illness associated with vaccination are followed to establish the

final classification of such cases. Managers should not assume that a rash illness in a recently vaccinated case is always due to the vaccination. All cases that are laboratory positive should carefully be investigated to assure they are not measles or rubella, such as determining whether there are potential source cases with rash and fever, and whether there has been subsequent transmission.

- National laboratories should be commended on their participation in, and the results from, quality control panel testing. All laboratories should continue to participate in these quality control programs. Program managers should ensure that all sera from suspected cases are tested for both measles and rubella antibodies. In addition, special emphasis should be placed on the collection of specimens for viral isolation and the logistics necessary to ensure that adequate specimens are taken and are shipped appropriately.

Polio

Substantial efforts have been undertaken by countries following the Sabin type 1-derived poliovirus outbreak in Hispaniola in 2000-2001. The first cases of poliomyelitis due to vaccine-derived poliovirus type 1 were reported in October 2000 in the Dominican Republic. A total of 13 and 8 cases were confirmed in the Dominican Republic and Haiti, respectively. All cases were among individuals either inadequately vaccinated or unvaccinated. The outbreak was the result of prolonged circulation of vaccine-derived poliovirus in areas with very low vaccination coverage with oral polio vaccine (OPV) and poor sanitary conditions. This allowed OPV-derived viruses to mutate toward virulence and establish circulation. Intensified national vaccination efforts in both countries, coupled with surveillance and active search for suspected cases, have prevented further spread of this mutant virus. The last reported cases of poliomyelitis due to vaccine-derived poliovirus were in January 2001 in the Dominican Republic, and in July, 2001 in Haiti.

TAG supports the need to minimize the potential for reintroduction of wild polio viruses through containment of polio virus strains in laboratories. Some countries in the Region of the Americas have initiated Phase 1 of the plan, corresponding to the elaboration of an inventory of national laboratories that may have stored wild polio virus or potential infectious materials, and the inventory of these materials. TAG received a report on containment and notes the progress that has been made in containment activities in the Region.

In response to the vaccine-derived outbreak in 2000-2001, PAHO recommended that countries undertake an analysis of the risk of failing to detect poliovirus circulation, based on the performance of national surveillance systems in the last five years, and the level of vaccination coverage with OPV reached during those same years. This exercise has highlighted the need to perform evaluations at the local level in order to see variations within countries. During the last five years, regional vaccination coverage with oral polio vaccine has been maintained at over 85%. However, local vaccination coverage shows that only 46% of municipalities reported coverage $\geq 95\%$ in 2000, and 44% in 2001. Countries with low-coverage municipalities are building pockets of susceptibles. Many countries are currently failing to meet acute flaccid paralysis surveillance key indicators. Of additional concern is the fact that almost 20% of all acute flaccid paralysis (AFP) cases lack an adequate specimen, and should therefore be classified as compatible cases, while only 15-20 compatible cases are reported every year.

Recommendations

- The TAG notes that a high number of AFP cases are being discarded that do not have an adequate evaluation or a stool sample. All countries in the Region should continue to use the recommended AFP case classification system and should establish a National Expert Group or Commission. This Commission should closely scrutinize

those cases without an adequate stool specimen in an attempt to determine the etiology of the case's paralysis.

- All countries must maintain certification standard surveillance. Special efforts should be targeted to improve surveillance, especially in those countries whose non-polio AFP rate has fallen below 1/100,000.

Neonatal Tetanus

A single case of NNT in the Americas should be considered a failure of the health services, and should be subject to an evaluation to determine how it can be prevented. The incidence of neonatal tetanus (NNT) continues its downward trend in the Region. The reported number of cases was 120 in the year 2000. The disease is now confined to less than 1% of all districts in the Americas. Epidemiological characteristics continue to show that cases occur predominantly among rural infants of multiparous women, who at times lack prenatal care, are unvaccinated, and have for the most part delivered at home.

Efforts in past years have been guided by epidemiological and social conditions associated with the remaining cases, such as migration, marginality, and incidence in remote areas, emphasizing selection of high-risk geographical areas. Programs have focused on taking advantage of all opportunities to vaccinate every pregnant woman or woman of childbearing age at each contact with a health facility. The epidemiology of NNT has changed. Now efforts should move from targeting geographic areas toward using risk factors for cases to guide interventions.

The NNT situation in Haiti is particularly worrisome. The regular notification system is reporting around 40 cases per year. As of midyear 2002, Haiti had reported 15 deaths due to NNT. Haiti accounts for more than 50% of the NNT cases occurring in the Americas. Most of these cases are occurring among mothers who are multiparous, have not received prenatal care, delivered at home, and were not immunized against tetanus. Previous surveys have pointed to widespread underreporting, and the real number of cases could be 10 times higher than those being notified. Part of the problem is that the regular immunization program covers only a small proportion of women of childbearing age. A survey carried out in 2000 has shown that only 25% of pregnant women had received 2 doses of tetanus toxoid (TT) vaccine. The Ministry of Health and Population has developed a Plan for NNT elimination to be implemented by early 2003. The efforts of Haiti should be fully supported.

Recommendations

- Special vaccination and surveillance efforts should be carried out within municipalities and underserved pockets that still report isolated NNT cases. Td vaccination should be integrated into maternal health services with emphasis in making the vaccine available for use by midwives.
- Missed opportunities to vaccinate can be markedly reduced by administering Td to all mothers who visit a health center for any reason.

Diphtheria

The incidence of diphtheria has been significantly reduced in the Americas as a result of increased vaccination coverage. In 1978, there were 6,857 cases reported, the highest number of cases recorded in the Region, since data were first collected. Cases have declined gradually from that peak reading, with 113 cases in 2000, and 68 cases reported in 2001. As of epidemiological week 40 of 2002, 164 cases have been reported. Average vaccination coverage with DPT3 has been 88%, however, 47% of municipalities report coverage under 95%. Recent outbreaks in the Region, in Colombia in 2000 and in 2002 in Paraguay, show that the majority of cases are occurring among the poor who lack access to vaccination services and/or who have not received all recommended doses, including school children and young adults. Persons at risk have been identified as persons living in peri-urban and marginalized areas.

Recommendations

- Health staff should be updated on diphtheria surveillance, adequate case investigation, treatment, and control measures.
- In outbreak settings, vaccination activities should include the administration of two doses of Td one month apart to all affected age groups, including, if appropriate, school children and adults in a wide geographic area.

Yellow Fever

While cases of jungle yellow fever continue to occur in countries located within the enzootic area, a decrease in reported cases has been observed in the last four years as a result of recommended preventive measures adopted by the endemic countries, especially in Bolivia and Brazil. All cases thus far have been infected in rural areas, but some have come to *Aedes aegypti* infested cities for diagnosis and treatment. The widespread distribution of *A. aegypti* in urban areas raises concerns that urban transmission could be established unless more effective disease control in enzootic areas, and among visitors to enzootic areas, is accomplished.

Recommendations

- Countries should continue strengthening surveillance of clinical cases compatible with yellow fever, to ensure the expeditious implementation of control measures. Icteric syndrome and epizootic surveillance should be carried out in a systematic way in sentinel areas to enhance the capacity of countries to detect yellow fever virus circulation.
- Enzootic countries should consider the implementation of the following recommendations in municipalities within enzootic areas, or in areas with a level of house infestation index by *A. aegypti* greater than 5%:
 - Immunize the entire population.
 - Incorporate yellow fever vaccine in the routine schedule for children.
- Provision should be made by the Americas to stockpile sufficient vaccine for use in emergency outbreak control efforts.

Smallpox

The September 11, 2001 terrorist attacks in the United States, brought about heightened awareness of the potential threat of deliberate use of smallpox virus as a biological weapon against civilian populations. The existing low immunity levels of the population due to cessation of smallpox vaccination over 20 years ago, coupled with increased movement, became a source of concern, and stressed the need for an adequate and timely response.

PAHO convened two technical consultation meetings in 2001, to examine current and future challenges posed by these events, and the potential for regional production of quality smallpox vaccines to cope with emergency situations. Countries were asked to review their surveillance and diagnostic capabilities for rapid case detection and investigation of smallpox, and to strengthen emergency preparedness at hospitals. It was further stressed that consensus needed to be reached among countries that one case of smallpox in any country was a threat to the entire Region and, therefore, countries that produce and/or have stocks of smallpox vaccine would make them available to control the outbreak in the affected country.

Recommendations

- TAG took note of the resolution on smallpox of the XXVI Pan American Sanitary Conference, which indicates that all countries should consider any outbreak of smallpox as a threat to the Region and to the world, and should promptly report any suspected cases that may occur, and be prepared to provide necessary emergency assistance, including vaccines to contain the outbreak as rapidly as possible.

Vaccine Safety

Monitoring immunization safety and integrating this aspect into the health system are complex responsibilities shared by national vaccination programs, national regulatory authorities, quality control laboratories, and health workers. PAHO has emphasized the use of an approach that includes the use of quality vaccines, safe injections practices, and the expeditious management of any event attributed to vaccination.

Recommendations

- Sufficient resources must be allocated to make vaccine safety a priority and a fundamental component of all EPI programs with the following: guaranteeing an adequate supply of syringes, vaccines, safety disposal boxes as well as the appropriate final disposal of equipment.
- Training activities must be strengthened for all health workers including the development and dissemination of training materials to all levels of the health system to ensure knowledge of standardized guidelines on the prevention, detection and assessment of events allegedly attributed to vaccination. Training activities should also be developed for safe vaccination practices particularly to modify behavior regarding the recapping of used needles.

New Vaccine Introduction

Surveillance for New Vaccine Introduction

The rapid inclusion of a new vaccine against *Haemophilus influenzae* type b (Hib) by most countries in the Region has provided important lessons for the incorporation of other new vaccines, either under development and/or that have been approved. The availability of new ways of delivering multiple antigens, such as combined vaccines, has facilitated even further the rapid incorporation of Hib and hepatitis B vaccine into country programs.

Information on disease burden, risk groups, and cost-effectiveness studies are fundamental considerations for new vaccine introduction. Regional, as well as country-specific information is needed to determine the need for introduction.

Recommendations

- Adequate epidemiological information for policies regarding the introduction of new vaccines is needed. Countries should establish surveillance strategies that provide critical data for decision making regarding the introduction of new vaccines, such as pneumococcal, meningococcal and rotavirus. National Committees on Immunization Practices should be fully involved in this process. Special attention should be given to the sustainability of funding when the decision is made to include a new vaccine.

Quality Vaccines

PAHO has supported the efforts of countries in using quality vaccines in their immunization programs by strengthening national regulatory authorities (NRA), assuring that regulatory functions are adequately implemented through the development of a regional system for quality testing of vaccines, and by assuring that local vaccine producers comply with good manufacturing practices (GMP) and national/international requirements.

Recommendations

- Governments must ensure through their National Regulatory Authorities and national control laboratories that only vaccines of quality, either imported or locally produced and approved by competent authorities, are used in national immunization programs and in the private sector. National Regulatory Authorities should use results from WHO assessments of vaccine producers, pre-qualified to supply vaccines to UN agencies, to facilitate the licensing process of these vaccines in countries.

Immunization Management and Sustainability

There is now consensus of the role played by the health sector, to ensure sustainable economic growth and poverty reduction and, accordingly, of the need to secure access to essential health services, especially those with substantial impact on reducing health burdens such as immunization programs. This consensus provides immunization programs with a unique opportunity to maintain and expand the reach of immunization in the Americas, and as such to remain a critical component of child survival initiatives. Notwithstanding, it requires the maintenance and/or strengthening of the institutions that have supported the delivery of effective immunization and surveillance programs, as well as the effective stewardship of national health authorities to ensure optimum performance of immunization programs at all levels of a country's health system.

Impact of health sector reforms on national immunization programs.

The changes in the steering and delivery of national health programs resulting from health reform and decentralization have been approached as an opportunity to ensure that immunization programs are delivered in an equitable way in all areas of a country, and to broaden the support for immunization at all levels of society. In practice these systemic changes have represented a challenge in the effective implementation of national immunization programs in a uniform way. Particular areas where weaknesses have been identified include local management of immunization delivery and surveillance, as well as finance and human resource management. Moreover, local capabilities are not in place to secure an ongoing flow of quality and standardized information on vaccine preventable diseases throughout the health system, and up to the regional level.

Recommendations

- Efforts should be made to follow the examples of countries in the Americas that have developed legislation which establishes a specific budget line in the national budget that commits resources for recurrent costs associated with the purchase of vaccines and syringes. This legislation should also include resources for other aspects of an immunization program, such as staffing, supervision and operations.
- Immunization indicators should be used to monitor health service reform processes, and the performance of decentralized health services.

Sustainable financing of immunization programs

Fluctuations in the allocation of resources due to economic downturns are jeopardizing the implementation of national immunization programs, potentially opening the way for higher costs in case of an outbreak. Moreover, even current levels of

financing may not be sufficient as countries seek to concurrently achieve high levels of coverage in all municipalities, while also introducing new vaccines of public health importance which are more expensive. To safeguard the public health achievements and proven impact of national immunization programs, as well as enable their continued growth, countries and the international community, including finance ministries, will need to initiate a dialogue to identify and assess options to secure stable financing for national immunization programs. Such financing must include resources to identify and eliminate pockets of low coverage and to introduce new vaccines of public health importance. Financial implications of adequately implementing immunization programs need to be presented to Finance Ministers

Recommendations

- Health authorities should mobilize political support to find sustainable and effective ways to protect immunization levels during economic downturns or structural health sector changes.
- Efforts should be made to clarify the stewardship role of Ministries of Health in immunization, and to strengthen technical and financial responsibilities at the state and local level for decentralized systems.
- National Inter-agency Coordinating Committees should include members of the Finance Ministry, to strengthen the dialogue and collaboration among the two sectors.

Assessment of the quality of data within national EPI programs

The use of doses administered data has been, and remains, the method of choice to assess and monitor vaccination coverage levels in the Region. However, assessment of national coverage data by different measures shows a lack of concordance in several countries. This may be due to errors in the collection and recording of vaccination information at health centers. Assessing the quality of data at different levels of the immunization system is an important component of data management. Regular assessment of data quality on coverage levels should be an integral component of supervisory visits.

In collaboration with national Ministries of Health, PAHO is developing a supervisory tool, based on work completed in Bolivia and Mexico, to assess the quality of coverage data. This tool will compare doses administered data from different sources to determine their reliability.

Recommendations

- The assessment of the quality of EPI data should become a regular activity within national immunization programs. This assessment should be conducted within the context of regular on-going supervisory activities. Countries should also

strengthen data analysis capabilities including the identification of high risk municipalities and the causes of low coverage, which should lead to the development of micro-plans to correct identified problems.

- Tools developed by PAHO in collaboration with other countries should be disseminated in the Region for local adaptation and use.

Supervision as a Management Tool

Supervision is not being used systematically by all countries of the Region as an effective management tool. This lack of regular supervision has contributed to failures to identify areas at risk for low vaccination coverage. To improve routine immunization services, PAHO has proposed strengthening regular supervision at all health establishments, as both an educational tool, and as a means to enhance accountability at the local level.

Recommendations

- All countries should use standardized supervision protocols that cover the required program components, to include at a minimum: 1) vaccination practices and vaccine safety, 2) administrative data on vaccination, including quality assessment of data, 3) weekly reporting of vaccine preventable diseases, and 4) programming and implementation of outreach vaccination activities.
- Sufficient financial resources should be allocated for the implementation of regular supervision. National and local plans of action should always include a component for supervision.

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