



AFRICAN PROGRAMME FOR
ONCHOCERCIASIS CONTROL

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Revitalising health care delivery in sub-Saharan Africa

The potential of community-directed interventions
to strengthen health systems



World Health
Organization

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EXECUTIVE SUMMARY

National health systems in many African countries are weak. Understaffed, under-resourced, and decimated by migration and illness, these service provisions are also skewed heavily in favour of urban populations so that rural areas have few, if any, health facilities. All over Africa, public-health expertise is badly needed but is in short supply. And inadequate health education, prevention, and disease-control strategies keep millions of people at risk of illness due to preventable vector-borne tropical diseases—including onchocerciasis—that should, with currently available tools, be under control.

Effective vaccines and drugs exist to cope with the most common and devastating health threats. But the ineffectiveness of many African health systems, particularly in the sub-Saharan region, means these solutions do not get applied on the ground. Many of the challenges centre on integrating disease-focused programmes with primary care provision, scaling-up delegation to community workers, and creating public health strategies for disease prevention—all essential components of countries' commitments under the Millennium Development Goals.

These deep-rooted problems have long hindered efforts to improve public health, while lack of funds, bureaucratic red tape, and political inertia prevent governments making the necessary investments in health-system strengthening. However, one public health programme has not only achieved good results in these difficult conditions, but has also

demonstrated the effectiveness of a model of community involvement through which health systems, even in the most impoverished and conflict-ridden countries, can be supported from the bottom up.

The African Programme for Onchocerciasis Control (APOC), which was set up in 1995, began with a substantial challenge: how to organise mass administration of a drug, provided for free to all those in need, to all endemic areas, many of which are far from urban health centres. The World Health Organization (WHO), UNICEF, UNDP and World Bank-sponsored Special Programme for Research and Training in Tropical Diseases (TDR), working with African scientists, came up with a solution whereby communities in affected areas take charge of and direct drug distribution for themselves. They named it community-directed treatment. In the year 2006, 46.2 million people in endemic countries were treated by trained drug distributors—selected by communities from among their own ranks—using this strategy.

The community-directed approach has brought substantial achievements for river blindness control. Based on data from a recent health impact assessment, in the year 2007 close to one million disability-adjusted life years (DALYs) have been averted by APOC through community-directed treatment with ivermectin, representing more than 55% of all DALYs that would otherwise have been lost in the APOC countries without treatment.

But APOC has also formed a network of community distributors that can, if sustained, make a substantial contribution to strengthening the primary health care systems in countries where projects are running. APOC has established structures at grassroots where no routine health systems exist. In some countries, several disease programmes have been combined and all use the community distributor network to reach remote settlements. The necessity for partnerships with local health workers in training these community volunteers creates stronger links between communities and their health services, while the need for monitoring of adverse events also creates stronger communication links for emergency care.

However, while APOC has achieved great successes in its 108 project areas across 16 countries, its mandate comes to an end in 2015. Maintaining high coverage of mass treatment with ivermectin after that point demands that a strong sustainable system is in place. Integration of single disease-focused programmes, like APOC, within existing health-system structures increases the efficiency of primary care delivery and enables hard-won health gains to be sustained. Unfortunately, while high level political rhetoric is broadly supportive of the idea of this kind of integration, little progress has been made towards apportioning of appropriate funds or taking practical steps to ensure sustainability after 2015.

African governments should recognize that while strengthening health systems using traditional top-down approaches requires time and massive resource investment, community-directed intervention, as demonstrated by APOC, is a new model of operating primary health care which has the dual benefits of community empowerment and health system support. Community directed treatment can accelerate changes in health promotion, disease prevention, and provide the opportunity for control of many major chronic diseases, which are increasing in frequency in poor countries as well as rich ones.



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CONTEXT

National health systems in many African countries are weak. Understaffed, under-resourced, and decimated by migration and illness, these service provisions are also skewed heavily in favour of urban populations, so that in some rural areas health facilities are non-existent. Public-health expertise is badly needed, but in short supply. And inadequate health education, prevention, and disease control keeps millions of people at risk of illness due to preventable vector-borne tropical diseases—including onchocerciasis—that should, with currently available tools, be under control.

The World Health Organization's (WHO's) 2006 World Health Report put the African Region "at the epicentre of the global health workforce crisis", because it has 24% of the burden of disease but only 3% of health workers, and commands less than 1% of world health expenditure. With demographic changes increasing the demand for health workers in rich countries, and poor countries increasingly saddled with heavy burdens of chronic illness to add to their troubles with infectious disease, the situation will only get worse.

Sustained campaigning and shifting international attention has brought a new priority to the dangers posed by continuing health insecurity in developing countries, and greater recognition of the importance of robust public health and primary care in guarding against disease outbreaks. WHO has already pledged that its next World Health Report, due for publication in 2008, will focus on the important role of primary care in providing access to the essential prerequisites for health. Yet the countries with the most severe problems extending basic health facilities to their populations are paralysed by lack of funds, bureaucracy, a lack of appropriately trained graduates, overwhelming disease burdens, and, for some, ongoing conflict. These myriad problems mean that ring-fencing the time and resources that need to be invested to rectify their health-service crises is simply out of the question in many cases.

The persistence of these problems means a new solution to health-system deficiencies is required. Effective vaccines and drugs exist, but they are not being applied on the ground, and many of the people who would most benefit from these interventions are out of

reach of existing services. What is more, deploying workers equitably for universal access to HIV/AIDS treatment, scaling up delegation to community workers, and creating public health strategies for disease prevention are all essential components of countries' commitments under the Millennium Development Goals. But current approaches offer little hope of meeting these targets by the 2015 deadline.

With a recent influx of disease-focused funding to fight the biggest killers—HIV/AIDS, malaria, and tuberculosis—there has been a new level of international attention to the health problems of poor countries. WHO has also helped put health high on the global political agenda with the most recent World Health Report, *A safer future: Global public health in the twenty-first century*, laying out the potential security threat posed by unchecked epidemics, which can arise in areas where surveillance and primary health-care services are weak. It is therefore timely to debate ways in which sustainable investments can be made to best combat preventable epidemics. The experience of the African Programme for Onchocerciasis Control (APOC), which soon after its initiation in 1995 adopted an innovative strategy to reach the communities most in need, provides a valuable lesson.

APOC's innovation was to encourage communities to direct their own treatment in contrast to previous programmes that adopted "community-based" approaches whereby formally trained health workers imposed interventions on communities, usually with their permission but not participation. The evidence collected during APOC's 12 years of experience now convincingly argues that community-directed treatment can not only successfully tackle single diseases like onchocerciasis, but it also advances health promotion and disease control, strengthens basic health-system structures, facilitates better links between communities and health staff, and forms a crucial step in helping countries work towards their Millennium Development Goal commitments.



APOC AND COMMUNITY-DIRECTED TREATMENT

Efforts at onchocerciasis control in Africa began with the aim of eliminating the disease through vector control. The Onchocerciasis Control Programme (OCP), launched in 1974 as a collaboration between WHO, the UN Development Programme, the World Bank, and the Food and Agriculture Organisation, used helicopters and aircraft to spray pesticide over the breeding sites of blackflies—the vector for the onchocerciasis parasite—to kill their larvae. This strategy was successful, and, once an additional strategy of treatment with the microfilaricide ivermectin (Mectizan®; Merck & Co) became available, when the drug was approved for human use in 1987, OCP was able to halt transmission of the disease in 10 out of the 11 West African countries involved in the programme.

However, onchocerciasis is not limited to these areas. And for the many countries where it was deemed not cost-effective to engage in spraying breeding sites, there was no onchocerciasis control—before APOC was established in 1995, that is.

In addition to maintaining surveillance in the 11 OCP countries, APOC now runs projects that cover a region including 16 African countries endemic for onchocerciasis, with the aim of eliminating the disease as a public-health problem (see Table 1). There are four sites

in Uganda, Tanzania, and Equatorial Guinea where vector elimination through ground or aerial spraying is a possibility, but elsewhere the main control method adopted by APOC is reducing parasite load in human body through mass treatment using chemotherapy. The drug in use for this purpose is ivermectin. And Merck & Co, the agent's manufacturer, has pledged to make available an unlimited supply of the drug, free of charge, to all those at risk of onchocerciasis for as long as necessary. This generous donation made it possible for APOC to consider elimination of the disease as a reasonable goal.

With drug supplies secured, the principal challenge for APOC was to work out a way to deliver a single-dose treatment to the populations of high-risk communities, and to sustain the delivery for a sufficiently long period to bring about the control of the disease. Because ivermectin kills the parasite only when it is at the microfilariae stage of growth, adult worms remain alive in the host's body until they have lived out a normal lifespan—a period of around 14 years. During this time, individuals harbouring the parasite can exhibit symptoms of unrelenting itching, severe skin disease, and nodule formation, although these features are improved by annual treatment with ivermectin.

Table 1. Countries involved in APOC and Trust Fund made available (1996-2007) (US\$ 112.5 million)

Country	Date first project was approved by APOC in the country	Date first project was launched in the country	Total funds received up to August 2007 for APOC (US\$)**
Angola	September 2002	March 2003	1 320 908
Burundi	September 2002	February 2005	907 600
Cameroon	September 1997	August 1998	8 669 920
Central African Republic	September 1997	July 1998	977 700
Chad	September 1997	January 1998	1 639 414
Congo	June 2000	January 2001	817 471
Democratic Republic of the Congo	August 1998	April 2000	10 495 440
Equatorial Guinea	April 1998	December 1998	3 371 450
Ethiopia	March 2000	August 2000	2 049 122
Gabon	August 1998	September 1999	106 636
Liberia	July 1999	February 2000	1 178 866
Malawi	December 1996	January 1997	1 148 994
Nigeria	April 1997	October 1997	17 179 175
Sudan	April 1997	May 1997	3 426 351
Tanzania	April 1997	March 1998	4 242 128
Uganda	December 1996	May 1997	14 115 273*
Kenya	Hypoendemic -No mass distribution of ivermectin. REMO financed by APOC		
Mozambique	Hypoendemic -No mass distribution of ivermectin. REMO financed by APOC		
Rwanda	Hypoendemic -No mass distribution of ivermectin. REMO financed by APOC		
TOTAL			71 646 448

* includes cost of vector elimination activities in two foci in Uganda

** The total amount spent by APOC during the period 1996-2007 is \$112.5 million, which includes: US\$71,646,448 CDTI direct field costs, an additional \$26 199 157 on other field activities and funds for operational research, monitoring and evaluation, Macrofil research, technical assistance, and the development of new tools and \$14 638 644 on administrative costs.

Sustained drug delivery to all high-risk communities is difficult to achieve by use of the regular health services alone, which are already overburdened, sparse in rural areas, and short of resources. However, operational research done in preparation for APOC's first programmes in Africa indicated a solution for this problem, namely, greater involvement of the endemic communities themselves in the delivery process.

Large-scale community trials of ivermectin, in which mobile teams delivered the drug to endemic communities, started in OCP countries in 1987. By 1991, non-governmental development organisations (NGDOs) had teamed up with national, state, and district governments to organise mass and community-based dis-

tribution of ivermectin in endemic areas. But because interruption of transmission of onchocerciasis requires the drug to be continuously administered over a period of at least 14 years, a strategy enabling more sustainable treatment of communities, as opposed to occasional drug administrations dependent on external donors, was needed. As a solution to this problem, the WHO, UNICEF, UNDP and World Bank-sponsored TDR, working with African scientists, developed the concept of community-directed treatment with ivermectin, in which the community itself has the responsibility for organising and executing treatment of its population (see Box 1). A subsequent large, multi-country study by TDR showed that community-directed treatment is feasible and effective.

An additional multi-country study in 1994–95 documented that, when communities are responsible for organising their own distribution of ivermectin, higher coverage is achieved than when the health system plans and delivers the drug. As a result of these findings, APOC, which places high value on evidence-based decision making, accepted community-directed treatment as the basis of its control strategy.

APOC's achievements with community-directed treatment

APOC has struggled through a decade of operational barriers in the endemic and conflict-affected countries, but it is making progress towards eliminating the disease. Some countries where activities have been interrupted by conflict, or where previous achievements in control of the vector have been undone by insecurity (Sierra Leone is an example), require more work. But for the vast majority of endemic countries, ivermectin distribution is high in all project areas and the key symptoms that underlie the high morbidity of the disease have decreased by substantial amounts since APOC began its work. At present APOC operates community-directed-treatment projects in a wide geographical

area covering much of sub-Saharan Africa. Therapeutic coverage of more than 65% in these areas means that most of the targeted endemic communities in need are being reached with the treatment, even where the routine health systems do not exist at all.

A recent health impact assessment concluded that APOC operations have already significantly reduced the burden of onchocerciasis. Based on data from different sources and the latest APOC information on treatment coverage, the study estimated that in the year 2007 close to one million disability-adjusted life years (DALYs) have been averted by APOC through community-directed treatment with ivermectin, representing more than 55% of all DALYs that would otherwise have been lost in the APOC countries without treatment. Furthermore, as much of the effect of ivermectin treatment is preventive rather than curative, the future health gains will be even greater. The study estimated that by the year 2015 APOC would have presented over 15 million DALYs (Table 2).

These dramatic results have been achieved partly because APOC is fortunate to have committed donors and has managed to establish strong and long-term partnerships with several international agencies, communities, and NGOs. Another key factor is the

BOX 1

Initiating community-directed treatment with ivermectin

The process begins with an informal enquiry: a health worker pays a visit to community chief and arranges a meeting with the facilitation team and entire community. At this forum, the concept of community-directed treatment with ivermectin is explained. The community is then given time to select individuals they want to put forward for training as distributors (CDDs), who are village members chosen according to the priorities of the community.

Once this decision is made, the community informs the health worker of a preferred date for training the new CDDs. Once this instruction is done—usually in a group with representatives from several different communities—the newly trained CDDs conduct a census of their community, record the results in a notebook, and keep a copy in the home of the village or community leader.

The community as a whole decides on month and dates of ivermectin distribution, which the CDD communicates to the health worker/facilitation team. If possible, the CDDs collect ivermectin tablets from the nearest health post on a date previously agreed with health workers. When the drugs are in the possession of the CDD, distribution can begin.

CDDs monitor adverse reactions and treat cases of minor reactions where possible. Any difficult or severe cases are referred to the nearest health facility. After the drug has been given out, the CDDs must complete the treatment record notebook or form and return a copy to the health post from which the ivermectin was collected. These records are monitored by health workers during any future visits to the village and the health post records are updated accordingly.

strong coordination between APOC projects that has been maintained despite the wide geographical coverage of project areas and minimal human resources in the secretariat and management teams, which are based in Burkina Faso. The programme coordinates regional and global knowledge and multiple skills involvement through a smooth-running system of technical missions and temporary advisors whenever needed.

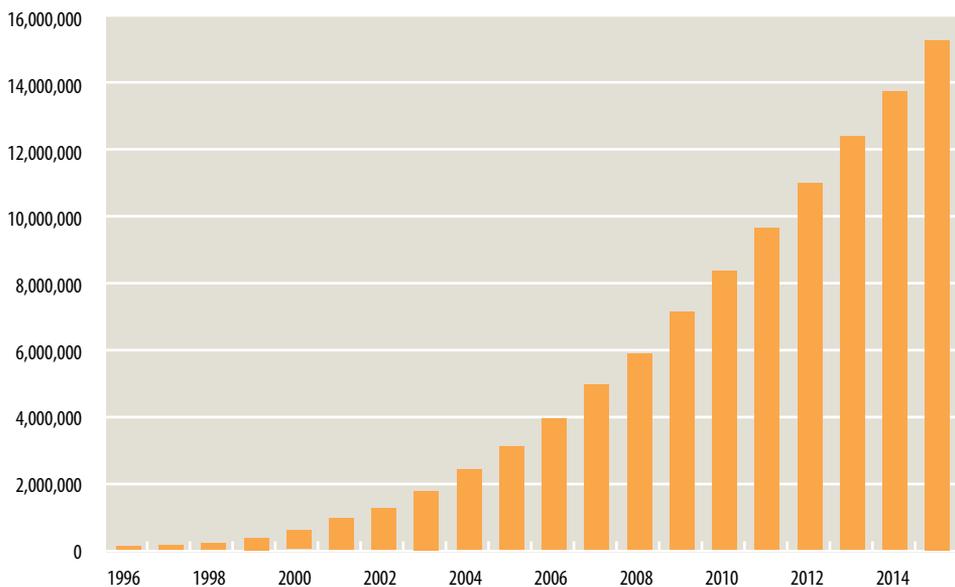
But the key to why it works, and costs so little—APOC has spent just a little over \$112 million in total in the 12 years of its operations—is that the system relies on community decision-making and resources, particularly the unpaid volunteers selected by communities from among their own ranks. These individuals, APOC has shown, are capable of distribution and record keeping and their motivation, as determined by communities, is by gains in recognition, self-esteem, and knowledge, rather than cash incentives, which makes their commitment sustainable and robust. APOC has consolidated the minds and energies of the endemic communities, created hope among them, overcome stigma, and created extra capacity for health activities in countries where there is little, if any, health

system support. The result is that over 46.2 million people were treated in 2006, up from 1.4 million in 1997 at APOC’s inception. Where other health programmes have applied community-based approaches and floundered and failed, APOC with its community-directed approach has succeeded.

In addition, due to APOC’s grassroots access and wide geographical coverage, the community-directed projects have served as vehicle to carry other health interventions to communities in need. By bridging this gap between communities and the existing orthodox health care system, APOC has contributed to strengthening the routine health system.

APOC’s experience not only shows that good results are achievable in countries ravaged by conflict with little in the way of existing health structures, but it also shows that community-directed treatment thrives in such environments because of the motivation of community volunteers. This example should lead to consideration of community-directed treatment as a policy option for helping African countries strengthen weak health systems in a cost-effective and efficient way, while moving them towards their Millennium Development Goal commitments.

Table 2. Number of DALYs averted by APOC’s community-directed treatment activities in countries that have APOC projects and predictions for future gains to 2015







INTEGRATION OF COMMUNITY-DIRECTED TREATMENT WITHIN HEALTH SYSTEMS: RATIONALE

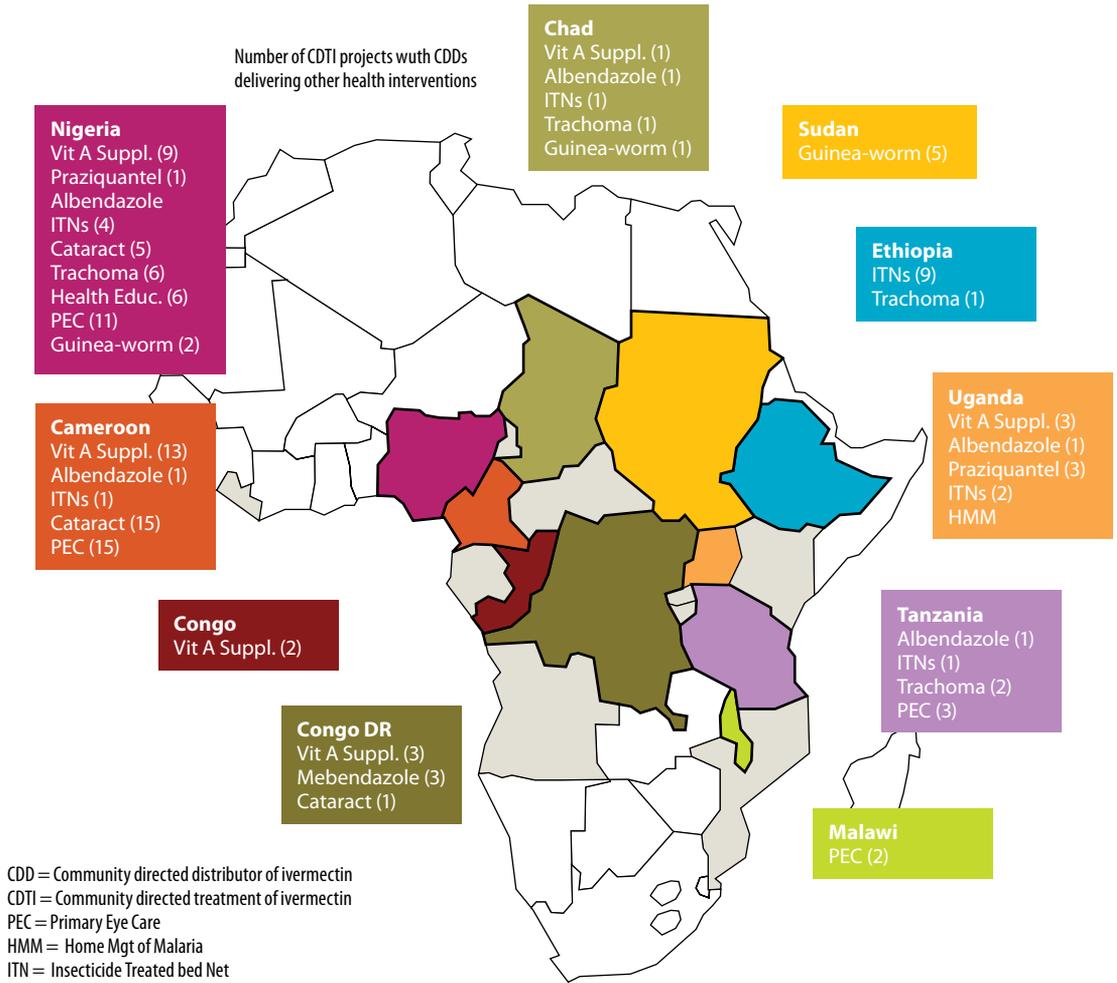
Sustained drug delivery to all high-risk communities is difficult to achieve by the regular health system alone, which is already overburdened with other responsibilities and short of resources. For its own efforts, APOC's scientists came up with a solution for this problem, namely greater involvement of the endemic communities themselves in the delivery process. But because the organisation's mandate is limited both by scope and time, the only way its achievements can be maintained is through integration of the community-directed treatment network into existing health systems. The benefits will not just be observed in onchocerciasis control, however. Integration of the community-directed treatment approach into current health-system structures has the potential to increase efficiency, decrease the burden on health staff, improve access to health services, and improve the effectiveness of health spending while maintaining treatment coverage.

APOC aims for integration of its activities into existing health systems before 2015. Achieving the goal of elimination of onchocerciasis as a public-health problem requires sustained mass drug administration past this date and there is also a need to prevent countries in which ongoing conflict threatens what has already been achieved slipping backwards in their control efforts. To maintain APOC's hard-won network of community drug distributors—whose commitment is what underpins the programme's

vast successes—alternative sources of funding, training, and support must be found. If the health systems of APOC countries step in to fill the programme's shoes, APOC argues there will be great added benefits to health in the country as a whole, not just safeguarding achievements in onchocerciasis control.

Integration of APOC's community distributor network and activities so that they become part of the health system could have broad benefits for health system planning and implementation, particularly in terms of increasing the efficiency of public-health activities and cutting costs. Efficiency savings come from the fact that the same network of CDDs can be trained to distribute many different drugs or pieces of equipment (see Image 3). In Uganda, for example, CDDs help communities by participating in vitamin A distribution, vaccination campaigns, mebendazole distribution (for worms), family planning aids, and malaria treatment (see Box 2). TDR in collaboration with the Ugandan Ministry of Health and other countries is currently running a research project to investigate just how many interventions a single CDD can undertake before effectiveness starts to deteriorate, or the CDDs feel overburdened and their goodwill reaches its limit. In DRC, under post conflict conditions, three projects are distributing Mectizan® with vitamin A and mebendazole.

Image 3: CDTI projects in several APOC countries are supplying additional public health interventions along with ivermectin



Because the CDDs are working for no cash incentives—they need equipment such as books and pens for note taking and record keeping, or bicycles for transport to and from drug collection points—they can take a lot of the cost out of the health system when it comes to health-promotion activities, if they are trained to take on this additional work. Other front line staff are freed up to take care of situations that require greater medical knowledge and time, and the benefits of integration to merging of record keeping and budgeting also cuts administrative costs. What is more, the contents of the available training guides for APOC’s CDDs, and the dose pole used to assess the number of tablets each community member should receive, now being used for schistosomiasis control, can be easily adapted to other situations making sure that integration can be done in a culturally sensitive and socially acceptable way.

The limited accessibility to rural Africa is another obstacle which implies a need for com-

munity human resource services to remain as an extension of health services after APOC funding ends, especially in countries where conflict has decimated what structures were in place and left governments in no financial position to put in the substantial investment necessary to improve facilities. APOC is operating in seven post-conflict countries. However, there are concerns that integration of community-directed treatment into a limited health system that is suffering from chronic under-funding, inadequate infrastructure, and a human resource crisis may actually threaten APOC’s achievements rather than enabling them to benefit the health system as a whole. Conversely, others believe that severely underserved communities may actually be able to achieve the greatest improvements in general health-service access after integration because these populations are frequently the most motivated to help themselves.

On a technical and budgetary level, integration allows for merging of activities or

collapsing them into one, simplifying reporting structures, facilitating planning, and decreasing resource demands. The result could be one plan of action, one transport system (a particular advantage for areas that are very difficult to access, see Images 4, 5, and 6), or one team of supervisors. Financially, a commitment to integration would require governments to adopt the idea of community-directed treatment and agree to allocate the necessary funding for CDD training and maintenance. Integration is perhaps most feasible when it comes to strategies to address interventions targeting related diseases of same level of policy priority, such as has happened for the neglected tropical diseases.

However, deciding on the specifics of what to integrate in individual countries requires a thorough performance analysis of the health system.

Overall, integration of onchocerciasis control with existing health-system structures is influenced by factors beyond the APOC mandate, including funding systems, political support, and the willingness of policy-makers both at global and national level to adopt a new paradigm of primary health care. But it is the decision-makers at policy level who ultimately decide on the fate of the front line health system and in whose hands the future of community-directed treatment lies.

BOX 2

Uganda as a model of integrated primary health care

Onchocerciasis control in Uganda received technical and financial support from APOC from 1997. Since APOC stopped providing substantial funds after 2002, except for a couple of small payments to reinforce training and maintain administrative capabilities, the governments of some districts have taken over training and maintenance of the CDD network and, after seeing the good results from this approach for onchocerciasis control, are expanding their responsibilities to include malaria home treatment, Vitamin A distribution, family planning, and deworming drugs, among other things.

For Uganda, this system of integrated primary care has enabled much more effective treatment for serious diseases such as malaria because the moment symptoms arise, communities members can go directly to the CDD's house and obtain treatment—obviating the need for a lengthy, expensive, and sometimes gruelling trip to the nearest health centre for a malaria test. The CDD network has also provided a good framework for NGOs and NGDOs to form supportive relationships with the Ministry of Health at central and district levels, which means their interventions support the health system rather than fragmenting it, as external organisations sometimes do with vertical initiatives.

However, the transition between APOC funding and government control has not been completely without problems. Many of Uganda's CDDs have been working for in excess of 10 years, so their experiences raise some issues that have not yet been encountered in other counties to do with longevity of CDD commitment and potential problems associated with an APOC exit strategy. Some are disgruntled at government plans to increase the number of interventions each CDD is responsible for. Others are frustrated at having a low ratio of CDDs to community members, meaning they have to travel long distances to reach their treatable populations and may not have the personal connections that CDDs in smaller communities are motivated by. Lack of financial incentives seems to become an increasingly sore issue over time as few other programmes pay cash incentives. But the key transition-related issue that remains to be resolved is the fact that feedback sessions as part of community-self monitoring, in which the coverage rates achieved by CDDs are presented to their peers and to ministry of health representatives, that were held frequently when APOC was funding them have now lapsed. This lack of feedback could jeopardise future CDD commitment because if they do not feel involved in health efforts, they begin to feel that their work is not being noticed, and this may lessen their resolve to continue.



INTEGRATION OF COMMUNITY-DIRECTED TREATMENT WITHIN HEALTH SYSTEMS: BENEFITS

The benefits of changing from community-based distribution to community-directed distribution have been expounded as sustainability, ownership, and empowerment on the communities' side. From the perspective of health systems, adopting this strategy as the basis of primary-care provision has additional

advantages: cost-savings, efficiency, sustainability, and increases in capacity. In areas where the transition from APOC trust fund to government-supported community-directed activities has already occurred—numerous projects in Cameroon, Nigeria, Sudan, Tanzania and Uganda have made this change-

Table 3. Trends in therapeutic coverage for ten example projects for which APOC funding has stopped

Country and project	Year APOC stopped supporting CDT activities	Therapeutic coverage (%)								
		'98	'99	'00	'01	'02	'03	'04	'05	'06
Tanzania, Mahenge Focus	2003	30.1	52.4	57.8	62.9	10.3	68.0	70.3	69.2	72.2
Ruvuma	2003		50.0	52.2	62.4	67.4	68.0	70.1	72.0	72.4
Uganda,										
Phase I	2002	N/A	67.5	78.7	77.9	74.5	78.1	75.5	75.2	76.3
Nigeria, Cross River	2003	78.6	66.3	68.1	71.6	72.9	76.6	73.2	82.5	77.2
Kaduna State	2003	31.8	67.8	73.8	80.9	80.6	83.8	84.3	85.1	84.6
Osun State	2003	NA	62.5	73.0	50.9	45.6	65.2	82.2	85.6	64.0
Yobe	2003	NA	50.7	54.1	57.4	61.8	62.3	59.6	82.3	76.7
Cameroon, Center III	2003	NA	43.8	39.1	46.9	64.2	73.9	75.9	71.8	75.5
Adamaoua II	2003	NA	16.7	35.2	56.7	65.1	73.4	69.8	74.4	72.0
South West I	2003	NA	65.9	43.0	32.1	31.7	67.0	71.0	75.6	73.9

--there is now substantial evidence to show that coverage rates with ivermectin can be maintained at high levels, demonstrating the feasibility of this transition and the potential for good health outcomes (see Table 3).

But in its 12 years of operation, APOC has also contributed some tangible improvements in skills and administrative capacity within Ministries of Health, further strengthening the argument for integration of APOC activities into existing health-system planning. Purchases of computer equipment and vehicles are the most obvious examples of APOC's contributions (Table 4). But other activities APOC has paid for that directly benefit the health system include: entomological surveillance and monitoring and evaluation tools; advocacy visits; sensitization of communities, bureaucrats and politicians; research on incentives, treatment compliance, search for a safe macrofilaricidal drug and operational issues; mapping of disease (onchocerciasis and loiasis); capacity building in the management and analysis of data; epidemiological and entomological surveys; financial management; field visits; and planning/feedback meetings. The prior experience in all these areas that APOC has given Ministry of Health staff lays the groundwork for successful integration of community-directed treatment in most countries. But the most significant basic advantage is the fact that APOC has trained hundreds of thousands of CDDs, sensitised and trained health workers, and advocated at local and national government level in ways that support the health structures from within.

These activities are important for several reasons. For one, APOC has shown how single-disease initiatives in stable and post conflict situations can contribute to health system strengthening. But the main factor of future relevance is that integration of community-directed treatment into health systems can help countries position themselves to be more resilient to coming challenges. It is a well-rehearsed prediction that the demand for health-service providers will escalate markedly in all countries over the coming years as ageing populations and longer life expectancies for those with chronic diseases place extra burdens on health services. Growing demand in rich countries will exert even greater pressure on the outflow of health workers from poorer regions. And in poorer countries, large cohorts of young people (1 billion adolescents) will join an increas-

ingly ageing population. Many countries are struggling with existing burdens of infectious disease and the rapid emergence of chronic illness, complicated by the HIV/AIDS epidemic. Success in bridging the gap between what is possible and what is happening on the ground will depend on how well the workforce is prepared for running an effective health system and how well the system can reach all the people in need.

The dual challenges of demographic change and alterations in epidemiological profiles create a need to better inform populations about healthy living, and a need for better surveillance and disease-prevention networks. Improving these systems cannot be done without the buy-in of communities. And with no health workers to spend the time sensitively investigating communities' desires and needs, or instructing them on risks and appropriate behaviours, the future looks bleak without a different approach to community health care. Well-reasoned integration of community-directed treatment strategies would provide a firm basis on which to address these problems.

This is where APOC's CDD network comes in (see Table 5). By taking on many of the simple health tasks that require little if any specialised knowledge, CDDs can release pressure on the overstretched health work force, extend health promotion activities to areas where it would be inconceivable to reach with the traditional health system, and strengthen surveillance in ways that improve countries' resilience to disease outbreaks. What is more, inappropriate skills mixes can be readjusted using the public-health skills obtained through community training and, rather than collapsing in the event of conflict, which traditional health services frequently do, the CDD network can operate in the most difficult of conditions because of the simple fact that it is reliant on the communities desire for helping

Table 4. Main equipment purchased by the Management of APOC for 16 countries 1996-2007

Description	Quantity
Vehicles	194
Motorcycles	3314
Bicycles	5926
Computers	317
Printers	235
Photocopiers	161

Table 5. Number of CDDs by country in 2006

Country	Total population in meso and hyper endemic areas	Number of trained CDDs	Population /CDD
Angola	370 209	1 129	328
Burundi	1 114 870	8 250	135
Cameroon	5 607 391	24 660	227
Central African Republic	1 351 730	5 014	270
Chad	1 646 902	8 731	189
Congo	609 464	1 854	329
Democratic Republic of the Congo	17 554 037	84 857	207
Equatorial Guinea	74 202	234	317
Ethiopia	6 335 297	48 748	130
Liberia	3 187 648	12 537	254
Malawi	1 774 315	7 355	241
Nigeria	29 636 373	81 835	362
Sudan	3 759 261	4 547	827
Tanzania	2 111 847	10 702	197
Uganda	2 697 125	128 932	21
Grand Total	77 830 671	429 385	
Mean Population /CDD			269

themselves (see Box 3). APOC recommends that to reduce the workload of CDDs, the demand for incentives and for countries to gain the most benefit from community-directed

treatment, the ratio of CDDs to population served should not exceed 1:100. A special initiative to increase this ratio has been launched by APOC for all projects by 2010.

BOX 3

Providing health-care during conflicts, case study from DRC

It takes just one example of APOC's extraordinary achievements during the 6-year civil war in DRC to show the potential of community-directed interventions to function in the most difficult environments. In Kisangani, Congo's second city at the northern end of the Congo river, many buildings of the town were damaged and many lives lost as townspeople turned on each other in the midst of country-wide conflict. The war finally came to a slow halt in 2002, and the first democratic elections were held in 2006. But during the years of war that destroyed much of the country's already basic infrastructure, APOC managed set up the CDD network that is now helping expand coverage with ivermectin, vitamin A, and mebendazole throughout the country.

Getting the drug to the remote areas of northern rainforest where, because of years of neglect; there are no roads to speak of, no rail connections, and no reliable supplies of electricity or other utilities, was an immense logistical challenge. During the war, pharmaceutical supplies were flown from France first to Entebbe, in Uganda, and then to Kisangani from where they would be loaded on to the backs of bicycles and these couriers would ride for a week---300 kilometres---through the dense rainforest to deliver the treatment to the remote town of Buta. From this provincial centre, drugs must be carted an extra 50 kilometres to reach some of the villages in need of the agent. Other regions of DRC had equally laborious routes for drug delivery. But among this chaos, the communities themselves kept the system running and coverage with ivermectin treatment is now admirably high in Buta as a result.

INTEGRATION OF COMMUNITY-DIRECTED TREATMENT WITHIN HEALTH SYSTEMS: CHALLENGES

Integration of community-directed treatment into existing health structures requires appropriate support mechanisms in order to ensure that the system continues to function well and maintains an optimal relationship with traditional health infrastructure, especially at the district level. But experience has shown that health-system staff often have difficulty adjusting to different ways of planning health services, particularly with respect to giving communities the freedom to design their own delivery system.

Even though many countries have undergone extensive decentralisation, the impact of which is yet to be established, there is little obvious hope, given the current situation, that gains achieved by APOC will be sustained after its exit. With decentralization, a common phenomenon among health services in Africa, the mandate of ministries of health, regional health departments, and front line health staff have changed, meaning resensitisation and renewed advocacy about APOC and community-directed treatment may be necessary in many regions. What is more, the gross under-funding of the health sector, lack of adequate infrastructure (particularly in post-conflict countries where the health system in peripheral areas is almost nonexistent), as well as human resource crises in most of APOC countries, pose a big threat to successful integration. This situation is compounded with high burden of HIV/AIDS, malaria, and tuberculosis, which keep staff workloads very high.

Besides the general issues that need to be addressed in health systems coping with multi-disease burdens, integration presents its own set of challenges. The community-directed programme needs consistent and proper management, even after exit of APOC, if the activities are to be sustained as they should be. Although APOC's exit strategy indicates a gradual reduction in number of projects every year, by 2015, three projects will still require support (see Table 6), so the integration of processes and activities needs to be done carefully to facilitate a positive process for safe exit and elimination of the disease.

Another problem is the lack of understanding of the community-directed process by health workers and managers who often do not have the management skills necessary to encourage and nurture community participation. There is also a potential problem associated with decentralisation that involves low use of evidence in decision-making as a result of poor data and research systems. The risk is that once community-directed treatment is integrated, the systems will become driven by ad-hoc decisions rather than the extensive evidence base that is currently used.

Maintaining the network of CDDs presents additional, specific challenges. Selection of appropriate individuals is an issue where literacy is very low. CDDs and health staff face transportation problems in getting to training venues and, when they get there, insufficient funds may limit the provision of necessary training materials. The increasing prevalence of programmes that pay cash for the time of community members, such as high-profile immunisation campaigns, pose a threat to community-directed treatment programmes because they affects the goodwill of CDDs and contribute to attrition. Additional reasons behind the attrition of CDDs include: fatigue after long working; bypassing of the process of CDTI by health workers who hand pick CDDs themselves; CDDs feeling unappreciated because of not frequent enough feedback; and frustration because of a need for bikes or other modes of transport.

So how can these issues be addressed? First, APOC must make clear to governments who want to integrate community-directed activities in their health system planning that stakeholder meetings in which CDDs receive feedback on coverage levels are essential for maintaining motivation among this workforce. But, perhaps most importantly, there needs to be strong advocacy at all levels of health system governance—local, district, national, and international—to raise awareness of the potential threats to successful integration and promote strategies that lead to a sustainable and robust mechanism for ensuring community-directed treatment survives.



THE ROAD TO 2015: ACHIEVING SUSTAINABILITY

While most of health programmes on the continent have produced little impact on reducing high disease burden, the community-directed treatment strategy has produced a quick gain for APOC in difficult geographical settings. But the sustainability of these achievements will be in jeopardy if these activities are integrated into exceptionally weak health systems, which create an unsafe environment for APOC's exit. Robust plans for effective and sustainable integration must be put in place to safeguard the past decade's hard-won gains.

Devising an exit plan was one of the conditions on which APOC's mandate was extended from 2010 to 2015 by donors. APOC is now urging countries to develop strategic plans to work out how APOC can exit from their territory, thereby reducing the dependence of community-directed treatment projects on APOC financial support. These plans involve setting out the means to increase government commitment on yearly basis so even when the programme is no longer receiving APOC money, it will still run efficiently (see Table 6).

Adequate preparation for a sustainable transition requires governments to undertake extensive mobilisation of communities, including making sure that transportation is ready where and when it is needed. Communities and other associations must be involved in the plans and kept informed about changes in activities through close liaison with all sec-

tors of the health service. National, regional, and district levels should allocate funds for community-directed treatment activities, including provisions for supervision of communities undertaking this work. These steps will allow communities already involved in directing their own treatment to continue using APOC's structures as a vehicle for obtaining all necessary services in future. However, any integration that occurs at the grassroots level which absorbs functions that communities are currently carrying out themselves will be a threat to the long-term sustainability of the community-directed approach rather than a support.

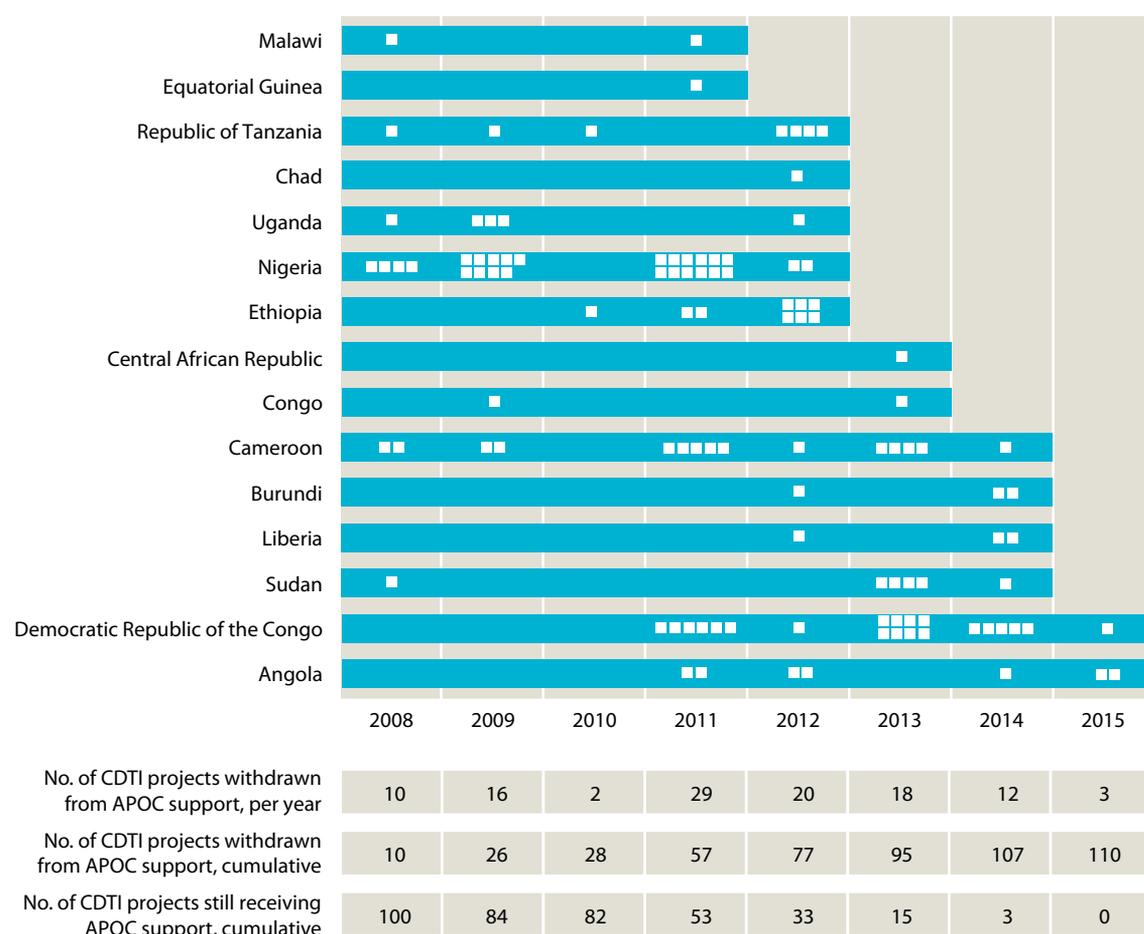
One potential obstacle to achieving a smooth transition between APOC support and integration with health systems is that establishing the necessary conditions requires a substantial behaviour change among health staff in the way they interact with communities. This shift goes hand in hand with the need for a broad discussion across the entire sub-Saharan region about what kind of primary health care needs to put into practice to quickly achieve and sustain health benefits--not only for onchocerciasis control but also other major epidemics.

Stable and effective health structures at the grassroots level are a must, and these features are why most recommends the community-directed approach above other sorts of community-based care. In the commonest

community-based initiatives, frontline health workers or NGOs operate on behalf of individuals and communities, with only a minimal degree of involvement from the communities themselves. In general, this approach means that communities do not take full responsibility for their health, thinking instead that it is the role of the health system and the government. However, real health improvements should involve communities participating on a much larger scale. And while policy mak-

ers say they are committed to preserving community-directed treatment strategies, local health authorities have not yet been forthcoming with the necessary full support--either financial or logistical. Sustainability will require intensified and continued advocacy efforts to make sure community-directed treatment is considered as a serious option for improving primary health care across the continent.

Table 6. Discontinuation of APOC support to countries up to 2015







CONCLUSIONS

Maintaining strong community participation even after integration is of utmost importance to enhance the control of many epidemics. This is because even with a policy atmosphere shift towards major killer diseases, such as HIV/AIDS, malaria, and tuberculosis, these strategies cannot work effectively without empowering communities and individuals to become more responsible for their own well-being.

Innumerable complex factors are contributing to weak health systems today and, since it requires time and extensive resource investment to address these issues, one of the only feasible options for quickly improving basic health system function is to bridge the gap between capabilities and reality through use of community-directed interventions to extend and strengthen health services.

Careful integration of community-directed treatment into existing health system structures should retain a strong element of community participation, minimising overstretch in the traditional health workforce. Financing remains a huge problem for many countries, but at least some health system gaps can be reduced or eliminated by a well-reasoned approach to community involvement. If not carefully undertaken, however, integration might simply mean that community roles are absorbed by local health services, and ultimately, communities will lose interest overtime.

For positive integration to successfully occur across APOC countries, governments need to endorse the community-directed approach as a new model of operating primary health care. However, while APOC has achieved great successes, and high level political rhetoric is broadly supportive of the idea of this kind of integration, it is unclear whether there has been much progress towards widespread endorsement of the strategy as a method of strengthening health systems and improving primary health care.

African governments should recognize that while strengthening health systems using traditional top-down approaches requires time and massive resource investment, community-directed interventions, as demonstrated by APOC, is a new model of operating primary health care which has the dual benefits of community empowerment and health system support. Community-directed treatment can accelerate changes in health promotion, disease prevention, and provide the opportunity for control of many major chronic diseases, which are increasing in frequency in poor countries as well as rich ones.

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APPENDIX I

Lists of acronyms

APOC	African Programme for Onchocerciasis Control
CDD	Community-Directed Distributor
DALYs	disability-adjusted life years
NGDO	Non-Governmental Development Organization
OCP	Onchocerciasis Control Programme in West Africa
UNICEF	United Nations Children’s Fund
UNDP	United Nations Development Programme
TDR	The World Health Organization (WHO), UNICEF, UNDP and World Bank-sponsored Special Programme for Research and Training in Tropical Diseases
WHO	World Health Organization

APPENDIX II

Lists of images, boxes and tables

Image 1: A regional health centre serving 10 villages in the remote northern rainforest of Democratic Republic of Congo.

Image 2: CDD training in northern Democratic Republic of Congo.

Image 3: CDTI projects in several APOC countries are supplying additional public health interventions along with ivermectin.

Images 4, 5, and 6: Rural areas of Democratic Republic of Congo can be very difficult to access with vehicles, so integrating disease control efforts would maximize the usefulness of individual trips.

Image 7: Wanginanyi Edirisa, the onchocerciasis coordinator in Bufumbo, eastern Uganda.

Image 8: APOC supplies landcruisers to help staff get around the rough terrain in several countries. This river crossing in DRC is necessary because a broken bridge means vehicles cannot get across.

Image 9: CDDs from a village in northern Democratic Republic of Congo.

Box 1: Initiating community-directed treatment with ivermectin.

Box 2: Uganda as a model of integrated primary health care.

Box 3: Providing health-care during conflicts, case study from DRC.

Table 1: Countries involved in APOC and duration of their funding.

Table 2: Number of DALYs averted by APOC’s community-directed treatment activities in countries that have APOC projects and predictions for future gains to 2015.

Table 3: Trends in therapeutic coverage for four example projects for which APOC funding has stopped.

Table 4: Main equipment purchased by the Management of APOC for 14 countries in 2006 & 2007.

Table 5: Number of CDDs by country.

Table 6: Discontinuation of APOC support to countries up to 2015.

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- Community-directed treatment not only advances health promotion and disease control, it also strengthens basic health system structures...helping countries work towards their Millennium Development Goal commitments.
- International recognition of the threat posed by HIV/AIDS, malaria, and tuberculosis has brought a much-needed influx of health funds to developing countries... But with health systems as weak as they are, this money cannot be put to best use.
- The community-directed approach has brought continent-wide success for onchocerciasis control in Africa while other health initiatives have floundered and failed.
- Integration increases efficiency, decreases the burden on health staff, improves access to health services, and improves the cost-effectiveness of health spending while maintaining treatment coverage.
- Demographic and epidemiological changes present immense future challenges that cannot be met without rethinking health-care delivery. Well-reasoned integration of community-directed treatment strategies would provide a firm basis on which to address these problems.
- The community-directed approach enables strong community ownership rather than something imposed on them by the Ministry of Health but feedback is essential to maintain commitment and goodwill.
- Community-directed treatment has produced a quick gain for APOC in difficult geographical settings. But the sustainability of these achievements will be in jeopardy if these activities are integrated into exceptionally weak health systems.
- Maintaining strong community participation is of utmost importance to the control of epidemics and for achieving better overall health for the poorest countries. Integration of community-directed treatment with the health system enables these goals to be achieved.



AFRICAN PROGRAMME FOR
ONCHOCERCIASIS CONTROL



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