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Implementation of a National Integrated Management of Childhood Illness (IMCI) Program in Uganda

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Summary

Uganda was among the first countries to implement the Integrated Management of Childhood Illness (IMCI) approach on a national scale, beginning in 1995. The program benefited from strong child health structures in the Ministry of Health, and generous support of donors. This enabled the training of over 8000 health workers in IMCI methods and to begin pre-service training and training for private practitioners. Training was decentralized to district level in 2000, and a short training course was developed in 2002. When the results of the national program were examined in 10 districts, the presence of IMCI-trained health workers in health centers was patchy. Supervisors observed health workers using their IMCI skills at only about half of visits. However, turnover of health staff following IMCI training was generally low. Low utilization of health facilities has reduced the potential benefit of the IMCI program. The pressure for rapid implementation of IMCI resulted in neglecting development of strong monitoring methods, a consistent supervisions system, and methods to assess the quality of IMCI training. The need for a hospital referral component was not appreciated until well into implementation. Although the need for community IMCI was recognized early in Uganda, development of the core components and the implementation process required much longer than anticipated.

KEY WORDS: Uganda, Integrated Management of Childhood Illness, child health

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Introduction

Uganda shares many of the health problems of sub-Saharan Africa. In an effort to reduce childhood morbidity and mortality, Uganda was one of the first countries in Africa to implement the Integrated Management of Childhood Illness (IMCI) as a national program, with heavy support from many donors and organizations. The program was begun in 1995, and IMCI is now part of health services in all 56 districts. In this paper we start with the steps taken to plan and implement the program, and look at how the national program has changed the care for sick children in 10 districts. We examine the lessons from its creation that would be useful for other countries planning or beginning the implementation of a national IMCI program.

Health status

The population of Uganda is 24.5 million, 80% rural. The infant mortality is 88.4/1000 and the under five mortality is 151.5 per 1000 (Uganda Bureau of Statistics, 2001). Life expectancy at birth is 48.1 years, and the fertility rate is 6.9 (Uganda Bureau of Statistics, 2002). Maternal and perinatal conditions account for 20.4% of deaths. Among infants and children, common causes of death are malaria (15.4%), acute respiratory infections (10.5%), HIV/AIDS (9.1%), and diarrhea (60%). About 49% of children are fully immunized. A trained attendant assists only 37% of pregnant women during delivery. It is estimated that 49% of the population lives within 5km of a health facility (Uganda Ministry of Health, 2000a). Fewer than half of under five children receive care from the public sector (JHU, 2004).

Health services

Decentralization of government in Uganda began in 1993. The Ministry of Health (MoH) retained responsibilities for formulating policy, guidelines and the setting and monitoring of standards (Uganda MoH 2000a). Management of national hospitals remained with the MoH, while district hospitals and clinics as well as human resource management became the responsibility of local government. District services are supported by conditional and unconditional grants from the central government, donor funds and with assistance from nongovernmental organizations (NGOs). To manage decentralized services, the MoH provided district health management teams (DHMTs) quality improvement training (Omaswa, *et al* 1997).

Primary Health Care (PHC) services are provided by dispensaries (HC2), dispensaries with maternity units (HC3), and facilities with inpatient beds, an operating theater for emergency procedures, and a medical officer (HC4). A first referral hospital supports clinic services. Both public sector and NGO hospitals are part of the district health system. Health sub-districts have been created in many districts. Services in are managed by district health management teams. The team includes section heads for such areas as reproductive health, immunization, and environmental health. The hospital superintendent and representatives from NGOs and from donor projects commonly participate in district (or sub-district) health planning and management.

Development of IMCI

The Integrated Management of Childhood Illness approach was developed by WHO and UNICEF to provide a method for health workers to assess, classify and treat children with common and potentially life-threatening illnesses (Gove 1997). The three components of IMCI address improving health worker skills; strengthening the health systems, and promoting community child health practices. The initial experiences with IMCI were summarized in 1999 (Lambrechts et al 1999).

In 1999, with USAID support, the Johns Hopkins Bloomberg School of Public Health and the Institute of Public Health, Makerere University began an effectiveness assessment of IMCI in 10 districts across Uganda through regular data collection at health facilities (figure 1). In these 10 districts live 23% of the country's under five population.

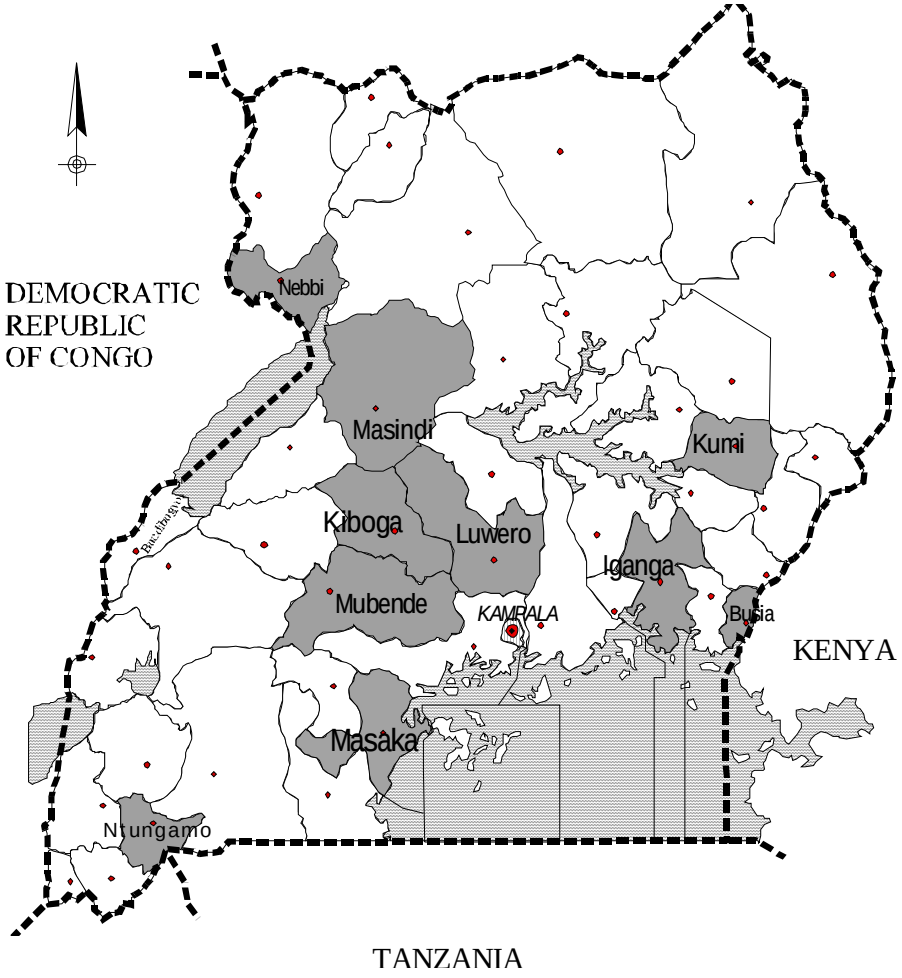


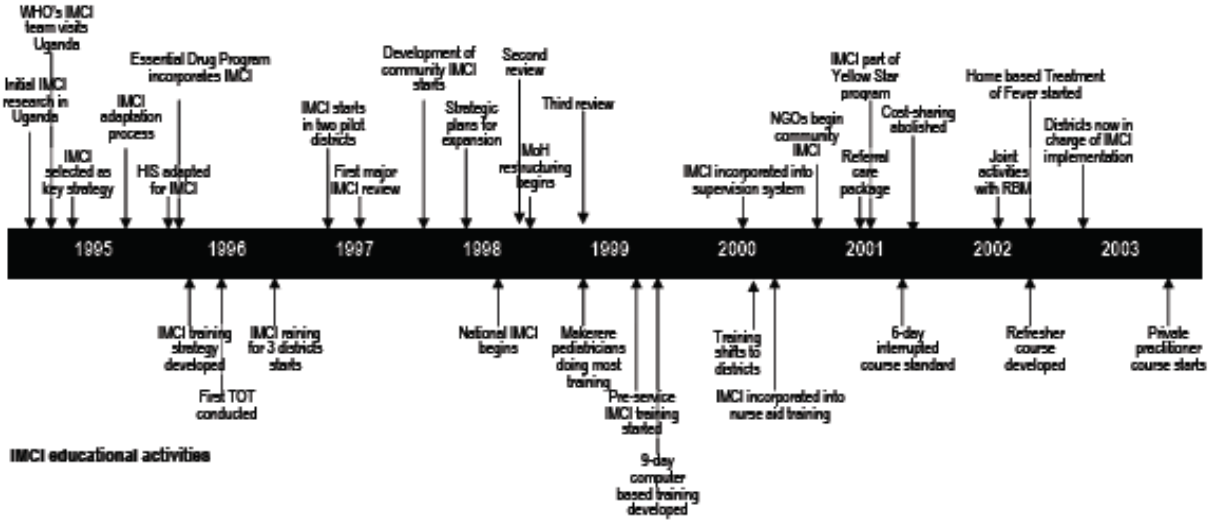
Figure 1. Map of study districts

The first part of this article documents development and implementation of IMCI in Uganda as a national program. The second examines how the implementation of a national IMCI changed the provision of child health services in the10 districts.

I. Development of IMCI in Uganda

The first Uganda studies of IMCI were conducted in 1994, in Kabarole district (Kolstad *et al* 1997). These found the approach to be feasible for Uganda. Prior to this there had been discussions within the MoH on integrating the country's multiple child health programs. In 1995, IMCI was selected as the child health strategy for Uganda. The sequence of IMCI implementation in Uganda is depicted in figure 2.

Figure 2. Timelines for IMCI in Uganda



A 22-member national IMCI working group was established to coordinate IMCI activities, with sub-groups for planning, training and adaptation. A first goal was to ensure that IMCI was consistent with Uganda health policies and guidelines.

This initial phase concentrated on adapting clinical guidelines for Uganda, producing a chart booklet with the IMCI algorithm, and developing the capacity to train health workers. The new IMCI initiative was incorporated into the well established Control of Diarrheal Disease and Acute Respiratory Infection program (CDD/ARI) in the MoH.

An IMCI training strategy was developed in January 1996, with the first training session conducted for 15 central and district trainers a few months later. Also trained were personnel from technical programs such as malaria and nutrition. The first district-level training was conducted in October 1996. A plan for the follow-up of newly trained health care workers was developed, and a core of national IMCI supervisors was trained. In 1999, IMCI was adopted as one of 12 components in Uganda's Essential Package of Health Services. From the first, IMCI was planned as a district-implemented initiative, consistent with the country's on-going decentralization process.

Early implementation

In October 1996, health worker training started for two pilot districts, Mukono and Masaka. Training for Kampala was added in 1997. This training used an 11-day course with training materials adapted for Uganda. Hospital-based doctors, nurses, and clinical officers, mainly from Kampala, were used as trainers as there were few trainers at the district level. The initial implementation plan called for training health workers in 15 districts by the end of 1998, and in all districts by 1999.

Evaluating IMCI implementation

In March 1997, after one year of implementation, key stakeholders, including the MoH, UNICEF, WHO and USAID, reviewed the IMCI program. The evaluation found the pace of implementation satisfactory. Participants developed a training strategy for 1997-2003, and set criteria for expansion to additional districts.

WHO and UNICEF conducted a second evaluation in mid 1998. This evaluation reviewed implementation from start up to August 1998, using information from the training of 701 health workers in the now 19 districts starting IMCI implementation. This reviewer concluded that rapid IMCI expansion was taxing the MoH's limited capacity to support districts, and that districts themselves lacked the ability to fully supervise those being trained. The reviewers recommended that further expansion of IMCI be done cautiously. Other recommendations included improving the referral process from health centers, involving the private sector in IMCI, linking IMCI with the community, and introducing IMCI into pre-service training for health workers.

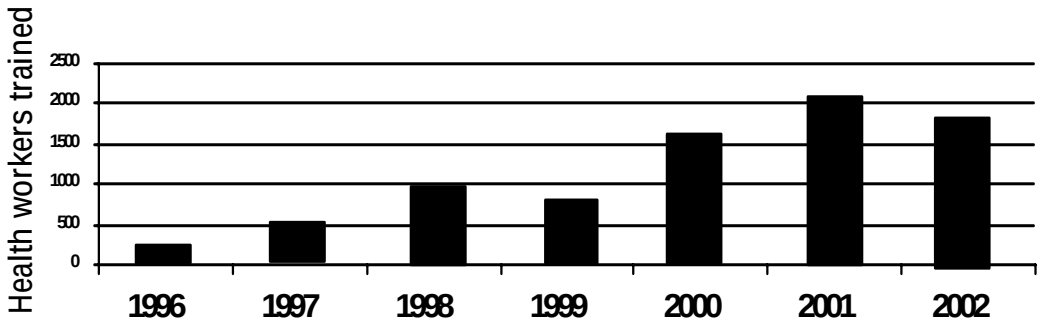
Expansion phase

Uganda stakeholders conducted a third evaluation in November, 1998. At this review, an expansion plan was developed for 1998-2005, based on the needs, capability and resources of districts to implement IMCI. A goal was for a national pool of 250 trainers who would also follow up health workers trained with two week and three month visits post training.

A sequence of activities was developed for the introduction of IMCI into new districts,. These included pre-visits to assess district readiness, sensitization of local government about IMCI, and a two-day orientation meeting with the District Health Management Team. An IMCI focal person was selected by the DHMT who would lead a district IMCI working group to develop a one-year work plan and budget for implementation.

During the expansion phase the Ministry of Health was being restructured as part of health sector reforms. Restructuring reduced the number of staff at MoH headquarters. At the same time a new National Health Policy, and Health Sector Strategic Plan was created. By now the national IMCI program had replaced the CDD/ARI program and was a fully constituted entity,. This MoH restructuring, as well as a physical move of the MoH from Entebbe to Kampala (40 km) reduced the number of persons trained in 1999 (figure 3).

Figure 3. Number of health workers trained in IMCI by year through in-service courses



Ten zonal teams of IMCI trainers/supervisors were formed to provide decentralized support to districts beginning IMCI. These teams came from adjacent districts, where IMCI implementation was advanced. The teams helped the new IMCI districts by providing support and technical assistance, reducing demands on the national IMCI management team.

By 1999, some 1500 health workers and 200 supervisors and trainers from 15 districts had been trained. A 9-day computer-based IMCI course was developed in 1999, with support from the USAID Quality Assurance Project. This is now (2004) being used for IMCI training of medical students. Contracts with pediatricians at Makerere University made it possible to train 694 health workers and district trainers during 2000/2001, representing 36% of all health workers trained in that period.

Central training ceased to be the principal training strategy in 2000. Now that a large number of district-level trainers had now been created, IMCI training could be shifted to district sites. In 2000, an interrupted course was developed for Uganda. This course starts with three days of classroom training in the district and is followed by a week of work at a health facility under close supervision of an IMCI trained mentor. The course concludes with three days in the district classroom to consolidate IMCI learning and field experience.

Community IMCI

The MoH adopted the concept of Community IMCI in 1998, though its full development took another 2½ years. UNICEF, WHO and others provided support for its development. This period of time was spent mainly on development of guidelines and tools for strengthening 16 family health practices thought to have the greatest impact on child health. The MoH and an NGO IMCI working group began worked together to implement community IMCI. In a complementary approach, the Home-Based Management of Fever intervention started up in seven districts during 2002. By December 2002, 46 districts had implemented some elements of community IMCI in one or more parts of the districts.

Referral Care

The 1998 evaluation noted that many children referred for hospital care were not taken to hospital, and those who did go often received poor care at referral hospitals. Frequently there was a delay of 1-2 days before taking the child to hospital. Families cited costs as the main reason for not completing the referral (Government of Uganda MoH, 2000b). The Uganda program developed an IMCI referral care package with guidelines for improving inpatient services, technical guidelines for patient management for use by health workers, and a facility assessment and monitoring tool. This was tested in seven districts and the results were reviewed in 2002 before expanding the package to additional districts.

Linkages and partnerships

From the beginning, the IMCI program sought to build links with other programs having an impact on child health and with organizations with child health activities. The IMCI program collaborated with the Roll Back Malaria program (WHO) and the Malaria Control program (MOH), Home Based Management of Fever (WHO/MoH), Nutrition and Early Childhood Development (MOH/World Bank), and Prevention of Mother-to-Child HIV Transmission (MoH). During the expansion phase IMCI helped create a steering committee of principal NGOs involved in child health, to support the implementation of community IMCI. This group is linked with the USAID-funded Child Survival Collaborations and Resources Group (CORE) which functions across many countries.

Present status of the Uganda National IMCI program

Many changes that have occurred in the Uganda health services since 1995 affected IMCI implementation. These have included health reforms, the Sector-Wide Approach (SWAP), further decentralization of health services with the creation of the Health Sub District (HSD), the creation of the minimum health care package, and rapid growth of the for-profit sector. Nongovernmental organizations have come to play an increasingly important role in IMCI integration, planning, and implementation.

Training

By the end of 2003, all 56 districts in Uganda were implementing IMCI components one (health worker training), and two (health system support). Around 8000 health workers of different cadres have been trained in using IMCI guidelines. In addition, some 8200 students have received IMCI pre-service training. Half of these are nurse assistants trained in IMCI as part of a three month upgrading course for nursing aids organised by the MoH.

Ten districts began implementing the IMCI referral package in 2003. All districts in Uganda except one are now able to do IMCI training for their health workers. Districts use their own decentralized budgets for training and supervision. Variations in resources between districts resources are an important constraint. A 3-day refresher course has been developed and is awaiting testing at the district level. A working group has developed an HIV/AIDS component in 2003 for inclusion into the IMCI approach. This is awaiting final MoH approval.

As time passed the IMCI program has focused increasingly on pre-service training. All 30 nursing and clinical officer schools IMIC has been introduced in varying degrees into the curriculum. In 13 schools full IMCI training is given with IMCI questions present in the final qualifying examinations. At the university level, IMCI is part of medical and nursing curricula at both Makerere and Mbarara universities.
Training traditional healers to participate in the community IMCI program has been considered, but is still awaiting a policy decision by the MoH. In 2003, short courses in IMCI were begun for private medical practitioners, using a negotiation/discussion format.

From the beginning, IMCI trainers have visited newly trained IMCI health workers 6 weeks after completion of training. A recent development has been regular visits by the zonal technical support teams to health workers recently trained in IMCI to address difficulties health workers are having in implementing IMCI.

Health Systems

Although the essential drugs program was modified early to include IMCI drugs, there have been difficulties in getting IMCI second-line drugs into health centers. In 2001, Uganda started moving from a kit-based "pull" drug system to a requisition-based "pull" system. At the time of writing, it appears that IMCI drug availability may be improving. In 1998 the Health Information System incorporated most IMCI classifications, however some difficulties remain, such as the classification of measles.
National supervision guidelines are now in use by all districts health teams. These include sections for various common childhood diseases and a section for observation of IMCI case management. This make is now possible to track the quality of IMCI services, and supporting drugs and supplies through a national supervision system database.

In 2000, the MoH introduced a "Yellow Star" program to identify health facilities able to provide a basic standard of services. The accreditation process uses a 35-item checklist that includes the capacity to provide good IMCI services.

Resources for IMCI implementation

Support for IMCI implementation has come from many sources. The commitment of the MoH to make IMCI part of the essential package of health care and to provide leadership at the national level was vital for a strong start. The prior existence of a well-functioning CDD/ARI programs at the national level supplied the organizational capacity from which the IMCI program could be built. The willingness of the Pediatric Department at Makerere University Medical School to provide the bulk of trainers in the early stages meant that the program could start in-service training for large numbers of health workers and create district-level trainers quickly. The World Bank-supported District Health Services Project (DHSP) gave districts the resources to assume training and for management of IMCI. WHO's contributions were important from the start. Their full-time assignment of an Assistant Project Officer to the IMCI program helped the program's early growth. The Spanish NGO CESAL provided early resources for adaptation and implementation. UNICEF supported initial introduction of IMCI, the early evaluations and planning, as well as taking the lead in development of the community component. USAID-funded projects provided support in a number of ways. The USAID BASICS project assisted NGOs in starting implementation of the community component. The USAID DISH II project strengthened delivery of services in their project districts. Through the USAID-funded IMCI Impact Study, data were provided to the national IMCI program on the progress of implementation in the 10 study districts. Prominent NGOs in the implementation of community component are World Vision, Save the Children, CARE, AVSI, SNV, and AMREF, but a number of other groups have also been involved.

Although resources have come from many sources, the IMCI program has sometimes found it difficult to secure the consistent and long-term support, which a program of this nature requires.

Monitoring and Evaluation

The importance of an effective monitoring and evaluation component was not well appreciated at the beginning when the national program was focusing on training as many health workers as possible. From 2000-2002, the IMCI impact study provided monitoring data for the 10 districts in which it was functioning. Although implementation of the national supervision guidelines created a database of information from districts, the national IMCI program had difficulty accessing this in the beginning. Follow up visits to health workers recently trained in IMCI has been generally provided at six weeks, however the IMCI program still lacks resources for a consistent program of support visits beyond this time. In 2003 the national IMCI program began establishing a monitoring system to measure program effectiveness, but this has been slow in implementation.

II. The function of IMCI at the district level

Methods

To assess how the efforts of the Uganda National IMCI program have changed the care of children at the district level, a team from MoH, Makerere University and WHO visited the 10 districts (figure 2) in July and August 2002 (Uganda IMCI Impact Study Team, 2002). Documents, reports and previous evaluations were reviewed. The team used a series of checklists and questionnaires for key informants. An average of seven persons per district were interviewed, the majority being members of the District Health Management Committee. No personal data were collected. These findings were supplemented by information collected by the IMCI impact study between 2000-2002 from eight (and in 2002, from 16) sentinel health facilities in each of the 10 districts (Pariyo G, *et al*).

Results

Planning for IMCI

All 10 districts included IMCI in their annual work plans for 2001/02, and in five it had been part of their annual plans from 1998/99. All districts included IMCI in their annual budget. Half of districts stated that information from their monitoring and supervision visits had been used to modify IMCI budget and work plans for the subsequent year. This most commonly applied to plans for supervision, training and drug supplies.

Table 3. Characteristics of 10 districts and health care resources

Table. Characteristics of 10 districts and health care resources

	Bugiri	Iganga	Kiboga	Kumi	Luweero	Masaka	Masindi	Mubende	Nebbi	Ntungamo
Population (2002)*	351,689	1,038,247	144,598	233,847	490,517	1,128,784	304,551	675,701	430,686	398,555
Estimated <5 population (2002)*	70,338	207,649	27,329	53,063	84,369	222,370	59,387	148,654	85,276	78,515
Number of Health facilities**	35	98	24	26	47	44	41	41	45	19
Ratio IMCI trained HWs to <5 pop	1: 765	1: 554	1: 232	1: 737	1: 556	1: 1,751	1: 540	1: 1,316	1: 1,152	1: 1,287
New clinic visits per child per year	0.17	0.54	1.65	1.12	1.21	1.37	* NA	1.18	1.40	0.81
% OPD facilities with ≥ 60% HW IMCI trained	4.2	70.5	82.1	50.0	58.6	62.1	71.1	6.3	No data	19.2
Supervisors trained in IMCI supervision	4/14	21/29	20/20	1/27	2/36	1/34	12/12	0/34	0/8	0/15
Supervisors trained in IMCI case management	10/14	21/29	19/20	20/27	32/36	21/34	0/12	0/34	0/8	4/15
IMCI trained staff who left (1999/2000-2001/2002)	2	3	13	14	7	12	4	0	0	5
Mean percentage of facilities receiving supervision visits in the past 6 months†	100.0	100.0	100.0	87.5	100.0	100.0	92.9	86.7	100.0	100.0
Mean percentage of facilities receiving supervision visits in the past 6 months including observation of case mgmt †	68.8	33.3	33.3	68.8	57.1	80.0	61.5	42.9	6.7	37.5
IMCI trained staff who left / still in Place	2/92	3/375	13/118	14/72	7/149	12/127	4/110	0/113	0/74	5/61
Under 5 visits Jan 2001-June 2002	11,633	111,919	45,287	97,710	102,093	304,715	No data	175,247	118,979	63,547
CORPS trained for community IMCI	15	0	627	103	20	34	8	0	0	345

*National Census (2002)
** Documentation study, August 2002
† Sentinel HFS 2002

IMCI trained health workers

The district population and under five estimations from the 2002 national census are set out in the table. The number of health facilities in each of district ranged from 17 in Bugiri district to 99 each in Mubende and Masindi districts. The ratio of IMCI trained health workers to children under age five varied from 1:232 (Kiboga) to 1:1751 (Masaka). In all districts the number of new visits to an NGO or public sector facility for children under five was low. This ranged from 0.17 new visits per child per year (Bugiri) to a relative high of only 1.65 new visits (Kiboga). To some extent this may reflect the poor access by the population to health facilities.

Although the national program had trained over 8000 health workers at national and district levels, this did not translate to full coverage at the facility level in the 10 districts. We considered a health facility as having good capacity to provide IMCI services when a minimum of 60% of its health workers caring for under five outpatients had been trained in IMCI case management. Using these criteria, in only one of the 10 districts did 80% or more of health facilities met this standard. The study found that the level of supervisor training in IMCI supervision and in case management varied widely among districts. In the previous six months, supervision visits had been carried out at 96.7% of the sentinel health facilities, and case management of a sick child observed by supervisors in 49% of these facilities.

A major concern of IMCI programs in many countries has been the turnover among health workers who have been IMCI trained. In the 10 Uganda district, the number of IMCI trained persons who left the districts after training reached 19% in one district, but in others was 10% or less, and was zero in several districts (table).

There is little information available on variations in quality of IMCI training received by district health workers. From longitudinal data we have collected over 3 years, the quality of health worker performance by clinical officers and nurses remained consistent over time (Pariyo *et al*). This was not true for nursing aids, trained in the three month upgrading program, where performance deteriorated with time.

Community IMCI

Community IMCI was developed in Uganda later than facility-based IMCI. At district level, concerted implementation began only in 2000. The approach used in Uganda focused at the district on training Community-Owned Resource Persons (CORPs) at the sub-county and village level in 16 key family health practices. Community IMCI was implemented by NGOs using participatory methods. By mid-2002, a variable number of CORPS had been trained, with none in some districts and several hundred in other districts, as set out in the table.

Discussion

The development of the Uganda national IMCI program has been one of the earliest and most resource-intensive IMCI initiatives among developing countries. Efforts that began in 1994 have been aggressively pursued through many changes including decentralization, growth of the private sector, and health system restructuring. The commitment from the Ministry of Health, university paediatricians and the district health teams has been unwavering. The development partners, particularly the World Bank, the World Health Organization, UNICEF, USAID, and the NGOs, have strongly supported IMCI. Some 8000 health workers have been trained, first in 11-day courses, and later in interrupted courses. IMCI training is now being introduced into most pre-service training courses for health workers. At the district level, this intense national program has introduced IMCI services to the majority of health facilities. Even with this concerted national effort, and significant resources committed, in the 10 districts examined in detail, many health facilities did not have the majority of health workers caring for children trained in IMCI. Much has been learned during the implementation of this program that can assist countries developing IMCI or other national child health initiatives.

In retrospect, the need to give substantial time to the IMCI planning process was not fully appreciated at the start up of the Uganda program. There was intense pressure to start service delivery. More time could have been given to considering the needs that IMCI would create, and the various adaptations and alternatives to the WHO model needed for Uganda. Specifically, these neglected areas included pre-service training, strengthening the health system for IMCI delivery, care for children referred to hospital, and program monitoring. This meant that many of these activities had to be added later, sometimes in an *ad hoc* manner.

Although some saw IMCI as integrating a number of program activities at the MoH, some national programs viewed IMCI as competition for scarce resources. More time could have been spent early in building links with other programs to allay these perceptions.

A major advantage in Uganda for in starting IMCI was the existence of a strong child health program (CDD/ARI) in the MoH that served as a base for the IMCI program. There was already thinking at the MoH about the need to integrate child health activities, so IMCI was able to build on this existing interest. Starting IMCI *de novo* would have been more difficult.

Addressing the second component of IMCI, strengthening health systems to provide IMCI services, received somewhat uneven emphasis. Major health systems components such as adapting essential drug lists and health information system were addressed as part of the IMCI adaptation process from the beginning (Rowe, *et al* 1999). However, other health systems issues, such as supervision, management of patient flow, changes in counselling, and introduction of job aids received less attention. These areas became problems later.

District level implementation in Uganda focused heavily on adequate equipment and supplies as well as designating a focal person for IMCI in each DHMT. In retrospect, the capacity and resources of districts were uneven, making it difficult to fully implement IMCI in all districts in a uniform way as anticipated by the national program. District teams tend to be more attentive to programs able to provide resources such as vehicles and workshop *per diem*. As IMCI provided few of these, some districts may not have seen IMCI as a priority. Nevertheless, our survey found that all 10 districts in the study area had incorporated IMCI into annual district workplans and budgets. It also appears that information on IMCI implementation from supervision visits are being used in district planning. Somewhat to our surprise, we found that the turnover of health workers after IMCI training had been generally modest. This may be related to the decentralized manner of employing health workers. This low turnover, and the planning and budgeting for IMCI found is a positive reflection on Uganda's efforts to build an effective district level management that could function in a decentralized system.

Monitoring the quality of IMCI services is the responsibility of the district health team, and evidence suggests this is not always done effectively. Although 96% of facilities had received supervision visits in the preceding six months in just under half did the supervision visit include observations of IMCI case management, thus providing little opportunity to assess health worker skills. The supervision and support of IMCI health worker skills is of critical concern to the sustainability of effective IMCI care. This has clearly been shown in studies from Niger (Tawfik *et al* 2001; Kelley *et al* 2001).

In the early phases of IMCI, the major effort was for in-service training for health workers in both government and NGO facilities. The massive efforts in scaling this up provided little time to consider establishing pre-service training for PHC workers, training for Uganda's rapidly growing private sector and others outside the public and NGOs sectors, such as market drug sellers. Uganda's experience is that each group needs a different training approach. Given the changing nature of health services utilization, with more services being provided outside the public sector in most developing countries, it is important not to neglect this area. (Birungi *et al* 2001). Evidence from India and Pakistan suggest private practitioners can adapt and use child health algorithms (Chakraborty S *et al*, 2000; Luby S *et al*. 2001).

Uganda was one of the first countries to provide IMCI training to nursing aides, and the data show that this cadre could perform as well as nurses and clinical officers, and in some case perform better (Pariyo *et al*). As IMCI training was decentralized to districts and to other organizations (such as nurse aide training programs) the quality of training was not fully monitored. There is a suggestion that the quality of the later nursing aide and district training for PHC services has deteriorated. The extensive use of specialist pediatricians as trainers probably gave more of a clinical rather than health systems focus to IMCI training in the early phases.

Many organizations provided resources to the IMCI program. The level of sustained resources required was probably underestimated by all organizations at the beginning. Supporting the implementation of IMCI on a national basis requires long-term donor and Ministry commitment. Particularly problematic has been some of the limited and short-term commitment of resources for community IMCI.
A major need, not fully appreciated at the beginning, was the establishment of a monitoring component. The need to track hospital referrals, the quality of training, and district support of IMCI trained health workers were recognized only later. Although several activities by other programs or organizations to some extent provided the national program with needed information, this was not always comprehensive or consistent. A shortage of technical personnel to implement, supervise and monitor the quality of IMCI services continues to be a major deficit for district programs.

The information presented in this paper has a number of limitations and potential biases. Our report represents the views of many who were involved from the beginning of the IMCI program in Uganda. While we have tried to be objective, nonetheless the accounts are influenced by our own experience. The data collected from the 10 districts comes from an analysis of district records that were believed to be reasonably complete, though could have failed to record important information. The 160 sentinel health facilities from where some of the data were collected may not have been representative, although they were randomly chosen. The experience of Uganda may not be fully applicable to other countries where health systems differ.

Conclusion

Much has been learned during the introduction of IMCI in Uganda. Perhaps above all has been the need to invest adequate time from the beginning in long-range planning. Although pressures for early implementation are always great, failing to adequately plan creates subsequent problems for programs. Yet it is important to maintain flexibility and a "learning while doing" environment to accommodate the many changes in the health sector that can be expected during an extended implementation process. The importance of having long-term financial and programmatic resources committed before starting was another important lesson. A strong information system to monitor implementation including the distribution of health workers trained, their performance following training and the level of district commitment and support is critical and this need was only subsequently realized. These data need to be collected from the beginning, and used to continuously realign implementation methods. Development of the community component of IMCI was delayed in Uganda. Ideally this component would be implemented in the catchment areas of facilities where health workers were being trained at the same time, so the processes could be linked (Winch *et al* 2002). The standard 11-day IMCI training has proved difficult for health systems in many countries. The interrupted course developed in Uganda, as well as courses for private practitioners, and pre-service IMCI training are moves to train various groups in a more flexible approach, one that promises to be more sustainable. The most sustainable situation will be when all health workers receive IMCI training as part of their pre-service education, followed by in-service refresher courses.

Uganda IMCI Documentation team

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