Andhra Pradesh: Building a Model Immunization System

Indian state protects millions and demonstrates what new vaccines and technologies can achieve

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The Indian state of Andhra Pradesh (AP), in partnership with PATH’s Children’s Vaccine Program* (CVP), has introduced a model system for immunization that is having spin-off effects throughout South Asia. The project has improved overall immunization rates, incorporated hepatitis B vaccine into the childhood immunization program, and created effective systems for health system management and for ensuring injection safety.

The objectives of the AP partnership are to:

1. Increase overall infant immunization coverage from 58 percent to 85 percent and increase hepatitis B immunization of newborns from 10 percent to 85 percent.

2. Improve vaccine logistics, management, and supervision.

3. Ensure safe injections for all immunizations.

4. Assure financial and technical sustainability through increased government commitment.

5. Adopt better disease control strategies.

Well into the fourth project year, it is becoming clear that these objectives will be achieved—and some well ahead of schedule. One possible exception may be measles vaccine coverage. It is rising but might not reach 85 percent by 2006.

Increasing immunization coverage, with a special emphasis on hepatitis B

More children in AP are being protected against vaccine-preventable diseases—tuberculosis, tetanus, pertussis, diphtheria, polio, measles, and now hepatitis B—than ever before. Since the project began, the percentage of fully immunized infants in AP has increased from 58 percent to 72 percent (as measured by DTP3). And drop out rates for measles vaccine has decreased from 22 percent to 8 percent. These achievements are due to refresher training, new supervisory strategies, and sustained advocacy for immunization.

Furthermore, Andhra Pradesh has become the first state in India to protect all its children against hepatitis B—a serious disease of the liver and a major health problem throughout India. Hepatitis B vaccine previously had been available only through the private sector, meaning that less than 10 percent of infants—those from rich and urbanized families—were vaccinated annually. But in the AP project, coverage now ranges from 40 percent to 60 percent, depending on the district. Trends suggest that coverage will reach 85 percent by 2006—preventing over 6,000 cases of future hepatitis B-related cancer and chronic liver disease each year.

**Improving vaccine logistics, management, and supervision**

Initial project assessments of AP’s immunization program exposed systemic failures of management, especially in terms of lack of knowledge and skills, on-the-job supervision and monitoring, and logistics and supplies. The project partners decided to tackle these problems head-on.

Since 2001, intensive re-training has helped over 23,000 nurses and health workers and 3,000 doctors and technicians upgrade their knowledge and skills related to immunization, injection safety, record-keeping, and communication with parents.

But better training alone does not necessarily result in better services. The assessments revealed that there was no system of supportive supervision to help frontline workers. Many workers admitted that they had never had a face-to-face visit from higher ups, and they felt they had no experts to guide them in solving problems. Trying a new approach, the AP government and PATH contracted with three local medical colleges to conduct regular supervision and support visits to primary health centers and immunization sites. After only a few months of operation and two rounds of visits, the new system improved the quality of immunization on several fronts: more effective planning of sessions, better cold chain management, safer handling and disposal of sharps, and improved dropout tracking. Health workers also reported higher levels of satisfaction because of the increased technical support.

By the end of 2004, all 1,400 primary health centers will have had at least two supervisory visits. The new system is being institutionalized to ensure continuation after the end of the project.

<table>
<thead>
<tr>
<th>Results of Improved Training, Supervision, and Support</th>
<th>First supervision visit</th>
<th>Second supervision visit (3 months later)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service improvement plans available</td>
<td>7% health centers</td>
<td>100% health centers</td>
</tr>
<tr>
<td>Needle disposal pits used in health center</td>
<td>27% health centers</td>
<td>83% health centers</td>
</tr>
<tr>
<td>Immunization cards kept in health center</td>
<td>7% health centers</td>
<td>67% health centers</td>
</tr>
<tr>
<td>AD syringes used for immunization</td>
<td>40% vaccinations</td>
<td>100% vaccinations</td>
</tr>
<tr>
<td>Community volunteers help track dropouts for health centers</td>
<td>14% health centers</td>
<td>80% health centers</td>
</tr>
<tr>
<td>Refrigerator temperature charts maintained in health centers</td>
<td>0% health centers</td>
<td>100% health centers</td>
</tr>
</tbody>
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Ensuring safe injections for all vaccinations

Injections historically have been a cause for concern in India due to frequent reuse of syringes and needles, which transmit life-threatening diseases such as hepatitis B or HIV/AIDS. Preliminary results from a national assessment show that every third person visiting an outpatient clinic in India receives an injection of some kind. Injections for immunization account for about 17 percent of all injections.

To help ensure that all immunizations are safe, auto-disable (AD) syringes are now used for all nine million immunization injections given annually at primary health centers, sub-health centers, and outreach posts throughout the state. The change is demonstrating immediate results. For example, auxiliary nurse midwives report a virtual disappearance of abscesses following immunization injections. The federal government is taking note of the AP experience and is considering adoption of AD syringes for immunization nationwide.

And because even an AD syringe can still pose a risk of accidental needle-stick, in 2003 the project team field-tested needle removers, a new technology designed to remove the needle from a used syringe safely. Those trial results also have been encouraging.

Assuring financial sustainability through increased government commitment

Improving program effectiveness and safety does not come without a cost. From the beginning, project partners have taken measures to secure—and maintain—the long-term sustainability of AP’s achievements. In 2001, all recurrent costs for hepatitis B vaccine and AD syringes were borne by the project, not by the Ministry of Health budget. But in the second year, the government began progressively to take on those costs—first paying 20 percent, and increasing to 100 percent by 2006. In 2004 the government is paying 60 percent of costs.
Adopting better disease control strategies

Maternal and neonatal tetanus historically has taken a toll in AP, but in November 2003 a team from the World Health Organization (WHO), United Nations Children’s Fund (UNICEF), the AP government, and PATH was able to certify that the state has eliminated the disease. AP is the second state in India to achieve this milestone.

Japanese encephalitis (JE) is a devastating illness that kills one in three infected. Those who survive often are left mentally and physically disabled. Most JE victims are children under 15 years of age.

Faced with limited supplies of JE vaccine in 2001, the Government of AP asked PATH for help procuring one million doses from Vietnam. Since immunization began, deaths from JE have decreased from about 250 annually to only 2 to 4 per year.

AP also is improving JE surveillance capabilities and is pioneering an innovative phone and web-based disease reporting system. The new system may soon be rolled out in neighboring countries.

Showing the way for India and leading AP into the future

Due to AP’s impressive leadership in immunization services, many other Indian states are following their example:

- Through support from the Global Alliance for Vaccines and Immunizations (GAVI), 33 districts and 15 cities have introduced hepatitis B vaccine into their routine immunization programs in years 2002 and 2003.
- AD syringes are likely to be adopted for use nationwide in 2004.
- AP-produced training materials for vaccinators, managers, and logistics staff were adapted for use nationwide.
- AP-developed injection safety strategies have been adopted in other states such as Gujarat, Karnataka, Maharashtra, Orissa, Rajasthan, and Uttar Pradesh.

And recently PATH was pleased to be asked by the government to establish a “Commission on the Future of Immunization” to begin planning for continuing AP leadership in 2006 to 2011.
Key Accomplishments in Andhra Pradesh

Increasing immunization coverage, with a special emphasis on hepatitis B

- Coverage rates increased from 58 percent to 72 percent. Measles drop-out rates decreased from 22 percent to 8 percent.
- To further boost coverage, extra effort is being invested in increased communication for social change.
- Hepatitis B vaccine is now available free to all 1.6 million children born annually in AP. Vaccine introduction was achieved in only 30 months—more than 2 years ahead of schedule.
- By 2003, 40 percent to 60 percent of newborns received hepatitis B vaccine, preventing thousands of cases of future liver disease—including liver cancer—each year. And coverage rates are increasing.

Improved vaccine logistics, management, and supervision

- Over 23,000 nurses and health workers and 3,000 doctors and technicians were re-trained in immunization, injection safety, record-keeping, and communication with parents.
- The new, outsourced supervision system resulted in improved planning, better cold chain management, safer handling and disposal of sharps, and improved drop out tracking.

Ensuring safe injections for all vaccinations

- AD syringes are now used for all nine million immunization injections given annually.
- Needle-cutters will soon be adopted for use statewide.

Assuring financial sustainability through increased government commitment

- Government contributions for hepatitis B vaccine and AD syringes will reach 100 percent in 2006.

Adopting better strategies for disease control

Japanese encephalitis

- There was a 90 percent reduction in cases of JE within the first year.
- An innovative phone- and web-based disease reporting system will debut in late 2004.
- Progress in JE control in AP is piquing interest nationwide.

Maternal and neonatal tetanus

- AP is the second Indian state to be WHO-certified as having eliminated maternal and neonatal tetanus.

Showing the way for India and leading AP into the future

- Other Indian states are following AP’s lead.
- PATH and the state government soon will establish a “Commission on the Future of Immunization.”

For more information

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PATH Immunization Publications

These documents are available from www.ChildrensVaccine.org
Most are available in both English and French; some are available in Spanish and Russian as well.
Use the site search engine to locate titles of interest
(or click on the titles below if you are reading an electronic version).

Advocacy for Immunization
- The Case for Childhood Immunization
- Fragile Lives—Immunization at Risk (film)
- Childhood Immunization: A Worthwhile Investment (PowerPoint show)
- Advocacy for Immunization
- Childhood Immunization: What You Need To Know (for parents)
- Hepatitis B Vaccine Introduction: Lessons Learned in Advocacy, Communication and Training
- Realizing the Full Potential of Childhood Immunization: How Health Professionals Can Make a Difference
- Helping Young People Become Youth Advocates for Immunization

Immunization Management and Training
- Immunizing Children Against Hepatitis B
- Immunizing Children Against Haemophilus influenzae type B
- Immunizing Children Against Japanese Encephalitis
- Immunization and Child Health Materials Development Guide
- Preventing Vaccine Freezing in the Cold Chain
- Guidelines for Supportive Supervision
- Training Vaccinators in a Time of Change
- Advanced Immunization Management (AIM) e-learning modules

Injection Safety
- Giving Safe Injections
- Proper Handling and Disposal of Auto-Disable Syringes and Safety Boxes
- Designing Safe Syringe Disposal Systems for Immunization Services
- Using Uniject™ to Increase the Safety and Effectiveness of Hepatitis B Immunization
- Unsafe Injections, Fatal Infections
- Practical, Local Solutions for Safely Managing Contaminated Syringes and Other Medical Waste
- Technologies for Vaccine Delivery in the 21st Century
- Perceptions About Injections and Private Sector Injection Practices in Central Nepal
- Immunization Injection Safety in Nepal

Other papers describing PATH’s immunization solutions
- Andhra Pradesh—Building a Model Immunization System
- Cambodia—Coverage Improvement Planning Pays Off
- Senegal—Changing the Face of Immunization in West Africa
- Vietnam—Progress Beyond High Coverage
- PATH’s Children’s Vaccine Program—Increasing coverage, improving safety, expanding protection