A National Program for Control of Acute Respiratory Tract Infections: The Philippine Experience

Elvira SN. Dayrit

Maturing programs on child immunization and diarrheal diseases, a community-based research project, and a rational drug-use program facilitated the launching in 1989 of a nationwide Philippine Control of Acute Respiratory Infections program (Phil-CARI). From 1990 to 1991 the Phil-CARI expanded rapidly, training >80% of its middle managers and frontline health care providers on the case-management protocols of the World Health Organization for acute respiratory infection. Multiple donors and good collaboration with various societies and medical schools assisted the program. However, by 1992, there were difficulties in maintaining training quality, follow-up, and supervision. Donor assistance dwindled and the health care delivery system decentralized. Government procurement systems were unable to meet the logistics demands of the program. The monitoring and evaluation system was inadequate to measure impact. The Phil-CARI provides lessons in searching for more sustainable approaches and systems to meet the various demands of a nationwide ARI control program and to create the desired impact.

The Philippine Control of Acute Respiratory Infections program (Phil-CARI) was one of the earliest nationwide programs for acute respiratory tract infections (ARIs). When it was launched in 1989, the World Health Organization (WHO) global ARI program was also just beginning to be developed. Several factors favored the early development of the Phil-CARI, foremost of which were the following.

**Ongoing community-based ARI research since 1981.** By 1989, the community-based research collaboration between the Research Institute for Tropical Medicine and the Australian government generated about 7 years’ worth of valuable local data on baseline ARI incidence and risk factors. Local studies confirmed the high incidence of ARI, at 6.1 episodes per child-year, among Filipino children <5 years old in depressed urban communities in Metro Manila, with a peak age incidence between 6 and 23 months [1]. The incidence of acute lower respiratory tract infection (ALRI) was also found to be exceedingly high, at 0.5 episode per child-year. The case fatality rate ranged from 5% [2] to 18.8% in bacteremic children [3]. Measles was noted in about half of the cases of ALRI (48%) and was identified as a major determinant of mortality.

Risk factors for increased ARI-related morbidity, such as malnutrition, parental smoking, household crowding, and poverty, were also identified. The finding of fast breathing, when compared to radiological diagnosis, was found to have 63% sensitivity and 87% specificity [4], thus leading to easy acceptance of the use of simple diagnostic flow-charts understandable at the community level. The research program also brought the Philippines in touch with the international community, facilitating the exchange of ideas and experiences. The program also had a committee that linked it with the Department of Health. Altogether, these developments facilitated the understanding of local conditions and needs, which was essential in the formulation of a national program.

**Maturing child-health programs.** Two of the most important child-health programs are the Expanded Program on Immunization (EPI) and the Control of Diarrheal Diseases (CDD). Through the EPI, which started in 1976, early protection of infants from measles, diphtheria, and pertussis is provided in pursuit of the Universal Child Immunization goal. This goal was reached in the Philippines in 1989. The successful acceleration of the EPI also boosted the confidence of the leaders of the Department of Health on the capability of the health care delivery system to effectively implement national-scale interventions. The CDD, which started in 1980, established diarrhea training units in at least six big hospitals in different parts of the country. Both programs had strong functioning linkages with the Philippine Pediatric Society and the Association of Filipino Medical Colleges.

**Strong support for rational drug use.** Spearheaded by the Health Secretary at the time, the National Drug Policy Program was a strong movement within the Department of Health. Since rational drug use was a major component of the policy, standard ARI treatment protocols became the concrete example of the practical implementation of this component. Decisions limiting government purchases of drugs were quick and unanimous. Prior to this, government was the biggest buyer of cough medicines.
Establishing the Phil-CARI

Components

With the realization at that time that many program interventions, such as those to reduce domestic smoke or parental smoking, were largely untried and untested, the Phil-CARI was deliberately designed to be simple and flexible. Only two major objectives, with one corresponding component for each objective, were selected. The first objective was prevention of ARI, with the main intervention as immunization, especially with measles and diphtheria-pertussis-tetanus vaccines. The second objective was mortality reduction, which was to be achieved through early detection and treatment of pneumonia, the killer ARI. Vaccination was delegated to the EPI, so that in essence the Phil-CARI had only one major component, which was the institutionalization of an efficient and effective method of detecting and managing pneumonia. Other ARIs, such as those presenting as wheezing or ear infections, were included in the training courses for doctors and nurses but were not given much emphasis in the training of midwives.

The simplicity of the program design was deliberate in order to facilitate broad understanding of the new concepts and to quickly scale up the activities and bring the core intervention, which was the standard WHO case-management protocol, to the maximum number of frontline health service units and thus benefit as many children as possible, especially those in far-flung communities.

The national program included research and development as a third but less-prominent component to allow room for future strategies. The research issues at that time focused on the search for effective ways to reduce the other ARI risk factors, such as domestic smoke, or on the development of newer ARI-specific vaccines.

General measures to promote breastfeeding and improve infant nutrition and growth were delegated to other existing child health programs.

Core Activities

Several core activities were undertaken to institutionalize a health care delivery system that could efficiently and effectively detect and treat pneumonia. These were the following.

Training of frontline health providers at the center and hospital levels. Rural midwives, the frontline health providers in the smaller health stations, were trained in the health center with use of the algorithms in the WHO Supervisory Skills module on “Management of the Child with Cough and Difficult Breathing.” The nurses and doctors who manned the main health centers went through the complete WHO Supervisory Skills module, including the algorithms on “Management of the Child with an Ear Problem or Sore Throat.” Doctors and nurses at the outpatient and emergency units in hospitals went through the WHO manual on “ARI in Children: Case Manage-

ment in Small Hospitals in Developing Countries,” also called the Standard Case Management module. All groups had hands-on exercises in treating children in outpatient settings. The hospital groups had additional inpatient sessions.

The Diarrhea Training Units established for the CDD easily incorporated ARI training courses and were transformed into ARI-Diarrhea Training Units (ATU/DTUs). Several courses were conducted as combined CDD-ARI training, following WHO guidelines. In contrast to CDD courses, which were undertaken only during the rainy season from June to September every year, ARI training was possible year-round since no seasonal variation of ARI was detected in the Philippines. Similar to the situation with CDD, pediatricians and the faculty of medical colleges actively joined the courses as participants and later on became trainers; however, unlike with CDD, funds were not available for direct release to the pediatric society or the medical colleges.

Provision of essential equipment and supplies. These included one-minute timers and co-trimoxazole tablets for midwives and penicillin, chloramphenicol, and oxygen tanks with flow meters for the hospitals. With added donor assistance, oxygen concentrators were provided to distant hospitals, and pulse oximeters and pediatric otoscopes were given to the ATU/DTUs.

Monitoring and evaluation. The Research Institute for Tropical Medicine Bohol-ARI research project continued to document changes in the baseline incidence and mortality rates in the province of Bohol. The study showed a 48% reduction overall in mortality among children <5 years old and a 60% reduction in pneumonia-specific mortality after 6 years of implementation in the province [5]. A drug-resistance surveillance group incorporated ARI drugs in its system and noted the continued low resistance of Streptococcus pneumoniae to penicillin and co-trimoxazole [6]. Facility health surveys were also conducted in collaboration with the WHO to detect changes in clinic and household practices as well as obstacles to these changes.

Maintaining the Program

From 1990 to 1991, there was overwhelming interest in the new program. Donor partners funded as much as 80%–90% of the courses, equipment, and supplies. The program target was to train 80% of the frontline health providers over a period of 5 years. By 1992, six ATU/DTUs were functional, and in 3 years the 5-year training target was exceeded. Health facility surveys conducted with the WHO involving 85 facilities showed that 83% had health care workers trained in ARI standard case management [7]. However, the same health facility surveys showed that refinements were needed to improve the total quality of health care services for ARI. In spite of the training, the midwives had less-than-adequate assessment skills, as shown in the unacceptably low 49% health worker/
surveyor agreement in case classification. As a result, only 69% of the patients with pneumonia were adequately treated, since 32% were not given antibiotics.

Health education was also inadequate, and only 63% of mothers received home care advice. During the group feedback discussion that followed the surveys, the program managers identified the inadequacy of hands-on clinical practice and the lack of follow-up and supervision as the major reasons for the poor survey findings. In addition, despite the high levels of training, only 52% had first-line antibiotics available in their facilities, thus reducing their capability to treat ARIs adequately.

From 1993 to mid-1995, many varied activities were reintroduced to respond to the problems detected in the surveys. Refresher courses were planned for midwives. By that time, the health delivery system in the country was reorganized into at least three independent units: the central Department of Health with its regional field offices, the provincial- and city-level organization, and the municipal-level organization. This devolution of health services created functional and financially independent units. Except for service provided by some retained hospitals, Department of Health functions were limited to policy formulation, planning, and monitoring.

The bulk of direct health care delivery became the responsibility of the municipal, provincial, and city units. The municipal health centers ceased to be answerable to the provincial or city health offices and became answerable to the local municipal mayor. The provincial and city health officers, in turn, became answerable to the provincial governor and the city mayor, respectively.

The Phil-CARI responded to this organizational change by allotting donor funds to orientation of local government executives. The orientations focused on ARI program objectives and components. To respond to erratic drug supplies, the program allocated centrally budgeted government funds for basic antibiotics. Household surveys showed that only 49% of children with an ARI episode needing assessment were taken first to an appropriate health care provider [7]. To improve facility utilization, a mass media campaign was planned to increase identification of fast breathing by caregivers and to encourage immediate consultation at the government health facilities. However, while these plans seemed logical and sensible, their execution was poor.

Refresher courses were done haphazardly, many times using ineffective simulation of cases. Orientation meetings were poorly organized and poorly attended. In spite of fund availability, the government procurement system was too inefficient to provide the essential drugs on time. The mass media campaign was also so poorly funded and executed that it did not reach enough audiences beyond the Department of Health doorsteps. The media materials came after the campaign and remained in government storerooms long after the campaign period. To date, communication materials have not been evaluated.

There was also poor follow-up of linkages with the pediatric society and medical colleges. There was virtually no active contact in 1995. Plans to expand linkages with nursing and midwifery schools were left undone. Even the ATU/DTUs deteriorated from lack of follow-up. Training and methodology standards were not defined, and trained personnel were not followed-up. Expensive oxygen concentrators, distributed to far-flung district hospitals, were hardly used because the users were not adequately trained and followed-up.

While the main Department of Health component continued to meet problems, the research component proceeded steadily. Various studies were completed, including assessment of rapid diagnostic techniques in determining ARI etiology and immunogenicity studies on vaccines against *Haemophilus influenzae* type b and *Pneumococcus* and other various combination vaccines. Surveillance of drug resistance continued.

From 1995 to 1996 the Phil-CARI was reviewed. The refresher and orientation courses were discontinued. A consultative meeting of ATU/DTU managers was called to clarify roles, targets, and standards. Linkages with the pediatric society and the medical colleges were reestablished. This was facilitated by the introduction and adaptation of the new training modules on “Integrated Management of Childhood Illnesses.” Linkage with the midwifery association was also established. In 1997 the Department of Health’s budgeted allotment of drugs for each regional office was distributed in order to shorten the drug procurement and distribution process. Pediatric formulations of co-trimoxazole in blister packs are being considered to prevent diversion of the drug to adult patients. The costs and benefits of this move will have to be thoroughly evaluated.

In 1997, in response to large numbers of measles cases, a campaign to eliminate measles by 1998 was prepared and involved immunizing >26 million children between 9 months and 14 years old. Plans are also underway for a better-planned and better-supported mass media campaign aimed at increasing timely consultation and utilization of health facilities by caregivers.

While the Research Institute for Tropical Medicine vaccine trials have shown encouraging results, there are difficulties in incorporating the vaccine against *H. influenzae* type b into the EPI, primarily because the disease burden and thus the expected benefit cannot be readily ascertained; laboratory facilities are inadequate, and there are other logistic constraints. The high cost of these newer vaccines makes cost-benefit studies crucial.

**Lessons Learned**

After almost 9 years of implementation, the Phil-CARI cannot easily demonstrate any impact in terms of incidence of pneumonia or associated mortality among children <5 years of age. What is known is that pneumonia remains as the number one killer of Filipino children. It is thus felt that while the health care delivery system has been primed to potentially create the desired health impact, the changes instituted in health care practices are not yet adequate to reduce the incidence and
mortality rates associated with pneumonia. This means that much remains to be done. The following are important lessons that can be shared from the Phil-CARI.

Training and institutionalization of standard case management protocols. The ATU/DTU trainers always tried to achieve the proper combination of the following elements: proper selection and motivation of participants, adequate training and preparation of trainers and facilitators, adequate hands-on practice, and good follow-up and supervision after the course. However, there was wide variation in the actual execution. In the frenzy to achieve high training coverage or use donor funds according to schedule, some of these essential elements may be compromised. Quality assurance in ATU/DTU training is thus important. This should include follow-up and supervision after training.

Training of doctors also posed more difficulties than did the training of midwives or nurses. It was more difficult to get doctors to attend ARI courses. A 1996 desk review of the ARI component of UNICEF’s Fourth Country Program for Children showed that, in spite of the overall high training coverage, only 55% of frontline physicians were trained in the ARI courses, in contrast to 87% of midwives and 89% of nurses. On the basis of follow-up-visit reports, physicians were also found to be less likely to count the breaths per minute and, especially among those based in hospitals, less likely to comply with the standard drug regimen. These difficulties led us to consider emphasizing preservice training, especially for doctors. It was felt that to ensure continued adherence to the standard management protocols in all service delivery outlets by all service providers, quality-of-care indicators should be regularly monitored and a reward-and-discipline scheme should be linked to this monitoring system. Household and health facility surveys cannot always be conducted. Thus, the indicators in the survey questionnaires were translated into quality standards of care and incorporated in the checklist during routine supervisory visits.

Sustainability of programs and services. The Phil-CARI could have planned better for the shift from external funding to more sustainable government funding by securing government counterpart funding at the initiation of the program, especially during the period when political support and excitement were high. Structural and operational changes in the health care delivery system, such as better drug procurement and distribution, better supervision and feedback, and better referral systems, should have been more closely linked with training. While training proceeded at a fast pace, the concomitant changes in the rest of the health care delivery system were slow. The gaps within the system diluted the successes of the training activities.

Training cannot be isolated from the rest of the health care delivery system. Thus, the “Integrated Management of Childhood Illnesses” training module, the newest WHO innovation, is no longer viewed as mere algorithms to be learned but is recognized as representing a change in the total health care delivery system. These module courses are thus proceeding more slowly and are to include more comprehensive planning immediately after the courses.

Achieving desired impact. While it was never claimed that training courses alone can achieve reductions in morbidity and mortality, some ARI program managers believed that training would have the most impact on child health. Even if the ARI courses in the Philippines were perfect, an impact on health could not be achieved with only 49% facility utilization. The equally important role of the parents and caregivers, in addition to that of the health care provider, has to be recognized and emphasized. Health education during sick-child consultations, while important, may be too focused and limited to precipitate and sustain behavioral changes among caregivers on a national scale.

Plans in the Philippines for a more comprehensive and better supported information, education, and communication intervention aimed at changing the behavior of parents and caregivers of children are being reviewed. The search is for the proper multimedia mix that will deliver ARI messages that stimulate enough concern but not panic among the parents and caregivers. The aim of such communications is that caregivers will not only assess symptoms more accurately but also execute appropriate action, even if they know that the signs they detect spell danger for their children.

Multimedia communication activities may also potentially enhance health provider training and sustain health provider behavioral changes. Long-distance teaching via the radio is worth exploring. To design the proper mix of messages and methods and to reach the millions of parents and caregivers within a nation are the challenges to communication experts and program managers everywhere.

Another aspect of making an impact on health is the ability to demonstrate this impact. The Philippine health information system was not responsive enough to the needs of the Phil-CARI, so information on its performance is markedly incomplete. Modifications in the information system and commitments to these modifications should be secured at the initiation of a national program. National monitoring and surveillance of the incidence of ARI and pneumonia, specific pneumonia-associated mortality rates, the incidence of complications, and changes in the knowledge, attitudes, and practices of parents and caregivers are some of the proposed indicators.

Goals concerning an impact on ARI are also more properly viewed within the perspective of the overall goals for child health. Integrated childcare services, designed from the point of view of the needs of the children, should be among the structural goals of child health programming. In this way, all available services and resources can be pulled together to create the desired impact.

Campaigns such as mass-immunization days should be carefully planned so that these do not divert limited resources and manpower to a single disease but actually contribute to integrated childcare. The measles elimination campaign in the Philippines was an ARI/EPI activity that took years to mount in
response to the 8-year-old research finding that measles was a major culprit in the deaths of children with pneumonia in our country. Key moves like these can be made only through consistent synthesis of experiences, redirection of plans and resources, and frequent consultation and evaluation.

References


