

Immunization and health reform: making reforms work for immunization

A reference guide

Prepared for WHO/V&B/EPI
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DEPARTMENT OF VACCINES
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Table of contents

Summary	v
1. Introduction.....	1
2. What is health reform?	1
3. Basic functions of immunization services.....	2
3.1 Essential Functions at National or Central Level.....	3
3.2 Essential Staff at National Level?	8
3.3 Locating where authority and responsibility now lie	9
4. Processes of reform, structural changes, and their implications.....	10
4.1 Changes in structures and functions.....	10
4.2 Changes to immunization programmes and services	13
4.3 Implications for international agencies and donors.....	16
5. Reaching consensus on goals and priorities.....	18
6. Lessons learned and opportunities.....	19
6.1 There is no one model.....	19
6.2 Political mapping, stakeholder analysis, identifying key players.....	20
6.3 Identify changes in structures and functions.....	20
6.4 Assess whether immunization functions can be carried out.....	20
6.5 Identify and assess the operational changes affecting immunization.....	21
6.6 Develop new approaches to procurement	22
6.7 Maintain institutional memory.....	22
6.8 Assessing and building capacity	22
6.9 Recognize priorities at each level of the health system.....	23
6.10 Initiating new policies or strategies.....	24
6.11 Reaching consensus on the use of public funds.....	24

6.12	Map the planning cycle and time frame for ongoing reforms	24
6.13	Reconcile timing of international and global efforts	24
6.14	Dealing with uncertainty	25
6.15	Monitoring	25
6.16	Use of reviews	25
6.17	Time	26
6.18	Next steps	26
Annex 1:	Two case studies: Health reform and immunization services in.....	27
	Zambia and Uganda	
	Health reform and immunization in Zambia	28
	Health reform and immunization in Uganda.....	63
Annex 2:	Monitoring impact	80
Annex 3:	References and Documents Consulted.....	87
Glossary	93

Immunization and health reform: Making reforms work for immunization

Summary

Concerns have been raised over the effects of health reforms upon immunization. This document has been prepared to provide some insights into how quality immunization services can be sustained in a reformed and decentralized health system, especially if integration involves disbanding the vertical EPI programme.

There is no single model that encapsulates “health reform”, which sometimes involves radical constitutional and structural changes not only to health services but also in other sectors. This document presents two case studies of countries, which have approached reforms in very different ways, and highlights the lessons learned presented in Chapter 6. For organizations supporting countries undergoing health reform, the following are prerequisites:

- Gain an understanding of the background leading to reform in a particular country, and of the ambitions and guiding principles behind the reforms. Identify which sectors are involved, what is the leading sector or institution, and who are the key players. Find out how far ownership extends beyond the core group, and the extent of consensus. Identify the changes in structures and functions.

The organigrams developed for this document illustrate how radical the changes may be. It is likely that the old systems used for vertical programmes must be changed to fit the reformed structures and processes; appropriate solutions will be specific to a particular setting. The following general principles were identified:

- Use the set of essential functions in Chapter 3 to assess whether immunization seems to be adequately covered. It is important to distinguish between temporary problems arising from the transition to the new system, and structural flaws or weaknesses in the design of the new system. If necessary, propose further adjustments to ensure that essential functions can be covered.

Reforms are likely to involve operational changes in the way that immunization services are to be managed. Integration of services is often perceived to provide a more cost-effective approach than the vertical programmes.

- Take the opportunity offered by reforms to extend the standards developed for immunization to other aspects of primary health care, thus reinforcing good management practices and building up capacity. Consider new approaches to funding arrangements for supporting immunization, especially for procurement of specialized equipment.

Monitoring and reviews provide ways of assessing the execution of essential functions at national level and the management of immunization services through all levels of the system. Suggestions for indicators are given in Annex 2.

- Be aware of the time frame and agenda for reforms and the annual planning cycle, allow more time for reaching consensus with all key players, and be patient.

Immunization and health reform:

Making reforms work for immunization

1. Introduction

This document has been prepared in response to concerns about the implications of health sector reforms upon EPI. The document is intended to provide guidance for national immunization programmes in countries that are undertaking health sector reforms, and for donors providing technical assistance and funding to those countries. Zambia and Uganda were visited while preparing the guideline, which also refers to experience from other places. Annex 1 describes the reforms and the immunization services in the two countries visited.

2. What is health reform?

The term “health reform” tends to obscure fundamental differences that stem from a constellation of national and local circumstances. Countries have adopted diverse approaches for changing their health systems, and refer to the changes by a variety of terms. For example in Zambia the Ministry of Health vehicles bear the logo “*Health Reforms at Work*.” In Nicaragua the change is referred to as “decentralization” or “devolution.” The health sector may be leading the reforms, or following another sector’s lead. In Uganda several sectors – health, education, agriculture – are all being decentralized simultaneously, with local government reform as the vehicle of change. These reforms do not occur in linear stages; in most cases there are multiple streams of change (e.g. hospital autonomy, local health boards, raising revenue locally), which may be moving at different rates.

Among countries’ diverse experiences there are similarities from which lessons can be drawn for strengthening immunization services. The objective of this guideline is not to provide a route map of steps to follow (it should be emphasized again that the route is not linear). Nor does the guideline argue for maintaining the status quo of “vertical” programmes. Instead the guideline highlights functions and processes which are essential to effective immunization services, and suggests approaches for ensuring that services of adequate quality are provided effectively, not only in reformed health systems but also during the process of change.

One of the main lessons for working effectively in a changing environment is that advice and decisions about immunization need to be based not only on technical content of health policy but also on a more holistic understanding of the political process of policy development and implementation in a particular country (Cassels and Janovsky, 1996). It is essential to acquire an understanding of the background, objectives and current state of progress towards achieving the changes that the country desires. The following questions illustrate the point:

- Why was the decision to reform the health sector taken?
- Which individuals, institutions and political bodies made the decision?
- Who are the proponents and opponents of reform?
- Why are these individuals or groups so strongly in favour of – or opposed to – reform?

Such an assessment of the motivating forces is the first step in planning for decentralization, based on experience from ten countries (Kolehmainen-Aitken and Newbrander, 1997). WHO's Division of Analysis, Research and Assessment (formerly SHS) is currently conducting a study of health sector changes in about 30 countries. AFRO's Regional Director sent a memo to 46 countries in September 1995 and 21 countries in March 1997 asking the WHO country offices for information on the status of health sector reforms. These sources should be tapped.

In some countries, an objective of health sector reform is to provide integrated health services; integration is reinforced by discarding the concept and terminology of vertical programmes. As an exercise in flexible and reformed thought processes, this guideline has been prepared referring to immunization services rather than EPI.

3. Basic functions of immunization services

In order to assess whether health reforms were likely to support and sustain immunization, the basic functions of immunization services were identified, by considering the goal and objectives of this public health intervention. The goal of immunization is to reduce morbidity and mortality from vaccine preventable diseases, doing no harm in the process. The objective of immunization services can be summarized as follows:

- for all antigens in the schedule, to provide potent vaccine (20*)
- correctly administered (13*)
- safely (13*)
- properly documented (8*)
- at a time when the client is susceptible and prior to exposure (7*)

* The numbers in parentheses are the number of indicators checked during a recent review (Foster *et al.*, 1998) to assess whether immunization services were meeting the objective.

This objective is met by carrying out activities or functions that can be arranged in a variety of combinations. When vertical programmes were set up in countries without established immunization services, global and regional agencies offered a formulaic approach for organizing EPI or UCI. The front pages of the Product Information Sheets (illustrating equipment needs) and UNICEF Supply Division's Newsletter (1997) epitomize this approach, in which the periphery is represented as units of constant size and workload.

Countries with established health services tend to have enough human resources at provincial, county or district level to shift some responsibilities away from the centre. Many countries that are changing the structure of their health sector share the view that decentralization will increase the effectiveness of health services. However, one of the lessons learned from the effects of decentralization on family planning programmes is that *some functions should not be decentralized* (Kolehmainen-Aitken and Newbrander, 1997). This observation also applies to immunization, and it is important to identify which functions must be carried out at central level for immunization services to be effective.

3.1 Essential Functions at National or Central Level

First the minimum set of functions for the team at national level is identified, then some functions are discussed that have traditionally been located at national level in a vertical programme but may be arranged differently in future. (See Matrix 1.) Finally the staff needed for carrying out the essential functions are considered.

✓ *Formulating national policies, standards and guidelines*

This includes deciding which vaccines will be provided, setting the immunization schedule (number of doses and age or status of eligibles), and specifying contraindications and injection technique. Cold chain standards covering vaccine storage and transportation, and acceptable equipment for these tasks, must also be specified.

When new technologies or new vaccines become available, or international initiatives are proposed, the national level is responsible for considering the implications for the whole country, and presenting the options. It is the national level's responsibility to take the wider (international, global) perspective and present the relevant options and arguments to opinion leaders and subnational levels, who must respond to local issues and concerns, typically across a wider spectrum of activities.

The national level takes the lead in advocating the chosen policies to health professionals and to other sectors. It may also develop and provide promotional and educational materials for health providers (e.g. posters on how to interpret VVMs) and for the community (e.g. advertising campaigns in the national media).

The national level must take responsibility for material in manuals that contain immunization policies, standards and guidelines. These may be specific to immunization; for example South Africa has two volumes: *Immunisation that works! Vaccinator's Manual* and *Cold Chain and Immunisation: Operations Manual*. Or they may be modules within an integrated document for multipurpose health workers, such as Zambia's *Integrated Technical Guidelines for Frontline Healthworkers* (its first edition still refers to the 1992 EPI Manual, which is being updated).

✓ ***Planning at national level***

The national level is the point of contact for special efforts such as national immunization days and cross-border coordination. Managers at national level are responsible for calling staff from the next level to meetings, for explaining special efforts and strategies, and motivating the next level to carry out these activities. The South African programme has a quarterly meeting of provincial management teams (one clinical/medical person responsible for epidemiological aspects and one pharmacist/nurse for cold chain and logistics). The National Immunization Programme in Romania uses the annual epidemiologists' meeting as a forum for discussing developments in immunization services.

The national level is also where financial issues should be coordinated. These might include advocacy for adding a line item for vaccine to the government budget, donor support, additional financial commitments for special efforts, and donor funds allocated to specific geographic areas. Health sector reform may include allocating district budgets on the basis of a weighting system; when the weights are chosen, national managers could draw attention to the extra needs of hard-to-reach areas. If basket funding includes vaccines and other immunization supplies, provision for these public health items must be safeguarded against pressure to purchase drugs and other medical supplies.

✓ ***Procurement***

In the most decentralized model the national level prepares tenders for vaccine; once these have been awarded (by the Tender Board), the provinces order direct from the suppliers. There is no national vaccine store managed by the government health service. The national level has opted to check the provinces' forecasts of their requirements in an attempt to refine annual estimates of quantities in the tender. (This system could be improved if the tenders were for guaranteed quantities, i.e. if provincial estimates were more accurate, which would probably result in suppliers offering lower prices.)

At the other end of the spectrum the national level takes total responsibility for forecasting vaccine requirements, procuring the vaccine (typically through UNICEF), settling the invoices (often done by a donor), holding the country's stock of vaccine, and distributing it periodically on a push system according to past consumption and/or population and coverage.

As countries proceed through the stages of implementing their health sector reforms the responsibilities for procurement may shift. In Zambia the Central Board of Health's (CBoH) Directorate of Health Services Commissioning has a Services Support Manager, under whom is a Procurement Specialist (see Annex 1, Figure Z2). This individual is the logical focal point for procurement of immunization supplies. At the time of writing, the Services Support Manager was dealing with drug procurement but not yet with the highly specialized area of vaccine procurement; vaccine funding is not yet in the basket of funds.

Matrix 1: Functions of immunization services which are the responsibility of national level

Function	National level only	National and/or other levels
Formulating national policies, standards and guidelines and disseminating them (e.g. manuals)	Yes	
Planning international coordination (e.g. for NIDs)	Yes	
Planning service delivery strategies; advocating the chosen approach with health professionals and other sectors		National coordinates with other levels, and disseminates news of creative and successful local solutions
Advocacy for allocation of funds from central government; coordinating donor support	Preferable to ensure equitable distribution	
Procurement: preparation of tender documents, monitoring quality of products bought under the tender (vaccines, equipment, and supplies)	Yes	
Purchase, customs clearances, storage, stock management, distribution		These functions may be delegated (as in S. Africa)
Forecasting, quantification	Monitor the quantities forecast	With bottom up forecasting, national level can aggregate totals from lower levels, but total quantity ordered may be others' responsibility (as in S. Africa)
Monitoring, surveillance and reporting; design of formats for use nationwide	Aggregate data from lower levels; key role in surveillance (AFP, measles, NT). Forward data to WHO Regional Office.	Local staff, close to point of service delivery, can act promptly, before data reaches the national level.
Focal point for research pertaining to immunization	Yes; choice of topics, priority setting and coordination are needed for best use of resources	
Organizing reviews	Yes	Lower levels participate
In-service training; updating skills	Skill requirements defined as per policies, standards and guidelines	National participates in curriculum development; training itself can be delegated and decentralized
Supervision	(See monitoring and reviews)	May be delegated

Donors wishing to earmark funds for immunization supplies are unwilling to put these funds into a general "health" basket unless and until there is sufficient transparency to guarantee that the funds are spent on the items for which they were committed. There is also a question of whether and how the basket-funding concept can be reconciled with the present design of the Vaccine Independence Initiative. One approach is to create a special basket for immunization supplies. Even this will require considerable negotiation as some donors are used to procuring and paying for their donated goods directly from their home country.

Health sector reform offers the opportunity for national staff to take greater responsibility for those aspects of procurement that have until now been handled by donors. During the process of changing the system the most important procurement issue for immunization services is to ensure that adequate supplies of quality vaccine and injection equipment arrive in the country.

The national procurement function does not necessarily include forecasting or quantification. One of the potential strengths of decentralized planning is that health facilities will calculate their own vaccine requirements; the numbers of vials needed will be aggregated at each level to produce the national requirement. Calculations for injection equipment depend on doses to be administered and will be aggregated in the same way. The national level will have the function of monitoring the quantities forecast by lower levels and checking comparative consumption.

It has been mentioned above that the national level must set standards for cold chain equipment. Where provinces or districts are responsible for replacing cold chain equipment and other specialized items (e.g. steam sterilizers, auto-disable (AD) syringes, incinerators) then these must be available for them to purchase. If suitable equipment is not available locally then it must be imported, and national procurement is probably the most cost-effective option.

✓ ***National level monitoring, surveillance and reporting***

Notification of diseases and reporting immunization activity must be aggregated at national level, which forwards the information to the Regional Office of WHO. The present requirement to identify a specified number of acute flaccid paralysis (AFP) cases, according to the country's population, has placed national management in a more pro-active role regarding surveillance. For all but the largest districts, the annual probability of having a case of non-polio AFP is less than 1, and only the national level has the complete picture.

One feature of reforms in Zambia has been the creation of an integrated health management information system (HMIS). It is designed to reflect the health worker's integrated tasks, to be commensurate with his/her work load, and to provide on-the-spot indicators which health staff and neighbourhood groups can monitor and respond to. Each programme was asked to identify the minimum set of indicators required for monitoring activity. The final version of the facility's monthly and quarterly aggregation form contains six indicators of immunization activity which correspond to those reported in *EPI Information System: Global summary, August 1997*. The diseases in that publication (diphtheria, measles, pertussis, poliomyelitis, tetanus: neonatal and total) are reported using the HMIS's formats for notifiable diseases (see Annex 1, Z3.8).

It may be difficult for vertical programmes, accustomed to receiving dozens of variables, to adjust to the constraints of an integrated information system. If a minimum set of data items can be negotiated in a constructive, problem solving approach, immunization services and other aspects of child health will have an information system that is more useful and usable for health workers.

Data on consumption of immunization supplies can be monitored using the records of stock issued. National level monitoring of this aspect of services would provide provinces or districts with comparative information which could indicate scope for improving their efficiency (i.e. doing things right) and effectiveness (i.e. doing the right thing). However, where provinces buy their own vaccine and injection equipment directly from the approved suppliers (those who were awarded the tender), it may not be feasible to track the quantities issued or received by each province.

✓ **Research**

The national level is the focal point for special studies pertaining to immunization. These have included cold chain studies, options for storage and distribution of supplies, serology for measles and hepatitis B, safety of injections, field trials of new equipment, and cost-benefit studies. In Zambia the reforms' focus on cost-effective strategies offers a positive context for operational research into appropriate strategies for hard-to-reach areas. As new studies are initiated in countries with health sector reform, it will be necessary to involve the budget holding entity (e.g. the District Local Council or LC5 in Uganda) in the preparations to ensure that adequate support is provided for the duration of the work.

✓ **Reviews**

It is a national level function to initiate and organize periodic reviews. These are usually carried out with technical assistance from donors, and provide an opportunity for assessing immunization services in the changing context of health sector reform.

Stock management?

This function exists at national level only if stocks are kept at this level, for example if there is a national vaccine store or a warehouse containing specialized equipment. In some countries these functions are contracted out to private sector suppliers, or allocated to parastatal organizations which are not directly supervised by the national management team.

Cold chain (and vehicle) workshop?

Vertical programmes have found it very convenient to establish specialist staff at national level in a well equipped workshop stocked with spares. The epitome of this model was seen in Tanzania's EPI in the late 1980s; the 97 District Cold Chain Officers drove to Dar es Salaam once per year, on a rolling schedule, and spent two weeks in refresher courses while their vehicles underwent annual preventive maintenance in the workshop. Such an island of perfection has proved to be unsustainable.

In a decentralized structure the provinces or districts are responsible for keeping their multi-purpose transport on the road. Controlling access to and use of transport has proved one of the greatest challenges to keeping logistics functioning (Feilden, 1991) and no easy solutions are offered here. Ultimately local managers must take responsibility for the transport under their control, whether they are motivated by altruism, fear of retribution, or law abiding discipline. The checks and balances in decentralized health systems may provide opportunities for establishing effective local management of transportation, or for community provision of transport (including hired taxis or animal transport).

Some of the specialized equipment for vaccine storage requires spares and tools that are not available in the local private sector, and these will have to be procured (see Procurement, above). Responsibilities of the most qualified technicians – the repairers of last resort – are not necessarily restricted to vaccine cold chain: other heat-sensitive products (e.g. ergometrine, insulin) also need a permanent cold chain. These staff may share a workshop with medical and biomedical equipment technicians (as in Mozambique).

In-Service Training?

The programme approach to training has tended to rely on a hierarchical structure and trickle-down transfer of information. National team members attend workshops or courses, sometimes in another country, and return to impart their knowledge to others. Donors have funded quantities of workshops, removing scarce personnel from their daily responsibilities. It is the exception to find an information system showing who has attended what training, and who is due for training. There is accumulating evidence that training designed for the particular system (what staff are required to do, and allowed to do, instead of what they *should* do) and peer training is more cost-effective.

The reforms in Zambia will place responsibility for in-service training with the districts, which will identify the individuals to send, and buy the service from training institutes. The responsibility of the national level is to ensure that the training institutes present material that is up-to-date and complies with policies, standards and guidelines. This means that national level staff (and technical assistance) must actively participate in the Training Working Group, set up in July 1997 to develop the curriculum for the public health practitioner (PHP). The effectiveness of this new approach to training has yet to be demonstrated in practice. The quality of health workers' skills and practices can be assessed through the mechanisms of regional supervisory visits and independent reviews.

Supervision?

In decentralized health systems the national level is not necessarily expected to carry out direct supervision. In Zambia this function is the responsibility of the four Regional Directorates (which are part of the CBoH) and the districts. In South Africa the Provinces are responsible for supervision.

The national level will oversee immunization activities and quality assurance through its monitoring functions, periodic reviews, and operational research studies.

3.2 Essential Staff at National Level?

The essential functions at national level require knowledge of epidemiology, cold chain/logistics (and possibly engineering), combined with operations management skills. It is unlikely that this range of knowledge and experience can be found in one individual. In some countries, the person designated national manager is an epidemiologist who has responsibilities in addition to immunization (e.g. for communicable diseases). The complementary cold chain and logistics functions may be carried out by one person or several, depending on the organizational structure of each health system. They may even be contracted to specialists outside the health system itself (e.g. equipment maintenance).

If there is no vertical programme and no full time manager dedicated 100% to EPI, the arrangement of job responsibilities is likely to differ. The crucial point is that the posts that carry responsibilities for one or more of the essential functions at national level must be

identified and the people filling those posts must be included in the relevant committees and working groups. In this way they can be advocates for their component of effective and sustainable immunization services. The larger the number of individuals involved, the more time needs to be allowed for arranging meetings with full participation by key personnel.

3.3 Locating where authority and responsibility now lie

After the reforms in the two countries visited, the essential functions described above are covered by structural arrangements which differ completely from each other (refer to Annex 1). In both countries the Ministry of Health (MOH) is responsible for setting policies, but in Zambia it is the CBoH which proposes policy updates to the MOH, prepares standards and guidelines, approves annual plans and budgets, allocates financial resources, manages central procurement, coordinates curriculum content, monitors reported data using a new HMIS, and evaluates quality and performance. These functions are divided between three directorates. CBoH also has four regional directorates that supervise their districts using a new performance audit including financial and administrative management. At the time of the review there was considerable uncertainty about who will be responsible for specific aspects of immunization services. The uncertainty is deepened because the new organization is still in the process of constituting itself; for example the epidemiological position, central for monitoring and surveillance, was not yet filled, and some regional offices were not fully functional. It is uncertain who will assume overall responsibility or be the principal point of contact when action on immunization is required from the central level. The districts should contact their regional directors first, who participate in CBoH's regular directors' meeting. At the time of writing, the future of the UCI cold chain workshop, the management and location of the national store, the distribution system, and procurement were still being worked out.

In Zambia the uncertainty is mainly at central level. The districts are well equipped to proceed with immunization services under the new system as long as they have the requisite resources, and as long as delinkage does not deplete the health system of experienced staff.

In Uganda each District Local Council (DLC) is now legally responsible for planning health care provision within the national health policy and with technical guidance from the MOH. The District Health Department falls under the authority of the DLC (see Annex 1, Figure U2), which administratively refers to the Ministry of Local Government (MLG). The role of UNEPI (Uganda National EPI) remains formally unchanged, but the reforms have introduced uncertainty about UNEPI's authority with respect to the District Health Departments. The terms and conditions of decentralization do not oblige the DLCs to include certain components of health services in their plans; reforms have exposed supervision, cold chain maintenance and outreach services to pressure from other line items and other sectors, which compete for the DLC's scarce financial resources. This exposure of essential services to competition for funds led the MOH and the Ministry of Education to activate a legal provision for conditional grants (earmarked funds) for health and education in the third year of decentralized planning and budgeting.

A third structure has developed in South Africa, where constitutional reform involved reorganizing 14 health services into nine provincial health services. Each province has an elected executive council and is constitutionally autonomous. It is obliged to cover certain services, including immunization. After the 1994 EPI review, a national team of four people was established, covering epidemiology and policy, cold chain, operations management (including preparing tender documents for procurement), service delivery standards, monitoring and research. The national team falls under the direction of Communicable Disease Control in the MOH. Each province has designated an EPI Manager (usually MD or nurse) and a Vaccine

Coordinator (usually a pharmacist); these staff all have extensive responsibilities in addition to immunization. The national team has a quarterly meeting with their counterparts from the provinces, which guard their autonomy; any initiative proposed by the national level must be accepted and approved by the provinces. South Africa does not have a national vaccine store; the national level negotiates contracts based on quantification of requirement by the provinces, which order directly from the appointed suppliers who deliver from their own stores.

These three examples illustrate that there is no single model for distributing essential functions, authority and responsibility for immunization, and that observers and technical advisors must acquaint themselves with the constitutional and administrative arrangements in order to locate the most suitable point of contact for a particular component of immunization.

4. Processes of reform, structural changes, and their implications

4.1 Changes in structures and functions

In any fundamental reform of the health sector, changes in structures are inevitably dramatic, involving changes in policies and the institutions through which such policies work (Cassels, 1995a). Incremental change is a more frequent phenomenon with a less dramatic impact on institutional arrangements. The background leading to reform is described in the case studies of Zambia and Uganda in Annex 1, and Matrix 2 summarizes health sector reforms in these two countries.

The new health policy in Zambia implied that the MOH would be changed to an institution responsible for setting policies, standards and norms and for assuring that such policies would be carried out and properly monitored and evaluated. The size of the MOH is being reduced from 400 to 67, and the new entity, the CBoH, has an establishment of 118 staff. Many of the MOH's former functions have been transferred to the CBoH, with a fundamentally different arrangement of responsibilities (see Annex 1, Figure Z2). The nine provincial offices that used to constitute an intermediate level between centre and district have been dissolved, and replaced by four regions with regional directors in CBoH. However, certain functions (such as emergency drug supply) continue at "subregional" level, i.e. the old provincial depots.

Structural changes in Uganda's health sector have been less dramatic. Reforms were led by the MLG and involved all the sectors under local government administrative control: health, education, agricultural extension and feeder roads. The reform programme includes the civil service, the constitution, the political and administrative system, and the economy.

In both countries, the districts became the focus for health planning, management and service delivery in a partnership with the local population. This meant a dramatic shift in responsibility from the centre to the districts. In Zambia a new district health structure has been created by establishing the District Health Boards, comprised of community representatives, selected members of Health Centre Advisory Committees, and individuals appointed by the Minister of Health. The District Health Management Team (DHMT) has been restructured, with new designations, responsibilities and functions. Between 1992 and 1997 the Health Reform Implementation Team prepared the district staff for their new responsibilities, including training in work planning, costing, budgeting, dynamic standard setting systems and problem solving techniques. The districts' financial allocations from CBoH are specifically for health.

In Uganda the District Health Department (see Annex 1, Figure U2) represents one of several sectors competing for resources allocated to the District Local Council (DLC), which is filled by elected councillors. The community component was not developed in advance of the reforms. A nationwide project to build community capacity is now under way.

Matrix 2: Schematic summary of health sector reform in two countries

Question/Issue	Zambia	Uganda
How did the health sector reform originate?	Attempts were made by the former government. The new MMD government voted into power late 1991 had reform of the health sector as part of its political manifesto.	Part of the National Resistance Movement's Ten Point Programme (1986) with Participatory Democracy. The Local Government Statute 1993 provided the legal basis.
Reform driven by the health sector?	Yes	No
Role of Ministry of Local Government?	Responsible for environmental sanitation	Responsible for implementing the decentralization reform
Focus of reform?	Deconcentration to the districts	Decentralization to the districts
Planning and accountability?	Done by DHMT in the districts according to guidelines issued by CBoH, approved by District Health Board and CBoH	Done by DHT/DHD in the districts according to MOH guidelines with approval by Local Council (LC5)
Competes with other sectors?	No	Yes
Staff employed by districts?	Not yet (delinkage postponed indefinitely in April 1998)	Yes (PHC)
Financing mechanism?	Approbation for specified activities in the district plan	Unconditional block grants and later conditional grants from MOF
Hospitals included?	Yes	No (will be)
Development funds included?	Yes	No (will be)
Immunization services reformed?	Yes. Existing UCI Programme will be dissolved and essential functions integrated into CBoH and Med. Stores/EDMSS. Some elements still uncertain (national cold chain workshop). Districts are responsible for imm. services.	Much less. UNEPI will continue to exist as a vertically oriented programme. There is uncertainty regarding cold chain maintenance and availability of funds for outreach and supervision in the districts.
Government financing vaccine procurement?	Not yet Line item for vaccine exists, funding by GRZ being discussed.	Yes Vaccine Independence Plan started FY95/96.

Question/Issue	Zambia	Uganda
Coverage last DHS?	FIC <2: 78% (1996 data) FIC <1: 67%	FIC <2: 47% (1994 data) FIC <1: 36%
Monitoring of the reform?	Regional team visits each district for financial and administrative performance audit; quality of services receive less attention.	Emphasis on political and administrative process indicators and less on specific indicators of health activity and outcome

MMD: Movement for Multiparty Democracy; DHS: Demographic & Health Survey

In both countries, the freedom of the districts is limited by the resources they command, the majority of which are still received from the central level. However, the reforms imply that districts have a degree of autonomy and responsibility for effective service delivery within the established health policy. In Zambia the reforms also mean that each district is held accountable for how resources are used, not only to its District Health Board but also to the board members' constituents. In Uganda the District Health Department is part of the DLC, which is answerable to MLG and the councillors. The introduction of conditional grants for specified health activities in the districts (agreed between the centre and the DLC) may help to ensure that the health sector receives a certain level of funding at district level. However, it will still be the DLC which approves the district health plan and the corresponding budget. Capacity building, support and supervision are needed to reduce the threat of resources being diverted to other purposes.

Structural reforms have launched the districts into a process of fundamental changes. The most important is the discontinuation of employment by the central civil service, and the shift of recruitment and employment to individual districts. All staff will be recruited and employed by a specific district for a specific position.

In Zambia the prospect of delinkage of employment from the civil service has caused understandable uncertainty among staff at all levels. For those whose situation was still pending, low commitment and "apathy was more evidenced during the 2nd round [NID] when [job] interviews coincided with the exercise. This probably harmed the effective execution of the 2nd round." (MOH Zambia et al., 1998) At the time of writing, delinkage has been postponed to an unspecified date in the future.

In Uganda the freeze in employment imposed as part of the civil service reform meant that vacant posts could not be filled unless the district could raise additional revenues. District income from local taxes was so much lower than expected that payroll had to be met from funds allocated to services. The shortfall of staff, losses of staff trained in immunization, and deficient skills in some of those in post all give rise to serious concern over the quality of health care and immunization services.

From the district perspective what matters is whether they will (a) have the resources to deliver routine immunization services of a good quality, (b) be an effective partner in surveillance of immunizable diseases and response to outbreaks, and in particular be able to pick up all cases of AFP for further investigation and action, (c) be able to accommodate national/global initiatives

such as polio eradication in their plans and budgets, and carry them out, (d) be able to carry out all necessary support services such as securing the necessary supplies and maintaining equipment, (e) be able to provide the necessary supervision of service delivery level staff and to maintain the competence of the relevant staff by updating skills. Annex 2 discusses monitoring performance.

4.2 Changes to immunization programmes and services

The pre-reform set-up of the immunization programmes in Zambia (UCI) and Uganda (UNEPI) was very similar. They shared the characteristic of being identifiable as distinct programmes with a clear mission, and the organization and means to pursue that mission. Both programmes had the following generic structure:

- A national programme manager
- Supplies management
- Cold chain maintenance: workshop, provision of spares, and training
- Surveillance and information management
- Transport management
- NIDs coordination

At the central level UNEPI has 51 staff compared with fewer than 20 in the UCI in Zambia. Many of the functions are independent of the size of the country's population, and the marginal volume of activities does not justify more than double the size of the staff. It seems that UNEPI has pursued a course of building up a stronger organization with more support functions and staff than is the case in Zambia. This may reflect weaker capacity at district level in Uganda.

UNEPI has a more distinct training function than Zambia's UCI and the support functions such as radio communication, accounting and secretarial functions are more prominent in UNEPI.

The national manager in Zambia's UCI had the function of being in charge of Reproductive and Child Health, so he was also responsible for other programmes such as ARI and CDD. Responsibility now appears to be shared between the Director, MCH in the MOH and the Reproductive and Child Health Specialist in CBoH. In Uganda the national manager is not a physician and is responsible only for UNEPI; ARI and CDD are located in the Department for Communicable Disease Control.

Traditional national immunization programmes set up as a separate organization with a single mission, a self-contained structure and separate resources are understandably concerned about their own situation. Their perception is that they are "losing control;" pressures for change (from both national decision makers and some international agencies) cause a shift of mind set, of paradigm and of the institutional setting for immunization services. The perception of losing control has been found in Zambia, Uganda, Nicaragua and elsewhere. This perception is a reality if immunization programmes have been separate entities with responsibility for immunization from policies to service delivery, reporting and monitoring. The change in structures causing loss of control can also constitute an opportunity for sharing responsibility with other parts of the health service, other sectors, and entities outside government services.

The districts need clear policies, standards and guidelines in reference material, which is regularly updated. In both countries the national immunization programmes appeared to lack sufficient internal dynamism to initiate updates, relying on external reviews to supply the necessary impetus.

In Zambia CBoH has produced the *Integrated Technical Guidelines for Frontline Healthworkers*, designed to be an accessible reference on integrated services. It is not intended to include the level of detail needed for immunization; at present it refers to the EPI Manual (1992). Policies are now being reviewed and updated, after which the manuals will be revised. In Uganda there appears to be no manual or reference document; the only written material provided by UNEPI was *ad hoc* papers that may be circulated during in-service training. Given the present staffing problems in the districts, the lack of a manual is a weakness.

In Zambia the whole allocative process has changed. In the past, vaccines, equipment, spare parts and supplies were collected from the central store by the nine provinces, then delivered to the districts (or collected by the districts if provincial transport was out of order). Districts did not budget for such items. This centrally controlled “push” system did not result in an optimal distribution of in-kind resources. The 1997 inventory of cold chain shows that some districts did not have adequate working refrigerators for their health centres, which also experienced shortages of items needed at irregular or intermittent intervals (e.g. cold chain spare parts or replacement sterilizable needles and syringes). Under the new system, districts plan according to their requirements and include the necessary items in their proposed budget. The review noted the need to create a mechanism for districts to obtain supplies and spare parts for all immunization equipment (including sterilizers) on a “pull” system, and refrigerators and freezers suitable for storing vaccines. The location of responsibility for the central procurement and logistics functions is still being discussed.

South Africa’s decentralized system provides a useful example of managing donated funds for cold chain while respecting the provinces’ autonomy.

The national cold chain manager prepared a “shopping list” of equipment suitable for storing vaccine at different types of facility, and asked the Provinces to complete an audit of their cold chain equipment. The national level and the provinces reached consensus on the amount of the donated funds that would be allocated to each province, which then prepared a business plan to explain and justify the equipment for which it was indenting, chosen from the shopping list up to the value of the province’s allocation. When the national level was satisfied with the business plan, the equipment was provided.

In Uganda equipment and vaccines are procured, stored and distributed by UNEPI from the new medical stores compound. UNEPI uses its own trucks that deliver vaccines and gas cylinders under tight control from the centre. The logistics functions of UNEPI are not integrated with those of the medical stores in any respect. The Statute Supplement of 1993 has a legal provision for integration.

Districts need funds for outreach immunization activities and for supervisors’ travel from the district level. In Zambia such funds used to come directly from the UCI Programme; now the districts themselves have to budget for these funds within their annual plan. In all the districts visited, the review found that the budget allocations for 1997 included funds for outreach community activities (as described in CBoH’s planning guidelines). Some health centres said that they were now able to perform more outreach activities. This contrasts with the situation in Uganda where funds for outreach and district supervision had been cut, partly as a result of

shortfalls in locally collected revenues, and partly because other sectors or line items (e.g. payroll) were given higher priority. This was a serious problem that was mentioned at all levels during the visit to Uganda.

Districts will depend on the national level training institutions to prepare staff with the competence required. In Zambia a major reorientation and training of existing health centre staff will take place as a transitional measure. Eventually the new candidates leaving the training institutions will have been trained according to the needs of the districts' health services. The new cadre for providing the essential package of services will be designated Public Health Practitioners (PHPs). The number of staff (and not the designation, as before) will depend on the number of people in the catchment area (one PHP for every 3000 population).

Districts in Zambia must budget for and purchase in-service training courses from the existing training institutions, paying per head for their staff who attend courses. The training institutions will have to keep themselves up to date with the market's requirements in terms of training needs, and will have to design their products accordingly. The DHMT will choose which staff should attend in-service training, and the topic of the course.

In Uganda there has been no such conceptual change towards the cadres, curricula and in-service training. UNEPI will retain its training staff at central level and they will continue to provide in-service training courses and will participate in pre-service training. As a consequence immunization related training will continue to be a central level responsibility, constrained by the availability of funds and trainers.

EPI has invested heavily in training for this component of health care. The management discipline required to run a successful immunization programme can benefit other components of the health service. Provincial and district staff in South Africa have many responsibilities besides immunization, and after a recent course in operations management for immunization, several participants commented that the skills and approach would have broader applications:

“The most useful in this workshop for me was learning about this whole process of management with all its aspects concerning EPI projects. Much of what I learned can also be implemented in most other areas in my work situation.”

Reforms offer an opportunity to improve information systems, and decentralization offers an opportunity to increase use of data at the point of collection. The reforms in Zambia envisaged a dismantling of vertical programmes and integration of services, making it possible to eliminate duplication in reporting. The new information system (HMIS) is designed to be usable by health centre staff, and has reduced the items reported to a logical set required for monitoring the essential health services. Facility staff can calculate several drop out rates, and the most appropriate one (it may be BCG to measles, or BCG to DTP3) can be chosen as the “local indicator” on the “public health flag.” Health centres must report routine activities to their district HQ every quarter and the national level will receive quarterly reports from the districts. This shifts the focus of rapid response to outbreaks in two ways: emphasizing local action, and increasing the role of the epidemic surveillance system, which is still being developed. The review team expressed reservations about quarterly reporting being too infrequent for active monitoring by the central level, and about the lack of emphasis on zero reporting (no news is not good news). The new HMIS does not include every dose of every antigen, so new algorithms for monitoring wastage must be developed. The new stock management system for health centres will allow consumption to be tracked at this level for the first time.

Uganda's reforms have left the MOH's vertical programmes intact. For example it proved impossible to integrate Vitamin A supplements with the polio NIDs. The new HIS is not designed around the concept of supporting the health worker by promoting understanding and local use of his or her own data. Without a policy commitment to integrate services, vertical programmes can insist on keeping all of "their" data and the reporting formats contain much duplication of information. This inflicts an avoidable burden upon peripheral and district level staff.

The two case studies give details of the implications of reforms upon immunization services. Matrix 3 summarizes the implications identified so far, recognizing that reforms are still in progress and their effects are still emerging.

4.3 Implications for international agencies and donors

International agencies and donors will also have to reflect on ongoing health reforms and their implications for vertical programmes supported by agencies and donors. In Zambia donors have funded 100% of vaccines until now, and taken responsibility for procurement. Now there is an opportunity for the Zambian government to assume some responsibility for buying vaccine. This means first and foremost that the donors will share ownership and responsibility for vaccine funding and procurement with the Zambian authorities. It also means that the Zambian government has to make a financial commitment in its annual health plan.

Such health reform initiatives imply new roles and responsibilities for external agencies. For example UNICEF has thrown itself behind the drive for universal child immunization within a vertical programmatic institutional setting, but when Zambia's UCI Programme is dissolved this structure will no longer exist. If UNICEF is to continue supporting immunization activities, it may have to change its mode of operation and identify which areas and elements in the health reform it can support. This may also mean a revision of UNICEF's mission, mandate and strategies to enable its support to fit the context of reformed, restructured health systems.

Donors have been generously supporting immunization programmes in Zambia, Uganda and elsewhere. This support has been given to an immunization programme (EPI/UCI) for specified activities. If donors support health reform, then their support implies that they will also support the implications for how vertical programmes can be integrated into the reformed health system. This means a review of the role of donors in vaccine, equipment and material procurement, in the financing of vertical training courses and in the way support is given to special initiatives such as polio eradication.

Matrix 3: Implications of health sector reform for immunization services in two countries

Topic	Zambia	Uganda
Information system	Integrated HMIS, designed for the reformed health system	Aggregation of existing formats rather than a fresh concept
Health services	Integrated (child health and maternal health; treatment) at same session	Lack of staff, attributed to retrenchment, means one person, often under-qualified, does multiple tasks
In-service training	Integrated; will be purchased by Districts from a training institute	Workshops for vertical programmes; no conceptual change yet. Staff losses from facilities mean lost benefit from earlier investment in training
Basic training	Integrated curriculum being developed by committee	UNEPI staff participate with other MOH staff
Supervisory visits	Regions supervise districts, which supervise HCs. Emphasis is on management and financial audit, less on clinical supervision.	UNEPI staff must report to Local Govt administration when visiting districts, which lack resources for supervisory visits to facilities.
Logistics	Planned closure of nine provincial stores delayed, awaiting logistics plan from MSL/EDMSS. Many districts now collect from centre; in future EDMSS may deliver.	Vertical programme; UNEPI trucks operate independently of essential drugs stored at the same central site.
Forecasting, quantification	Switching from top down to bottom up by HCs and districts.	Top down. Monthly push system reinforced by central control.
Procurement	Shift of focal point from donor to CBoH/MOH is under discussion.	Vaccine Independence Plan via UNICEF; MOH funds measles and DTP.
National store	UCI stock management unsound. May remain at old site with MSL/EDMSS mgmt & supervision, or may be shifted to MSL site.	Legislation for reforming medical supplies covers vaccines but not yet implemented; separate from integrated health sector reform.
Cold chain workshop	Now at Old Medical Stores. Future arrangements under discussion.	At UNEPI HQ; communication by radio to assist with remote repairs. Who pays to repair district radios under reforms?
Cold chain equipment	Districts have funds to purchase but cannot buy equipment suitable for vaccine storage.	Questions about ownership of equipment (LDC?) and responsibility for its replacement.

MSL: Medical Stores Limited EDMSS: Essential Drug and Medical Supplies Store

WHO as a technical agency plays an important role in setting the agenda for immunization policies and initiatives and by providing technical support to countries. WHO is also an active player in health reform by generating systematic documentation on the design, processes and results of health reforms. The challenge for WHO as an institution is how to enter into an active relationship with health reform processes in countries and give technical support to the restructuring of service infrastructures such as immunization services. One tangible component of support is to ensure that policy guidelines and technical recommendations from WHO/V&B/EPI are forwarded to the country's focal point; the Country Office should be instrumental in ensuring the flow of information to the appropriate recipients. Another component of technical support is through reviews, which are discussed in Annex 2.

5. Reaching consensus on goals and priorities

To make public health goals coincide with health sector reform goals seems to be the most important challenge in the ongoing health reform processes. This has to be achieved in a complex constellation of stakeholders and interest groups.

Health reform has its own history and path of development in each country. The focus in most countries appears to have been on structural, management, financial and administrative matters more than it has been on public health matters (cost-effectiveness). However, the public health arguments in favour of health sector reform have emphasized problems with access to quality health services.

The definition of an essential or basic package of services has been part of most health reform efforts in an attempt to create consensus regarding the best possible use of public funds. The basic package concept covers first and foremost primary health care activities although there are also attempts to introduce the same concept for the first referral level and above.

Immunization services have traditionally enjoyed a high degree of support from the international down to the community level. When the World Health Assembly endorsed the polio eradication initiative in 1988, and when Nicaraguans are now demanding immunization services, it was and is a reflection of this general commitment. It has been relatively easy to rally financial and other support around such services from national and international sources.

Health reform in any country is by its very nature a major change of policies and the institutions through which such policies are implemented. This situation has created uncertainties with regard to the future of programmes such as EPI. To make matters more complicated the polio eradication initiative was launched in African countries at a time when health reform had already been set in motion and was in progress. To assert priorities given to routine immunization services has become a national as well as an international matter of urgency in this environment of uncertainty.

Although there is a general consensus of support for immunization, the different perspectives on immunization and health services are likely to modify the importance and the urgency. The perspective and priorities vary between the international technical agency (WHO), UNICEF and others such as Rotary International on one side and bilateral donors on the other side. The trend among the bilateral donors is increasingly to support health reform. At the national level different ministries have different perspectives. The Ministry of Local Government in Uganda which carries the decentralization reform is primarily more concerned about implementing the political and administrative reform than about specific programmatic priorities of the MOH.

NIDs have been successful in achieving coverage goals; the preparations and implementation of NIDs have also uncovered problems with the existing immunization services, its infrastructures, functions and procedures.

- Problems with kerosene supply were uncovered during the NIDs in 1996 in Tanzania.
- In Uganda major problems with the capacity of the cold chain and its maintenance were identified.
- In Zambia there were problems with the planning for NIDs, which came as a late addition to the districts' annual cycle for health planning.
- NIDs have also contributed to uncovering problems with disease reporting (AFP) and outbreak response.

The impact of NIDs on routine immunization services and coverage is uncertain, and is likely to vary according to the country's capacity and resources.

There are other international initiatives under way such as the efforts to control and eliminate measles. This initiative will have far more complex operational requirements and will put a heavy demand on resources at all levels (Phillips, 1998). Participatory planning for the most appropriate strategies, based on local information and resources, would forestall some of the problems with previous global initiatives, documented in Taylor *et al.* (1996). A planning approach which is consistent with managers' and providers' roles and responsibilities for other aspects of essential services in reformed health systems is more likely to elicit genuine grass roots support and to produce an effective and sustainable outcome.

Health reform is an occasion and opportunity for reanalysing immunization priorities and policies. In doing so due consideration has to be given to financial and operational parameters. Where health reform has a strong element of decentralization, districts have to be adequately informed about existing and upcoming initiatives in order to incorporate the resources required in their district health plans, acquire the requisite technical and managerial skills, and convey the information to the clients in the community.

6. Lessons learned and opportunities

The effects of reforms upon immunization were studied in countries that have already chosen their policies and strategies. The following points have been identified from an analysis at one cross section in processes that started years ago and are not yet completed. These points are not a prescriptive route map for how to design reforms, but rather a summary of findings and conclusions about how reforms may affect immunization, identifying opportunities for sustaining and improving the quality of immunization services. The lessons learned should enable those concerned with immunization to operate more effectively within a changing environment.

6.1 There is no one model

No single model encapsulates "health sector reform." Although there may be some commonalities, reforms are particular to each country and their implications for immunization depend on a constellation of local circumstances. This is especially relevant for the way that funds are allocated to and controlled by the subnational level.

- Understand the constitutional and administrative framework for how funds are allocated and controlled, in order to understand the effect of reforms on resources for health: their quantity, timing (financial year) and management.

6.2 Political mapping, stakeholder analysis, identifying key players

It is essential to understand the context of reforms in any given country, the extent of their reach, where ownership rests, and the time frame within which they are being implemented. People who may be principally interested in only one aspect of child health – immunization – or only one disease must acquire a broader understanding:

- What is the historical and political background in this country? When did reforms begin here? What was their genesis?
- What are the guiding principles, ambitions and objectives?
- Which sectors are involved?
- Which sector or institution is the focal point, leading the reforms, driving the process? How far does “ownership” extend beyond the central focus?
- Who are the key players, both in favour of and opposed to the changes?

The MOH may not be the most influential ministry, and it may be essential to contact other parties (particularly those controlling financial allocations and planning). The processes of political mapping or stakeholder analysis make it easier to understand the ambition underlying the reforms, the new structures, and how they are intended to function.

Over time the principal players will change: not only nationals but also technical advisors. The influence of individual perspectives and goals should be recognized and not assumed to represent an organizational position.

- Identify the extent of consensus about the direction and purpose of the reforms outside the leadership, and beyond the central level.

6.3 Identify changes in structures and functions

Examples of changes in structures and functions are given in the two case studies, and the essential functions for immunization at national or central level have been described above. The new arrangements will be particular to each country.

- Obtain or create an organizational chart, to clarify structures and functions.

6.4 Assess whether immunization functions can be carried out

Having identified the reformed structures and understood how they are intended to function,

- Assess whether the essential functions can be carried out adequately in the reformed system, or whether some additional change is needed.

This should be done for each level of the reformed system. Specifically for the national level,

- Assess whether the national team includes a dynamic component with the function of keeping abreast of technical developments and international initiatives, and introducing policy updates and new epidemiological strategies.

It is preferable to make these assessments while the reforms are still developing, before the new arrangements are finalized.

- Be open-minded in assessing the possibilities offered in the reformed system, and be aware that elements that worked in the old model may not fit the new system.
- Recognize the stage of implementation that the new system has reached, envisage how it is intended to function, and guard against condemning a system that is still in transition or infancy.
- Distinguish between uncertainties arising from staff's personal concerns about their future employment and role, and uncertainties about the ability of the new system to function safely and effectively.

The personnel management reforms (delinkage and retrenchment) were still in progress in the countries visited and their effects will take some time to become fully apparent. The new arrangements for health centre staff to receive support and supervision from district PHC supervisors was a matter of concern in both of the countries visited.

6.5 Identify and assess the operational changes affecting immunization

The case studies describe how reforms have affected the operations which support the provision of immunization services: procurement, stock management, distribution, replacement of equipment, maintenance and repair, transport, in-service training, supervision, information systems and surveillance. The field visits also revealed examples of how quality of immunization services had been compromised as a result of decentralization (e.g. local purchase of unsuitable equipment, ignoring national policy on injection equipment, reduction in clinical supervision). Some reforms espouse the integration of essential services as a way of improving quality and cost-effectiveness, and some operational systems (for managing and distributing drugs and medical supplies, managing health information, providing continuing education) have undergone a fundamental reshaping. The operations management systems developed for EPI have often been the most highly developed of all the components of primary health care.

- Where reforms are intended to integrate services, explore the opportunities for integrating support operations at the point of service delivery.
- Reject the compartmentalization that often characterizes vertical programmes and explore how much duplication of effort can be reduced.
- Reinforce good management practices (e.g. stock management) by applying them to all the health worker's primary health care responsibilities.
- Promote consistency of procedures (e.g. injection safety) across all components of health care, aiming for the best practicable standard.
- Identify which aspects of operations management still need attention to assure sustainable services of acceptable quality.

6.6 Develop new approaches to procurement

In low income countries the major inputs for immunization have been provided through donor funding, which is often tied to this component of PHC. In countries with higher GNP, local procurement decisions have typically resulted in less than optimal storage conditions for vaccines. The decentralization of budget to provincial and district level enables these managers to equip and supply the programme, but the specialized items developed for EPI (refrigerators, auto-disable syringes, steam sterilizers, TST spots, incinerator boxes) are not easily accessible to them. The reforms provide an opportunity to increase national ownership of procurement decisions and involvement in international procurement processes that until now have been managed by donors.

- Develop new approaches to procurement of specialized equipment, reconciling the subnational level's new responsibilities for planning and budget allocation with donors' desire to direct resources into immunization.

The approach developed in South Africa (refer to 4.2 above) provides an example of how such new approaches can work.

6.7 Maintain institutional memory

Where reforms involve reductions in staffing levels and/or dismantling of vertical programmes, the experience and institutional memory which built up immunization will be dispersed, and may be lost.

- Distinguish strategies (e.g. most feasible method for maintaining cold chain) from standards (e.g. safe temperatures for each vaccine); standards are constant while strategies should vary according to local circumstances.
- While developing new structures and systems, retain the lessons learned from a particular programme; consider past experience in the context of future possibilities.
- Assess whether the new structures, processes and resources imply that strategies should be adjusted. If so, develop strategies appropriate to the reformed system.

This provides an opportunity to turn loss of control by the central programme into a more sustainable immunization service with greater ownership at subnational levels.

6.8 Assessing and building capacity

Implementation requires human resources and skills as well as commitment. One of the greatest differences between Zambia and Uganda was that in the former, the Health Reform Implementation Team spent six years preparing the district staff for their new roles and responsibilities before the budget was decentralized. In Uganda capacity building started after decentralization, and will involve special attention to the parish level as many health centres and districts lack the capacity to carry out this role.

The effects of civil service reform and delinkage of employment are still in progress. Where the funding for payroll has fallen short of projections, the extent of staff reductions has been greater than expected.

- Are the necessary staff in place?
- Do health workers have adequate qualifications and skills for providing immunization services?
- Do managers and supervisors of health services at each level have the capacity to function as expected in the plans?

If staff at any level lack the necessary capacity, or if shortages of staff are the constraint, then plans and timelines will have to be revised to match the human resources available, and appropriate training and capacity building provided.

- Identify as soon as possible the aspects of service delivery that are at risk (or already suffering) and propose appropriate measures.

Reviews provide a mechanism for making such assessments and are described in Annex 2, which also suggests indicators for monitoring immunization services.

Decentralization to subnational level offers a valuable opportunity to encourage the local development of appropriate strategies that are suitable for the topography, seasonal accessibility, settlement or migration patterns, physical infrastructure, and resources available. Periodic meetings with staff responsible for implementation (e.g. quarterly meetings of the provincial teams in South Africa) provide peer support and an element of competition, while sharing the variety of operational experiences from different parts of the country.

- Support the development and sharing of local problem solving skills and strategies while maintaining clear standards for meeting the objectives of immunization (potent vaccine safely and correctly administered when the client is susceptible but prior to exposure, with proper documentation).

6.9 Recognize priorities at each level of the health system

In some countries constitutional reforms have strengthened the role and independence of subnational levels, which gain confidence and capacity to present their perspective and advocate effectively for it. The priorities of the level responsible for allocating budget (e.g. province or district) may differ from those at national or international level.

National and international initiatives that require the lower levels to implement them must be presented convincingly enough for the provinces or districts to take ownership of these initiatives. A top-down approach backed by specialist superiority is likely to be met increasingly with a countervailing argument rooted in resource constraints faced by the subnational levels.

- Be prepared for greater engagement by subnational levels when discussing plans to implement initiatives that did not originate from the province or district.

6.10 Initiating new policies or strategies

Although campaigns can increase motivation and team spirit the subnational levels, now in charge of resource allocation for all health services, will become increasingly aware of the opportunity cost of their effort devoted to “vertical” campaigns. Requests to participate in global initiatives are increasingly likely to be met with conditional agreement, i.e. only when the extra financing required has been provided.

- Make adequate preparation before presenting subnational staff with the “wide horizon” initiatives originating in national and international agendas, and be prepared to build consensus.

6.11 Reaching consensus on the use of public funds

Most health reforms include the concept of a basic package of essential services, reflecting a desire to use public funds in the best possible way. Immunization is recognized as being one of the most cost-effective public health interventions and as such constitutes a key component of essential health services. However, if external funds are poured into a single component of immunization, as with NIDs for polio eradication, this has been perceived as an unequal and unfair allocation of resources, contrary to the spirit of health reform. Campaigns involve a diversion of effort away from routine work into a single issue, which some reformers perceive to be inconsistent with their concept of integrated and holistic essential services.

- Be aware that pushing for campaigns and special efforts for a single issue without acknowledging the opportunity costs (other tasks left undone) may provoke resistance or reluctance to support the next “special effort” emanating from the international EPI community.

6.12 Map the planning cycle and time frame for ongoing reforms

Where reforms are rooted in a desire to use public funds more effectively, the health system trains managers to follow an orderly and timely planning process, and monitors whether this is happening. Guidelines for the next financial year are prepared months before the subnational level makes its plans, which must be submitted for approval months before the financial year begins.

- When proposing new or additional activities, be aware of the country’s planning cycle and of how much advance warning is required for national and subnational levels to incorporate these activities in an orderly manner.

6.13 Reconcile timing of international and global efforts

The experience of NIDs in the two countries visited showed that late arrival of promised funding and equipment, and a NIDs schedule that clashed with ongoing reforms (e.g. delinkage of employment), or failed to take account of school terms (availability of volunteers) contributed to the difficulties of implementation, and diminished the intended supportive effect upon surveillance systems and routine immunization services.

- Avoid creating the need for crisis management; propose initiatives sufficiently in advance of their target date for them to be negotiated and agreed with the relevant parties, and included in the planning and budgeting cycle.

When the health system is working towards integration, continuing with a vertical concept and restricting visits and discussions to the “EPI” team is likely to arouse resentment against advocacy for immunization.

6.14 Dealing with uncertainty

The perception by programme staff responsible for immunization that they are losing control was encountered even where the programme itself is not being dismantled. Reform implies change, which introduces uncertainty. Strategies for dealing with uncertainty when preparing plans include adjusting targets, revising priorities, increasing resources and improving productivity. Where the uncertainty arises from structural and functional changes, strategies include:

- Identifying where structures, functions and processes could change (e.g. logistics for supplies)
- Assessing the feasibility of options, analysing the strengths, weaknesses, opportunities and threats of each option, and remembering that an item can be both an opportunity and a threat (depending on what happens elsewhere in the system).

6.15 Monitoring

Immunization programmes have well established indicators for tracking both quantity and quality of services. Where reforms have emphasized increasing access to care, the health system needs to compare uptake with potential demand, and EPI’s use of coverage provides a well tested example of this type of indicator. Some health reforms have developed quality standards and quality assurance techniques to improve performance, and immunization can contribute to and benefit from these developments. Annex 2 contains details of appropriate indicators for monitoring.

- Participate in and contribute to the development of output measures and quality assurance indicators. This may mean working with a group of professionals beyond the immunization programme.

Where reforms emphasize a partnership with the community, this offers an invaluable opportunity for strengthening and sustaining participation in immunization services.

- Promote ways of involving communities in active identification and follow-up of eligibles, and in monitoring quality of services, including interactions between staff and clients, safety of injections and disposal of clinical waste.

6.16 Use of reviews

It is the responsibility of the national level to initiate and coordinate reviews. These periodic assessments should be carried out by a team that includes both internal and external members. The formulaic approach to survey instruments is now outdated; a review has to be designed specifically for the structures and functions of the country (refer to Annex 2).

- Design reviews to encompass the essential functions and activities for immunization within the context and objectives of the particular country.

- Focus developmental effort onto defining methodological processes and concepts (indicators) for reviews.
- Provide technical assistance with creating survey instruments appropriate to each setting.

6.17 Time

Time is a scarce resource for health staff, and has become increasingly precious as civil service reforms result in redundancies and freezes on employment. Integration means that individual staff become responsible for a wider range of services. Integration may also result in a rearrangement of tasks (e.g. the monitoring group monitors all ambulatory services, not just immunization). In this case the reduction in the range of functions for one specialist does not necessarily reduce the workload; integration requires that the clinical specialists interact with the monitoring specialists and the procurement specialists (see Zambia's CBoH). Each component in the portfolio receives less attention from individual specialists than in a vertical programme, and the attention is spread between different units. This may be experienced at any level of the health system.

The result is that the contacts that must be consulted about immunization are more diverse than a vertical programme. This is the case even where the immunization programme continues as before, as reforms will have shifted the focal point for decisions (e.g. in Uganda the Ministry of Local Government is key).

- Allow more time for arranging meetings with the relevant personnel than was the case with vertical programmes.
- The first visit to a country should allow enough time to identify the context within which technical advice is to be provided. If not the visitor may leave out most of those who should be involved.

The final advice was given in diverse contexts from experienced observers who have been involved in the process of reforms:

- Be patient.

This does not mean being passive, but implies allowing time for ideas to be considered, for systems to develop, and for transitions to reach fruition.

6.18 Next steps

Using the lessons learned so far,

- Expand the analysis by sharing experiences from different countries and refine the guidance for ensuring that quality immunization services are sustained.

Annex 1:

Two case studies: Health reform and immunization services in Zambia and Uganda

The two case studies were carried out in Zambia and Uganda. The two countries were selected because both are in a process of reforming their health system. The field study took place from 18 September to 17 October 1997 with more time spent in Zambia than in Uganda.

In Zambia the team was integrated in the EPI Review, an undertaking planned and carried out with assistance from WHO/HQ, WHO/AFRO, UNICEF, JICA and BASICS. The review team visited 12 districts and collected information from 24 health centres. The information was collected by way of structured questionnaires that had been specifically designed for the purpose. The findings and options were presented to the Ministry of Health, Central Board of Health (CBoH) and other agencies. A more detailed report was circulated in December 1997, and the final report was distributed in May 1998.

In Uganda the study team had interviews with representatives from government and international organizations. A short field visit enabled the team to collect information from two districts, three facilities, and an NGO providing immunization.

Preliminary findings and recommendations were presented to WHO/EPI in Geneva in October 1997 and January 1998, and to the Technet meeting in Copenhagen in March 1998.

The main constraints for the field visit part of the study were (a) the time allocated, especially for Uganda, and (b) the fact that many aspects of implementation were still evolving. For example at the time of the final revisions to this document, a new Minister of Health had been appointed in Zambia and delinkage of civil service employment had been postponed indefinitely. In both countries major donor funding had been withheld, thus altering expectations about the progress of implementing reforms.

Health reform and immunization in Zambia

Z1. Introduction

Zambia is a landlocked country in Southern Africa sharing borders with Angola, the Democratic Republic of Congo, Tanzania, Malawi, Mozambique, Zimbabwe, Botswana and Namibia. It has a population of 9.5 million (1995) with a population density of approximately 12 per sq. km. Zambia has 43% of its population living in towns and cities and is the second most urbanized country in sub-Saharan Africa (after South Africa).

The GNP per capita is US\$ 400 (1995) and 84% of the population has to survive on less than US\$ 1 per day. Hence Zambia's GNP is in the mid-range compared with other African countries. The main sources of export revenues are copper and electric power.

The social and health status of Zambians is still at the level of the least developed of nations. Life expectancy at birth is 48 years (UNICEF, 1997), the under-5 mortality rate is 196.6 and the infant mortality rate is 108.9 (ZDHS, 1997). Yet 95% of pregnancies (those resulting in a live birth in the five years preceding the survey) had at least one antenatal attendance from a doctor, nurse or midwife, indicating almost universal access to these preventive and promotive services. Just under half (47%) of deliveries are assisted by a nurse/midwife or a doctor (ZDHS, 1997).

Z2. Health reform

Z2.1 Background

Following independence in 1964 Zambia's political system had been characterized by one-party rule with a philosophy of extensive provision by the public sector. The economy was highly urbanized and centred on revenues from copper exports. In the early 1970s the world market price for copper collapsed, and at the same time the first oil crisis caused steep increases in the price of fuel. With the collapse of the copper-based economy, urban unemployment rose and it became increasingly difficult for the previous government to sustain free medical services to the population. In response to this situation the government attempted to introduce reform in order to increase efficiency and to raise some revenue by introducing direct payment by users. Those reform efforts were not sufficiently thorough to have any lasting impact, and the deterioration continued.

The Movement for Multiparty Democracy (MMD) was voted into power in October 1991 with a political manifesto promising change from the one-party system, which had presided over a steady decline of the Zambian economy for two decades. The election of the MMD government ushered in a new era in the political life of Zambia.

In the 1980s the World Bank and other international institutions had started to articulate concern about the organization and delivery of health services in developing countries, given the increasing scarcity of resources for public sector activities. This concern gathered momentum and led to health being the topic for the World Development Report in 1993 (World Bank, 1993). The Zambian health reform was conceived and set in motion before the publication of this document and had anticipated some of the options presented in it.

A number of health reform processes were established at an early stage. The scope and magnitude of the reform process is summarized in Figure Z1 which shows that development of detailed concepts and ideas about the new district health system started in 1992/1993.

Z2.2 Policies

When the MMD government came to power, it had ready a detailed manifesto for a new health policy: "Health Policy Framework Paper, Managing for Quality in Health Care". In this policy the fundamental principle was that

"Zambians must commit themselves to building a health care system that guarantees equity of access to cost-effective, quality health care as close to the family as possible."

Although the nongovernmental sector has always played an important role as providers of health care (mine hospitals and mission hospitals), this statement invited Zambians to assume more responsibility for their own health. The new government committed itself to leading and managing the reform process, to collaborate with consumers and health providers to determine how best to improve the system, to encourage partnerships among all those concerned with health and health care, and to encourage accountability in the health system for consumers, providers, and the government to work together to provide the most effective and efficient treatments and programmes (Kalumba, 1997).

The political manifesto was subsequently transformed into a government policy document called National Health Policies and Strategies (1992) which contains the following key statements:

- A goal-oriented, financially sound management system for health care
- Clear accountability and responsibilities at every level
- A mechanism for regular review of progress
- Enhancing the role and responsibilities of consumers
- Strengthening health centre supported community based health care
- Maintaining the role of public hospitals, including psychiatric hospitals and the University Teaching Hospital
- Integrating private sector strengths and resources
- Improving quality assurance and treatment effectiveness
- Broadening the range of professionally regulated health providers; improving their conditions and strengthening team work amongst them, both in clinical and public health setting.

(Source: National Health Policies and Strategies, Zambia, 1992).

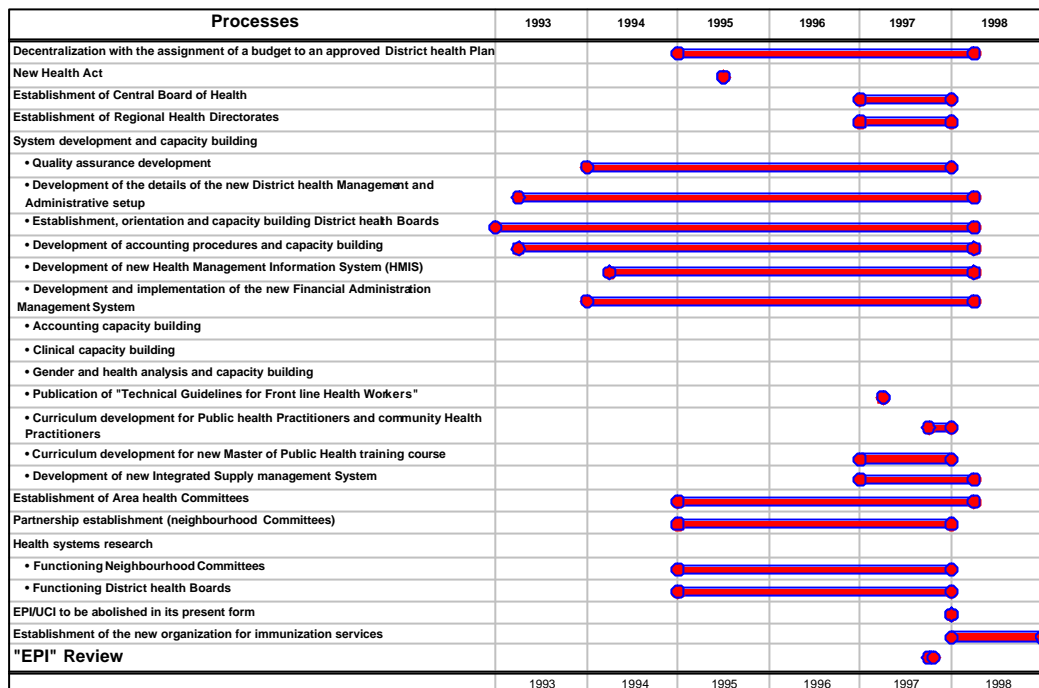
The new policy was translated into an operational format in “The Corporate Plan”, which became the implementation instrument in the early days of health reform.

A 1992 study looked into overall health policies and sector management, district health care, quality of care, the University Teaching Hospital, AIDS, population and family planning and physical infrastructure for primary health care. The study’s conclusions and presentation of options coincided with the new government’s policies and its reform efforts. A follow up study looked into urban health in the Lusaka area.

A basic concept of the reform in Zambia is the “essential package” of health services that the country can afford to pay for. The prototype package was defined through an iterative process involving central Ministry of Health (MOH) staff, district administrators and providers.

- Step 1: Determine the financing available for the recurrent costs of the essential package; include public and private expenditure, donors, missions, charities and NGOs.
- Step 2: Decide how these resources can best be employed to reduce Zambia’s burden of disease (measured by disability adjusted life years – DALYs).
- Step 3: Define standards for service delivery as envisioned under the reformed system (e.g. with a restructured supply system for essential drugs and medical supplies).
- Step 4: Define the package of essential services by evaluating the relative cost-effectiveness of interventions to reduce burden of disease, using the new standards (Step 3). Modify the essential package based on (a) political priorities, (b) contribution to reducing burden of disease, and (c) realities of daily encounters with patients. Regional variations are expected.
- Step 5: Define the policy implications of the package. For example effects on decisions made by those who have been commissioned to deliver the package will include choice of drugs, in-service training, standards of service, investment priorities.
- Step 6: Implementation: allocate and reallocate public resources. Make necessary investments during the transition; reorganize service delivery and support systems.

Figure Z1: Health reform processes in Zambia



Zambia’s essential package, defined by the approach outlined above, has been summarized as “six health thrusts”: child health, reproductive health, AIDS/STDs, TB, malaria, water/sanitation. Immunization is included within child health. These six aspects of health care must be provided by those commissioned as public sector providers. However if a district felt that it needed to cater for patients with problems which were not covered by the essential package, then it would be encouraged to gather data and reassess the relative cost-effectiveness of services to treat the burden of disease in its area. In Lusaka standard practice protocols were developed in 1995 for 20 main conditions, reflecting the broader spectrum of presenting conditions encountered in urban health facilities with more sophisticated provision of services (some with 30 beds).

The essential package has supplied the framework for reforming the staff cadres and the pre-service training curriculum (see Section Z3.6). A new reference handbook, “Integrated Technical Guidelines for Frontline Healthworkers”, describes the services to be provided and the new approach, which emphasizes partnership with the community.

Commitment to the essential package is supported by decentralization of authority and responsibility involving the restructuring of management and introduction of “new public management” practices in district health teams, hospitals and health centres. The ambition is that reforms will result in improved allocation of resources and more accessible, better quality health care.

Z2.3 Structures

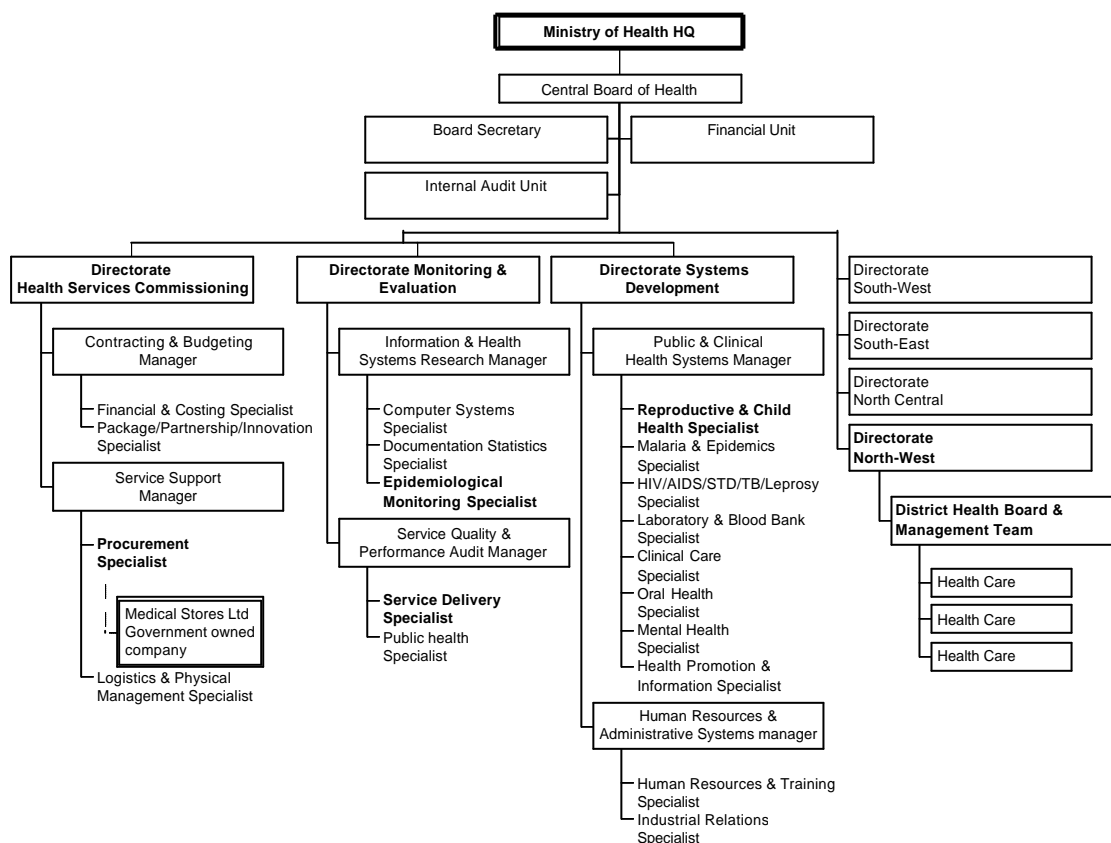
The new structure has been agreed and introduced. The MOH has delegated responsibility for setting standards, monitoring performance and commissioning out the delivery of public services to the Central Board of Health (CBoH), which was established in 1997. Some other functions are still in the process of being delegated; for example the Vehicle Service and Medical Equipment Management Board exists on paper but is not yet running the central workshops for

vehicle repair and medical equipment. The MOH will continue to be responsible for setting policy, for advocacy in parliament and maintaining legislation, allocating the public budget, and contact with donors. The delegation of other functions has meant a substantial reduction in staff at the MOH headquarters (from 400 to 67), while the CBoH has 118 posts in its establishment. Not all of these posts are yet filled, putting the new organization under some strain during the transition period.

The CBoH is headed by a Director General who refers to the Minister of Health. The CBoH has three technical directorates and four regional directorates (see Figure Z2):

- Health Services Commissioning, responsible for contracting and budgeting, and services support.
- Monitoring and Evaluation, responsible for all information, health systems research, service quality and performance audit.
- Systems Development, responsible for public and clinical health systems, human resources and administration.
- Regional Directorates (4), responsible for technical support, performance audit, administrative systems and human resources.

Figure Z2: Organigram of reformed health system, Zambia 1997



Four regions have replaced the nine provinces, but some aspects of the provinces' former functions (e.g. emergency drug supply) have been retained at subregional (i.e. provincial) level.

The reforms are intended to make the health system more responsive to clients, and to hold providers more accountable. The reformers considered that the previous highly centralized system could not adapt to meet these aims, and that decentralization of authority and responsibility was essential. In 1993 the new Hospital Management Boards and District Health Boards (DHBs) were established and commissioned to provide health services. These boards are responsible for costed annual plans, seek funding from CBoH and from other sources, and manage their own budget.

The DHBs are appointed, not elected, and are therefore not directly responsible to a constituency. They will have to create their own constituency by good governance and management of the resources at their disposal. In order to do that, the Boards will have to familiarize themselves with the health problems and activities in their district. This was mentioned as a priority activity by the DHB chairmen interviewed during the review of immunization.

At health centre level, Health Centre Advisory Committees (HCACs) have been established to manage the health centre's resources for activities at the facility and in communities in the catchment area. The HCAC includes the chairpersons of the Neighbourhood Health Committees, which are to assume responsibility for community action in partnership with community volunteers based at the nearest health post, and with health centre staff.

Z2.4 Processes

The legal instrument for health reform was the new Health Act, which was approved by parliament in 1995. The first districts received grants under the new system in 1995. Hence reform of the district health system was the forerunner for the rest of the reform.

Critical to the reform process was the decision by donors to support the reforms by placing funds in a "basket", a pool for financing district health plans under a common management arrangement. Contributors to the "basket" since its inception include DANIDA, DGIS, IrishAid, JICA, ODA/DFID, SIDA, UNICEF, USAID, and the World Bank. In the process of reforms others have joined in. WHO and UNFPA were not members of the "basketing" group, although they participate in the twice yearly meetings of the "basket" members. The April meeting is to review the performance and development plan, and to approve the rolling 5 year plan. The November meeting is to approve the next year's plans and to pledge a contribution to the "basket".

A common management arrangement for handling basket funds has been agreed. The procedures and formats for planning, management, accounting and reporting have been developed and implemented. A major capacity building exercise was completed by the Health Reform Implementation Team (HRIT) between 1992 and 1997, addressing the areas of quality assurance, management and administrative skills in the Hospital Management Boards and the District Health Management Teams (DHMTs). Figure Z3 shows the evolution of health planning from 1992 when the three pilot districts prepared plans, until 1997 when all but the newest districts prepared costed health plans.

Final approval of the plans rests with the CBoH in Lusaka. In future, the Regional Directorates will be responsible for supporting the districts in developing their plans. The regions will also have a clearing house function, assuring that the plans conform with the annual budget ceiling

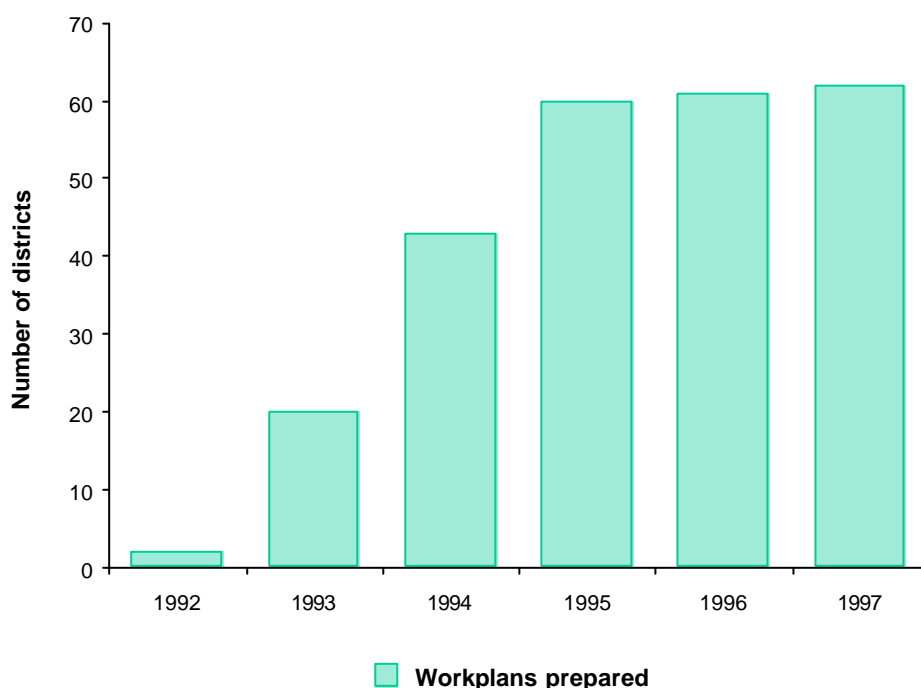
allocated to a particular district, and that the plans comply with guidelines from CBoH. These guidelines determine how much can be allocated to specific levels and types of activities (see Section Z3.2).

The district health plans are financed by the MOH with additional financial support from international agencies largely through basket funding. Until 1/1/98, funds were disbursed from the MOH to the districts and hospitals. As of that date, the CBoH took over responsibility for these financial disbursements.

Financial disbursements are quarterly. Prior to a disbursement there is a performance audit done by the Regional Directorate. If progress and accountability are found to be satisfactory, the next disbursement is effected. Otherwise, it is the task of the Regional Directorate to carry out a thorough assessment of the situation and propose remedies so that the next disbursement can take place.

The staff establishment is to be reformed by delinkage of employment; health workers will no longer be employed by the MOH but will be recruited, selected and employed by the District Health Boards. This decision has caused some anxiety and uncertainty among the staff in post, who had to apply for positions with the new employer. Job interviews were held in July 1997, and some staff know that their DHB did not select them. However, delinkage has been postponed several times, and in April 1998 it was postponed indefinitely.

Figure Z3: Number of districts preparing annual plans, 1992 to 1996



Source: CBoH library

Major processes have also been set in motion to redefine the designation and competence profile for health workers. The idea is that health centres will have only one technical cadre: the public health practitioner (PHP). The establishment of this new cadre is well under way with curriculum development nearing completion (see Section Z3.6). Existing PHC staff with

different pre-service training backgrounds will be assessed and, if necessary, upgraded through reorientation courses. The curriculum for this reorientation is under development. Plans for developing the Community Health Practitioner (CHP), a more highly skilled cadre than the PHP, are currently on hold due to lack of resources.

Community empowerment is part of the reform's central tenet of making the health system more accountable and more responsive to clients. This will entail switching the emphasis from outreach initiated by health centre staff to partnership with communities in the health centre's catchment area, with more involvement of community representatives. A Neighbourhood Health Committee (one per 3 000 population or 500 families) and community volunteers (CHWs, TBAs and others) will identify eligibles and their health needs, and will use a Health Post as the focus for local service provision.

All in-service training activities will be planned and managed by the districts. It is intended that they will purchase training courses from the existing training institutions and from others who can provide good value for money spent on training. This system is as yet untried.

A new health management information system (HMIS) is being designed, developed and tested. The recording and reporting system for ambulatory services will replace the old vertical information systems. A principal concept of the new HMIS is that information should be used by the people who collect it, and that all of the information gathered should be used (see Section Z3.8). To date, the system has been pilot tested in 15 districts and is due for nationwide "roll-out."

Medical inputs such as drugs, equipment and material will be procured through CBoH and distributed by Medical Stores Limited (MSL), which is expected to become the Essential Drug and Medical Supplies Store (EDMSS). The status and organizational set-up of MSL/EDMSS is still under discussion and final agreement has not yet been reached. Supplies planning and management will build on the Financial and Administrative Management System (FAMS), for which manuals (CBoH, 1998) have been produced in preparation for staff training. A bottom-up method for quantifying vaccines and injection supplies is being developed.

In September 1996 the health reform process was reviewed, at the request of the Minister of Health, by an external team supported by WHO, UNICEF and the World Bank (MOH, 1997). The reform process continues; most of the standards defined in Step 3 of designing the essential package of services are still in the process of being developed and implemented.

Z2.5 Stakeholders

Health reform invites all Zambians to participate in the construction of the new health services. This partnership is manifest in the establishment of the new governance and management bodies at all levels, from the Neighbourhood Health Committees at community level to the Boards at district and central levels.

The main stakeholders are found within the health establishment itself: both the new and the old one. Implementation of reforms will entail removing functions from one body and assigning them to another (for example, some of the functions of the Provincial Health Offices have been transferred to the Regional Directorates, others such as distribution of routine supplies will go to MSL/EDMSS). Some staff have been absorbed into the new regional offices, others will have

to find new employment. At district level, some posts in the old establishment may be regarded as dispensable by the District Health Boards, and delinkage is expected to cause a certain amount of disruption. Therefore, it is not unexpected that the delinkage element of reform has met with some resistance and dissatisfaction.

The employees in the new health system are also important stakeholders as proponents of the system using their skills and competence to fulfil the providers' responsibilities.

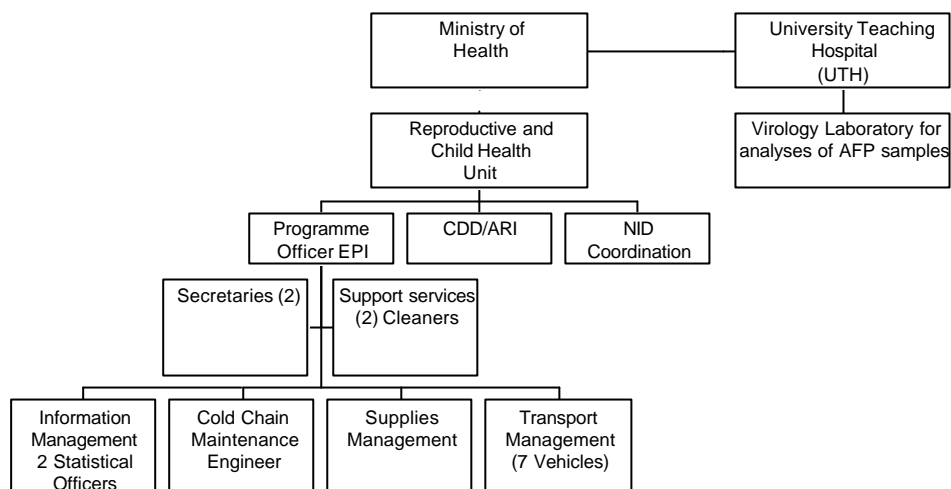
At the time of the immunization review it was expected that the existing UCI Secretariat (see Figure Z4) would be dissolved, and there was a palpable environment of uncertainty concerning the future of immunization services. Staff had been informed that they would have to apply for new jobs in the new system if they were to continue working in the public sector. Some staff had reacted by resigning in order to take up employment with donors and NGOs working on aspects of the essential package within the context of reforms. Among those who remained in UCI there was a complex mixture of preference for the familiarity of the old system, and loyalty to the specialized programme to which they had been appointed. This loyalty seemed to inhibit some of the remaining members of the team from full engagement with the numerous elements of integrating immunization activities into other services. If the UCI team perceived that one person was spending time and effort on "reforms" (e.g. at meetings in CBoH) this was sometimes regarded as an attempt to "change sides" and secure a future position in the reformed structure. The result has been too little constructive technical advocacy for matters concerning immunization. For example, staff from the UCI Secretariat attended meetings about the developing stores procedures manual, but the sections they submitted on vaccines and immunization injection equipment are too brief for such a comprehensive manual (CBoH, 1998). By May 1998 a decision had been taken to retain the UCI group for another two years, during a period of transition.

In general, there is enthusiastic support for the reforms, even among the staff who have to cope with uncertainty regarding their own future employment and conditions of service. The pivot of the staff concern is whether it will be possible to solve the pending employment issues (e.g. pensions) "satisfactorily". As expected, the higher ranking officials in the MOH and in the CBoH are committed to the reforms, and five years into the process most were enthusiastic about them.

There was a mixed reaction among the donors and agencies. A number of donors have demonstrated commitment to the reforms and have supported the process by agreeing to provide continued basket funding for district health activities. However, when the team asked one senior donor representative with multicountry responsibilities whether commitment depended more on agency policy or on the views of the individual he concluded that individual advisors follow their own commitment more than that of their agency. At the time of writing DANIDA, which has been one of the foremost advocates for reforms, has frozen its disbursements to the Health Sector Support Programme.

Concern has been expressed regarding the magnitude and scale of the reforms compared with the available local capacity in terms of human resources. The reform process can only move ahead at the speed it does with a substantial input of short and long term advisors funded by donors. This makes the reforms vulnerable if these stakeholders withhold their support.

Figure Z4: Organigram of UCI Zambia, October 1997



The MCH/FP Unit is located in the Ministry of Health. Lower levels pertaining to immunization are located on the premises of the "Old Medical Stores" separate from the MoH

UNICEF was concerned not so much by the health reforms as about its programmes and how they would fare under health reform. UNICEF has not been directly involved in supporting the health reform process, but continues its support to activities (such as immunization) within the new context.

USAID delivers a massive input to the reform process by supporting ongoing processes in the health reform such as quality assurance. This agency also supports the Integrated Management of Child Illness (IMCI) through BASICS. IMCI could potentially cause some disturbance in the ongoing process of curriculum development, reorientation and training by diverting some attention away from a more integrated approach to child health.

Z2.6 Special features of health reform in Zambia

Health reform in Zambia is a daunting health sector effort to improve the access to quality health services in a partnership arrangement with the population. However, this reform is confined to the health sector; it is not part of the ongoing reform efforts for the public sector as a whole. The local government system is undergoing its own reform and a general civil service reform is also under way. The successes and failures of health reform are likely to influence the general reform processes.

Although health reform is portrayed as "decentralization" it is a de-concentration within the health sector. The District Health Boards include one representative from their Local Government Council, but the Boards still refer to the central Ministry of Health (CBoH) rather than to the Local Council. Indeed the Minister of Health is able to choose and appoint members of the District Health Board, which can be dissolved by decisions taken at national level. The Local Council still continues to be responsible for environmental sanitation. This divided accountability and responsibility calls for a close coordination and collaboration, both at the governance and at the operational level.

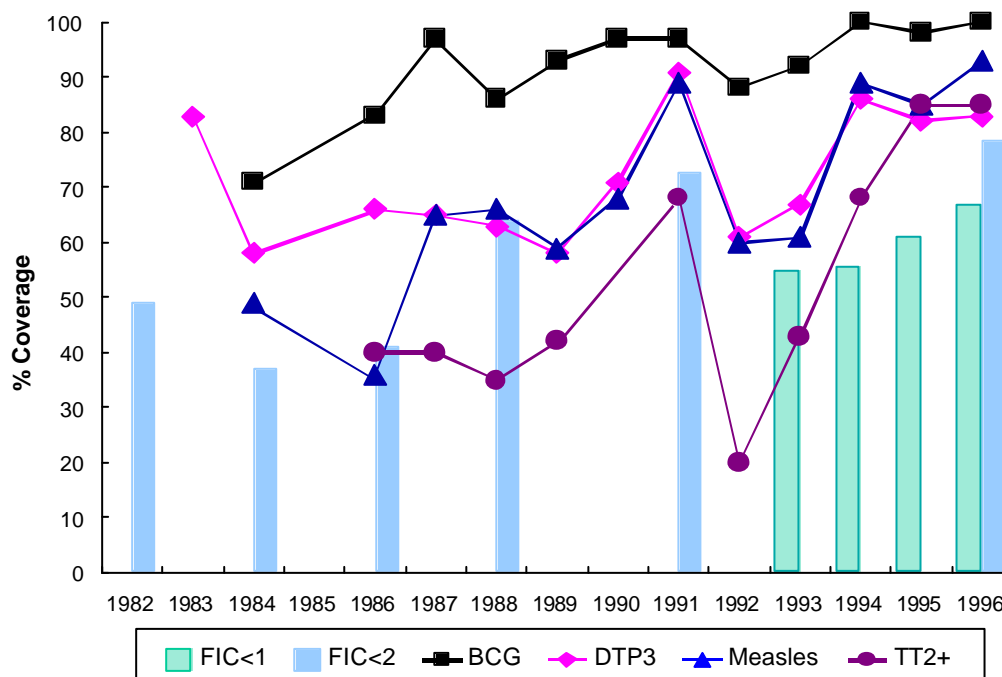
All the District Health Boards visited by the team had their particular characteristics. A lot of energy and drive for change was expressed in the interviews, as was the need to know better the health problems of the district, especially at PHC level.

Z3 Immunization

The first immunization programme, the National Immunization Campaign, was launched throughout the country in 1975. A coverage survey in 1982 showed that 49% of eligible children were fully immunized. Due to a number of factors (deterioration of the economic situation, poorly organized management system, lack of logistics, ill trained health workers and lack of commitment from policy makers), it was not possible to maintain this momentum, and subsequent surveys in 1984 and 1986 indicated a drop in immunization activities (see Figure Z5).

In 1987, President Kaunda launched the Universal Child Immunization (UCI) programme. In the same year the Accelerated Universal Child Immunization for Child Survival and Development Programme was initiated, introducing the following strategies: increased number of sessions at static health units, immunization on demand in all health institutions, intensification of outreach activities by increasing the number of subcentres, immunization campaigns (national immunization weeks), a new policy on contraindications (immunize unless the child requires hospitalization), and reduction of drop-out rates through social mobilization. New equipment was supplied to health centres, including steam sterilizers introduced nationwide. Transport was provided to each of the nine provinces and 57 districts for supervision and outreach. Provincial UCI coordinators and about 1100 health workers received training. In 1988 coverage for FIC under 2 was 64%.

Figure Z5: Immunization coverage in Zambia from 1982 to 1996



Source: WHO (1997) and ZDHS (1997)

During 1989, various operational problems emerged: less vaccine was used, and there were transport problems and difficulties with the distribution of paraffin. These factors suggested a decline in immunization activities, and coverage dropped for DTP3 and measles. During 1990, new forms were introduced for reporting monthly immunizations and cases of the target diseases. Temperature monitoring charts and immunization registers were produced and distributed to all health facilities. Between September and December 1990, national immunization days were held in three consecutive months, each NID lasting for three days. A coverage survey in February 1991 showed that the lowest coverage for any antigen among the children surveyed (12–23 months) was 89% (for measles); 61% were fully immunized before their first birthday and for this age group the drop-out rate between BCG and measles was 20%. Coverage in the towns was substantially higher than in rural areas (see Table Z1).

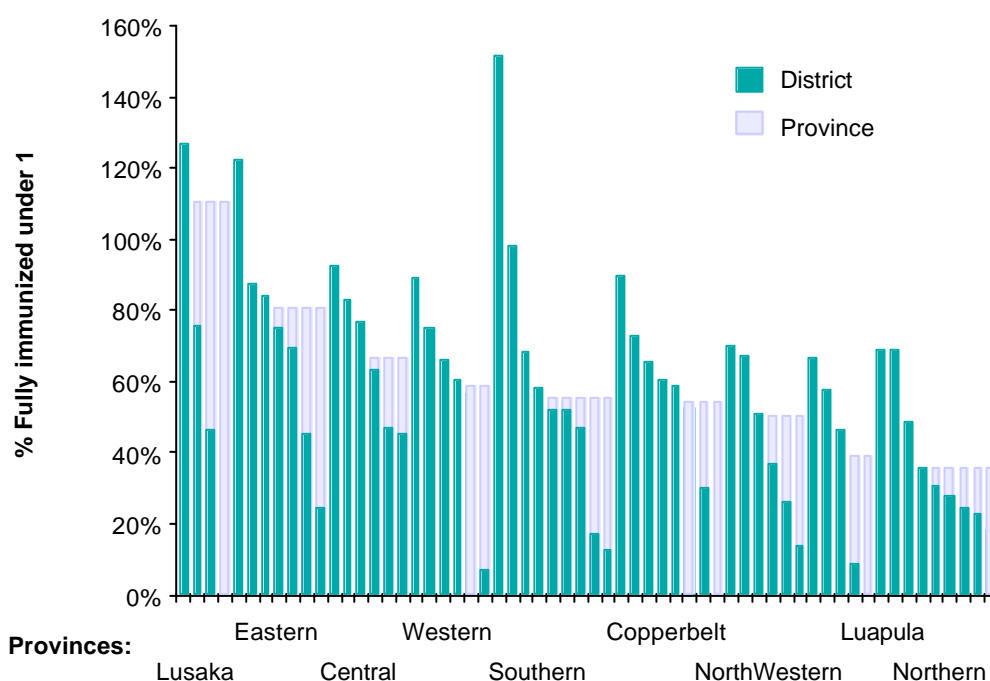
Table Z1: Fully immunized, at time of survey and before first birthday, in 1991 and 1996

	Children aged 12–23 months			By 12 months:
	National	Urban	Rural	National
Fully immunized in 1991	73%	80%	65%	61%
Fully immunized in 1996	78%	83%	75%	67%

Sources: MOH, WHO, UNICEF (1991); ZDHS (1997).

After the intensive effort to reach 80% coverage in the last four months of 1990, children’s immunization coverage fell during 1991 to the levels of 1989. Within two years coverage reported by UCI had regained the former levels and coverage above 80% for all antigens has been sustained until now. In 1997 ZDHS’s independent survey confirmed that coverage had increased, and the gap between urban and rural areas had been narrowed. However, there are wide variations between the nine provinces and the 61 districts (see Figure Z6).

Figure Z6: Zambia: Fully immunized children under 1 in 1996, by province and district (reported data)



Source: Data from UCI Secretariat

The first visit by the AFRO Logistics Support Project was in September 1996, followed by the rapid assessment of injection safety (January/February 1997). UCI prepared an inventory of all cold chain equipment in 1996 and this was updated with technical assistance in June 1997.

Late in 1996 the UCI Secretariat proposed a review to update immunization policies; this was the first review of immunization in 13 years. The review was postponed to avoid clashing with preparations for the NIDs, and was carried out in September/October 1997 by a team of national and international members.

The data collection instruments were designed to capture the quality of immunization services and the processes supporting the essential functions of UCI, within the environment of the ongoing health reform. This meant designing new formats to fit the Zambian situation. The approach included observing sessions in progress and asking clients for their perceptions both at the clinics and in the community. The review visited 12 districts and 24 health centres and their adjacent communities, and interviewed key staff at regional and central level. The topics covered are summarized by level in Figure Z7. One omission was the provinces, whose status was unclear at that time, and whose role in cold chain logistics is still under discussion at the time of writing.

Figure Z7: Topics covered, by level, for the review of sustaining the benefits of immunization within the Zambian health reform

	Central	District	Health centre	Community
Management and planning	✓	✓		
Work plans and budgets		✓		
Service delivery and quality			✓	✓
Cold chain and logistics	✓	✓	✓	✓
Reporting, surveillance and records	✓	✓	✓	✓
Stakeholders, health board, local committees	(✓)	✓	(✓)	(✓)

✓ indicates interviews using formats, (✓) indicates freeform interviews

Data were analysed using Epi-Info and the results were presented to the MOH and the CBoH under five headings:

- Policy, standards and guidelines
- Logistics and vaccine procurement
- Quality assurance
- Communication
- Use of information

Many of the comments in the following sections are based on the review team's findings. Further details can be found in the debriefing document presented in October 1997 and the final report (Foster *et al.*, 1998).

Z3.1 Setting policies, standards and guidelines

Who is the focal point?

The National Manager for immunization is usually the focal point for considering whether new technologies can be adopted within a country's programme, as well as for updating policies, standards and guidelines (PSG). At this point, the Director of Maternal and Child Health in the Ministry of Health is the National Manager of UCI. The restructuring of responsibilities has changed the division of responsibilities; the MOH is responsible for policy, CBoH is responsible for guidelines. Within CBoH, the Reproductive and Child Health Specialist (see Figure Z2) is the focal point for immunization, and calls upon UCI staff for technical input.

What is the process?

The last time Zambia's immunization policies were comprehensively reviewed was when the MOH published the EPI Manual in 1992. In the interim the UCI Secretariat has issued guidelines on an ad hoc basis but the programme had no formal mechanism for updating policies. The UCI proposed a review as a mechanism for updating policies, standards and guidelines.

The review team discarded the existing modules and designed a set of formats for a health system which is in the process of fundamental structural changes and shifts in responsibility, capturing key information relevant to discussing policy, standards and guidelines. Opportunities for using reviews are discussed in the Reference Guide (6.16).

Ensuring continuous updating of technical information

In the UCI office, there were a few WHO publications about technical best practice, stored in a haphazard and inaccessible way. Over the last few years experienced staff have left, anticipating reductions in the number of MOH posts. At the time of the review the UCI staff were in a state of limbo, having applied for positions in the reformed MOH but knowing that the number of posts had been cut from 400 to 67. The CBoH was in the process of setting up its establishment of 118 staff, none of whom has been directly involved in the immunization programme at central level. The CBoH library had very little material on EPI. The shedding and loss of experienced staff jeopardizes the institutional memory that is necessary for a continuous process of updating policies.

A discussion about the place of vaccine vial monitors (VVMs) in Zambia's UCI confirmed the impression that new technical information was not being applied effectively to the UCI programme.

The National Manager said that VVMs were only for NIDs and not part of routine operations. Yet nearly all of the OPV seen in health centre refrigerators during the review had VVMs. The only written instructions on interpreting VVMs were in the 1997 Vaccinator's Guide (prepared for the second year of NIDs).

Under "What to do at the end of the working day?" the Vaccinator's Guide says "return all unused vaccine vials to the health centre for refrigeration." It does not mention the need to discard any vial with a VVM inner square which is the same colour as, or darker than, the outer circle.

The Tally Sheet provides space for recording the “Number of OPV vials discarded because VVM turned black.”

The team did not see any charts or posters showing the shades of colour, and how to interpret the change in a VVM.

The lack of clear guidelines and the perception that VVMs are “only for NIDs” raises the following question: to whom are WHO’s technical materials and WHO/UNICEF policy statements addressed, and, in future, where will they be filed? The CBoH library should be on the technical mailing list, making these materials available in a well organized, accessible venue to those who should be using them.

Who should be involved in setting PSG?

In 1995 and 1996, the MOH staff from MCH/FP were involved in developing the integrated child health component of the Integrated Technical Guidelines for Frontline Healthworkers (CBoH, 1997), and were part of the group that reviewed the immunization schedules, specifically the addition of OPV0. This group, the IMCI Advisory Committee, agreed in principle in February 1997 that OPV0 would be added. However, the UCI Secretariat (and CBoH) is instructing districts to use three doses of OPV in calculating their vaccine requirements for 1998. The IMCI Advisory Committee is in the process of becoming the Child Health Advisory Committee and this would appear to be the logical focus for considering updates in policies, standards and guidelines.

At the time of writing MOH and CBoH are using local and international consultants to prepare proposals for updating immunization policy, guidelines and manuals. The process for considering new technologies and implementing them will need to be clarified when the reforms’ changes in staff and responsibilities are more established.

Who will disseminate PSG?

Current policies must be incorporated in curricula for basic training, as well as being taught consistently. The review found several examples where clarification of policies, standards and guidelines was needed.

The review team was told that during the rural practical stage of training, students argue with the resident health workers that the measles dose should be given at 7 and 8 months with a booster six months later (as they have learned from some urban HC staff). The current policy is one dose at 9 months (except during outbreaks). Neither the tally sheet nor the under-5 card is formatted to record a second dose of measles, so a question arises: Where do they record these booster doses?

Two of the 12 districts visited during the review had solved their problem of vaccine storage by purchasing domestic refrigerators from local suppliers. Many cold chain studies have documented that even in temperate climates, domestic refrigerators do not provide reliable storage for vaccines. District staff are not expected to be familiar with these studies, and central and regional levels must provide guidelines for the specialist equipment required for district storage of vaccines (see Z3.3).

The pre-reform system has not handled updating of PSG effectively. The review team recommended that:

1. a focal person at national level be identified as the initial point of contact for latest developments in immunization technology (within the CBoH structure this would probably be someone with epidemiological responsibilities)
2. a process be established for continuous review of latest technical developments and WHO recommendations and guidelines.

How is health reform affecting PSG?

Health reform offers an opportunity for updating policies, standards and guidelines, for integrating the updated PSG into the new curricula for PHC staff (both pre-and in-service training), and for designing an appropriate protocol for supportive supervision.

Updating PSG and integrating updates into the curricula are both in progress, involving a wide range of key players in order to build consensus for the changes. The outcome of the process will be determined by the extent to which the momentum and focus for change can be maintained.

Z3.2 Planning, budgeting, funding and other resources

Planning processes and priorities

The overall direction that plans should take is the responsibility of the MOH, and CBoH is responsible for detailed planning guidelines. At present the District Planning Guide is updated annually in an evolving process of refining the guidelines in response to experience. CBoH specifies the structure of the Gantt chart that districts should use in linking activities to resources, making it easier for the regions and CBoH to assess and monitor progress on implementing the districts' plans. When asking about planning and budgets, the review team found that districts were using a standard format for financial records.

Detailed planning has been decentralized to district level, and is designed to be a bottom-up process. Health centres (HCs) and the community representatives in the HC catchment areas prepare their plans, which are then assembled into one document by the DHMT. The activities in the plan must be costed, and the plan and the proposed budget must be approved by CBoH. The level of funding is based on available funds, population and a weighting system.

The District Planning Guide stipulates the services that must be provided and gives the minimum and maximum percentages of budget that may be allocated to each level, with ceilings for certain types of expenditure (Table Z2).

Table Z2: Minimum and maximum allocations for each level of expenditure, and ceilings for selected cost items

Level	Districts without an autonomous HMB ^a		Districts with an autonomous HMB ^a	
	Minimum	Maximum	Minimum	Maximum
District Office	5%	15%	10%	25%
1st referral hospital	20%	40%	0%	15%
Health Centres	45%	60%	60%	70%
Community	2%	5%	2%	5%

a. HMB: Hospital Management Board.

Cost item	Ceiling % of total budget
Allowances	20%
Emergency drug purchase	4%
Fuel	15%
Capital	15%

Source: District Planning Guide 1998.

These allocations represent a significant redirection of resources towards primary care, as well as a fundamental change in focus towards families' local health services provided at health centres, health posts and outreach sites. CBoH's guidelines on allocation support the ambition to provide essential services closer to home (one PHP per 3 000 population). In an area of low density settlement, the facility would be a health post staffed by one person.

The policy of improving access to care and encouraging people to use their local health facility is being reinforced by charging higher fees to people who arrive at hospital without a documented referral, to discourage them from using hospitals for primary care. It is planned to close out-patient departments and open urban clinics at different but more accessible locations. This will shift routine immunization services out of the hospital and into an ambulatory facility (although hospitals will still have to administer the antigens due at birth, and immunize paediatric inpatients). Districts are encouraged to develop an investment plan, with a ceiling of 15% on capital improvements. These funds can be carried over to the next year.

The districts' plans must provide for the essential package of services, which includes child health. Immunization is recognized as one of the most cost-effective interventions for reducing morbidity and mortality. The issue of how to keep its high priority in the absence of the diseases it prevents has not yet arisen.

During the review, all the 12 districts visited had prepared costed work plans for 1996, and these plans included routine immunization services. The review team obtained answers from ten districts concerning the inclusion of outbreak response in their budget, and all ten of them did include this item. Seven of these ten districts also budgeted something for campaigns and NIDs, commenting that actual expenditure exceeded what they had budgeted and that lateness of additional funds caused real problems with implementing the NIDs.

Until now, planning the quantities of vaccine has been top down. This process is now changing; the intention is that health centre staff will work out their own vaccine requirements based on past consumption, and that these estimates will be aggregated in the district plan (see Z3.3).

The districts also need to plan for routine maintenance and replacement of vehicles and equipment, and for emergency repairs. The Planning Guide gives specifications and prices for vehicles (Land-cruiser, motorbike and trailer) that CBoH will procure and sell to those districts whose purchase plans have been approved. A similar mechanism is needed to give districts access to equipment that is suitable for storing vaccines (see Z3.3).

As to the effect that decentralized planning has had on immunization services, the Sisters In-Charge at two urban HCs said that now they can plan according to their catchment area. They can allocate allowances and arrange transport for staff doing outreach, for which the Neighbourhood Health Committees (also involved in planning) prepare the people in their area. This suggests that before health reform they immunized only those who came to the clinic.

Facilities run by missions contribute to immunization services, and in some districts have been instrumental in promoting rural health services as a means of providing primary care close to the family. Thirty-five districts have mission institutions – hospitals and/or bedded health centres – which receive an allocation from the district grant. There has been considerable debate about how these institutions will fit within the context of the reformed health system.

Private sector providers collect vaccine from their local district stores and report on doses administered. The team did not investigate how private immunization activity is factored into district plans.

Sources of funds and other resources

The MOH prepares the overall health sector budget and submits it to parliament for approval. Once approved the Ministry of Finance disburses the allocation according to availability of funds (cash budgeting and disbursement). Before 1/1/98, the MOH was responsible for disbursements to the districts and hospitals. This responsibility was transferred to the CBoH as of that date.

The district plans must provide for the essential package of services. This is a challenge because funds available from central level presently cover about half of the total per capita cost of the package, which the World Bank estimates to be about \$12.

For 1997, the district allocation, including district drugs but excluding drug kits, was 3614 Kwacha (\$3) per capita, of which the GRZ grant comprised 55%. This does not include Japan International Cooperation Agency (JICA) support to the virology laboratory or the cost of technical assistance. Nor does it include the payroll, vaccines and equipment used for immunization, or revenue from user fees. During 1997, the salaries of the health staff were paid directly by the MOH, and this will change with delinkage, as described above.

Until now, vaccines have not been included in the “basket.” UNICEF and JICA have funded all vaccines for Zambia’s routine immunization, and Rotary International has paid for the vaccines used in NIDs. The MOH has a line item for immunization but has never used it to buy vaccine; in 1997 this allocation was used on operational costs of the NIDs. In 1996 JICA funding (for BCG and measles) was cut by 30%, and in October 1997 JICA informed the MOH that they would be reducing their funding of vaccine purchases by 20% per year, starting this year. By 2002 JICA will no longer be funding this recurrent expenditure. The MOH is ready to start contributing to the cost of vaccines. Basket funding is described above in Z2.4 and in Z3.3, with the Vaccine Independence Initiative.

Using 1996 costs for vaccine delivered and duty paid (DDP) and UCI’s estimate of vaccine requirements for 1997, the annual bill for vaccine is \$1.29 million. In 1996, donors spent another \$177 000 on recurrent supplies (under-5s cards, sterilizable needles and syringes, cold chain spares) and \$53 000 on equipment (vaccine carriers, steam sterilizers, spare parts, tool kits).

After amortizing and annualizing equipment costs, donor expenditures on these imported items and vaccines amount to \$4.10 per newborn, or \$5.25 per fully immunized child in 1996. If these expenditures were included in the district grant they would increase the per capita figure by \$0.15, to \$3.15 per capita to cover all district health expenditure, except payroll, drug kits and revenues from user fees.

In addition to the annual expenditure on imported items, immunization services involve local costs: staff time, allowances for outreach, fuel for sterilization and incineration, in-service training, inputs from district managers, supervisors and store-keepers, and transport. These costs, including salaries from 1998 onwards, must be met from the funding allocated to districts and any revenues raised locally.

Additional funding is obtained from user fees and “schemes” (a flat monthly payment that entitles the family to free services or reduced fees). Districts can retain and spend the fees collected after approval from CBoH. They are allowed to be innovative with user fees as long as they comply with the rules, which state that children under five years old and people 65 years and over are exempt from fees.

During household interviews with 133 mothers with a child under 24 months, 15% of mothers said that they had been asked to pay for immunization. Health staff might describe the payment as a fine for coming late, or a fee for replacing a card, but mothers perceive it as paying for getting the child immunized.

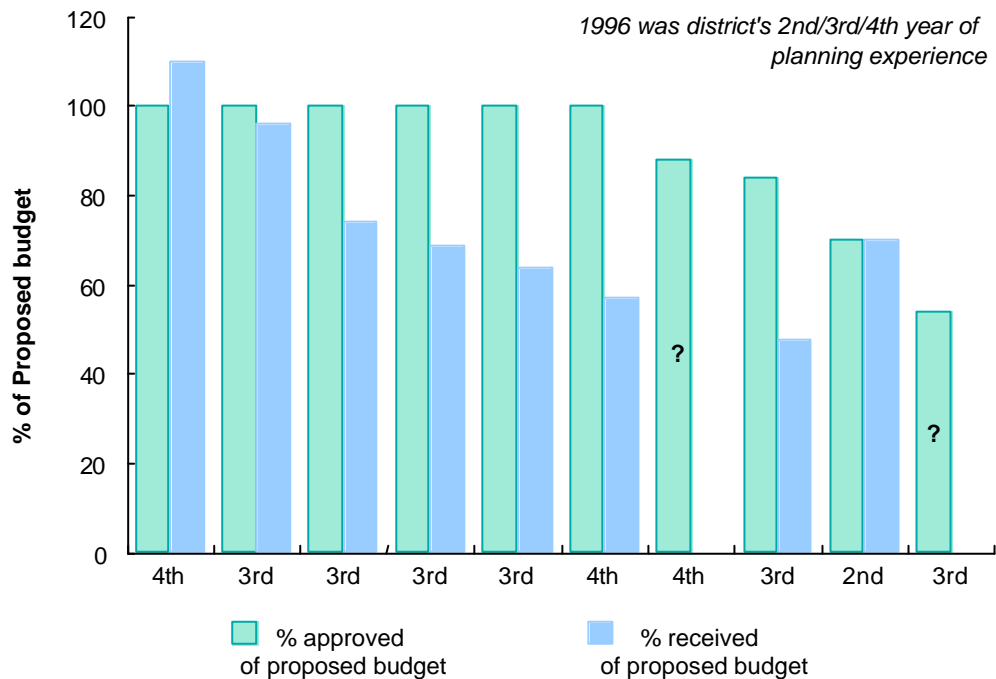
The developing structures under health reforms offer several possibilities for resolving these matters. Neighbourhood Health Committees can monitor both staff behaviour and client cooperation with retaining cards and attending advertised sessions. If health workers persist in breaking the rules, the complaint can be brought to the attention of the Health Centre Advisory Committee and then the District Health Board. Delinkage means that misdemeanours by staff can be followed up locally and that appropriate resolutions can be reached quickly.

Missions and other projects provide resources that indirectly benefit immunization services. For example, the WASHE Project (Water and Sanitation, Hygiene Education) in Monze District has trained environmental health technicians (EHTs) in working effectively with communities, and has equipped them with motorbikes. This transport enables two HC staff to travel with their equipment and supplies to outreach sessions in the catchment area.

Reliability of funds

Government revenues depend on economic activity and the tax base. The district allocations are approved before the financial year begins (January) and projected revenue may not be achieved. The review team found that six out of the ten districts surveyed had all of their proposed budget approved; these districts were in their third or fourth year of planning experience. This may reflect a degree of realism about financial constraints and acceptance of CBoH's "indicative planning figures" presented to DHMTs during the annual planning workshops. Two out of ten districts surveyed received the amount that the CBoH had approved for 1996 (see Figure Z8). One of these districts received 10% more than its allocation thanks to a donation, and the other only had 70% of its proposed budget approved. The remaining districts for which data were available received less than the amount approved by CBoH for 1996.

Figure Z8: Zambia: Proposed funds approved for 1996 and approved funds received by districts



Source: 1997 Review

For 1997, the team developed an indicator of the timeliness of receipt of funds. By the end of September, districts should have received three-quarters of their approved budget for 1997; this figure provides the denominator for the percentage of that year's budget received. Nine out of 12 districts had up-to-date information on grant received, and on average they had received 63% of the expected amount (with a range from 126% down to 10%).

These two problems – late arrival of funds and receiving less than the anticipated (approved) amount – were mentioned by DHMTs as one of their greatest problems. Lateness of funds causes scheduled activities to be interrupted; for immunization this typically means cancellation of outreach sessions and less on-site contact between health workers and their district supervisors, especially the MCH coordinator. Implementation of NIDs was also adversely affected by late arrival of funds (MOH: NIDs Report 1997). In some districts there is growing impatience with having to put substantial effort into developing costed work plans within CBoH's tight guidelines if the approved funds do not materialize.

In November 1997, the international press published reports that donors had suspended funding soon after the government declared a state of emergency following the coup attempt in late October of that year. These reports could not be substantiated. In April 1998 one of the main donors was considering whether to withhold disbursements to the Health Sector Support Programme and did so in July. The ideal is to design an affordable essential package, but the arithmetic for assessing available financing (Step 1) includes donor inputs and the health system is dependent upon donor support. Immunization services are vulnerable to the extent that the donors' agendas may change.

The time scale for planning and budgeting follows an orderly process spread over many months. If districts are to succeed in planning and managing their own budgets and running their health services, the planning cycle must be respected and release of grants to districts must be reliable. In practice, new policies, strategies and initiatives must be approved by MOH and incorporated within CBoH thinking some months before the District Planning Guide is published in July. Otherwise, the districts will not receive adequate warning to respond to the new items in next year's plans and budgets.

The effects of health reform on planning and budgeting

Health reform has introduced a new modality for district planning and budgeting that has a potential to be very supportive towards immunization activities. The priority given to HCs and the essential package ensures that resources will be allocated to primary care services, as long as funds are available. The allocation for community activities, with proper community support, can be very supportive for increasing coverage and reducing drop outs.

The force of scarcity may exert a pressure on allocations for community activities. The District Health Board should be able to counteract this by getting acquainted with community health problems and inviting communities to play a more active role in political as well as in technical terms.

The most impressive aspect of changes to planning and budgeting is that districts now have a real budget that they can allocate locally. The detailed guidelines and monitoring from higher levels ensure that plans include essential functions and administration does not consume too large a share of resources. Outreach activity appears to be a major beneficiary of the changes, but clinical supervision appears to have been eclipsed by the higher priority accorded to financial and management supervision (see Z3.8). The challenge is to ensure that allocated funding is provided on time, and that available resources are used in such a way that health outcomes are optimized.

Z3.3 Procurement and local purchase

Local procurement decisions involve CBoH for tenders, MSL/EDMSS for storage and distribution, and the districts as clients, buying items or drawing against an allocation. International procurement for immunization involves the UCI Secretariat and the donors, principally the UNICEF country office. Bilateral agencies sometimes procure directly from UNICEF Supply Division in Copenhagen (JICA for vaccines), or from the manufacturer (for cold chain equipment). Figure Z9 summarizes the purchasing and procurement arrangements for immunization in Zambia.

Figure Z9: Local purchase and procurement of items used for immunization

	Districts: local purchase	GRZ/MOH/CBoH central procurement	Donors: international procurement
Vehicles		✓	✓
Cold chain equipmentt & spares	✓		✓
Steam sterilizers & spares			✓
Stoves for sterilizers	✓		✓
Injection supplies	✓ disposables	✓ disposables	✓ sterilizables, AD syringes
Disposal/safety boxes			
Destruction equipment			✓
Vaccines			✓
Other medical supplies	✓	✓	
Stationery: cards	✓		✓
Fuel (diesel, kerosene)	✓		

For immunization, there are two important areas of overlap: refrigerators, and injection equipment. The review found that some districts had replaced broken cold chain equipment by buying domestic refrigerators in the local market. It also found that 71% of the 24 HCs visited were using sterilizables (in accordance with UCI policy) and 46% were using conventional disposables; 17% were using both types of syringes. Empowered with funding, districts had taken local procurement decisions to redress of their shortages, and these decisions do not always comply with the standards established for UCI. Shortages reflect the shortcomings of a centrally managed “push” system and the difficulty of ensuring that the necessary quantities of spare parts, new equipment, and resupply (especially of sterilizable syringes) are procured and made available.

The ownership of the international procurement process rests mainly with the UNICEF country office. UNICEF raises donor funding, reviews the UCI Secretariat’s forecasts of requirements, consolidates orders, coordinates transactions and arranges local transport from the airport to the national stores. Certain items have never been supplied (notably disposal boxes for discarded injection equipment and TST spots indicating time, steam and temperature compliance for sterilizing equipment.). Other items are ordered ad hoc (e.g. spare parts for the sterilizers); the review found that cold chain and sterilizer spares were in short supply. This highlights the weakness of the programme’s role in obtaining items that must come through international procurement.

Vaccines have all been procured through UNICEF Supply Division, but so far the funds have not been put into the joint basket. One donor has decided to fund two particular antigens, and has reduced its support based on unilateral priorities. The review team recommended that GRZ should start paying for some vaccine, and even if UNICEF continues to manage procurement the focal point should shift to MOH/CBoH so that national and central managers gain more experience of this highly specialized function and process. Future arrangements for international procurement are currently under discussion (Minutes, 1998).

The vision is for districts to pay for everything they need, and the district health budget has budget lines for vaccines and equipment. At present each district has a drawing right entitling it to vaccine according to its estimated needs. The success of this system depends upon good quantification of needs; the review team found that one district they visited was denied resupply of vaccine when the supplying store considered that the district's allocation for that quarter had already been issued. International procurement of vaccines at national level, funded mainly by donations, will continue for the foreseeable future.

At the time of the review it was not clear how districts could purchase donor-funded equipment and spare parts (hence their decisions to buy domestic refrigerators from local suppliers). It has since been suggested that they could choose replacements and spares from a "shopping list" of suitable products approved by CBoH and procured centrally.

A district can purchase vehicles under its capital investment plan, which must be submitted to CBoH for approval. CBoH offers a revolving fund to facilitate financing over two or three budget cycles. The central level has chosen a selection of appropriate vehicles and will negotiate a price to gain the benefits of bulk procurement. This approach could be expanded to include specialized equipment used for immunization.

How is health reform affecting procurement?

Health reform has increased awareness of the ownership of the procurement process. This was reflected in the indication the team received from the MOH's senior planning officer concerning the willingness of the MOH to include funds for vaccines in the next budget proposal.

Under health reform the procurement function is being transferred to CBoH (Directorate of Health Services Commissioning), creating a new unified and integrated drug and medical supplies system. Essential equipment is also within CBoH's remit. The enormity of the task facing CBoH and the perception that procurement for UCI has been functioning fairly reliably under the old arrangements may have contributed to CBoH's decision to leave the specialized task of vaccine procurement with UNICEF until a later date. In January 1998 the principal parties agreed to develop a long term plan for implementing the vaccine independence initiative (Minutes, 1998).

Z3.4 Storage and distribution of vaccines

The national vaccine store is at the "Old Medical Stores", the premises of the UCI Secretariat. The two cold rooms have sufficient capacity but operate with outdated equipment (only one condenser per unit). Each unit should have two condensers in order to increase the reliability of the equipment. Seventeen chest freezers cater for the remaining vaccines including OPV for NIDs. A walk-in freezer room would take up less space and has been recommended in a recent inventory of the cold chain (WHO/DANIDA, 1997)

Stock management at national level was seriously flawed in several respects. The review team found a sizeable difference between the physical count and the information on the stock cards. For example the measles vaccine stock card indicated 3 052 vials and the physical count 20 160; this was traced to a recording error several months earlier, indicating that the physical count was not being performed each month, despite UNICEF's request that it be done to help improve vaccine forecasting.

Inadequate tracking and recording of quantities has contributed to wildly inaccurate quantification of vaccine requirements, both overstocking (hundreds of thousands of TT doses expired at national level early in 1997) and under-stocking (DTP and measles were expected to run out before the next supply arrived). Vaccines expiring in the national store has contributed to high wastage over the last few years (WHO, 1996). During the review daily recording of temperature was not done systematically, putting the national stock of vaccines at risk.

Districts used to collect vaccines from the nine Provincial Stores, some of which no longer have functioning transport and cannot collect supplies from the national store. The plan was that districts would collect vaccines from the central store on a quarterly basis. This constitutes a problem for the more remote districts, some of which are making *ad hoc* arrangements to take turns or share collection trips in order to save on transport costs. Districts that are close to Lusaka collect their vaccine individually, sometimes monthly.

Under health reform, stock management procedures have been tightened as they are integrated, in the Financial and Administrative Management System (FAMS) which has been introduced at district level and below. In the districts stock management is better than in the national store. In eight out of ten districts visited, a proper stock management system was in place and the physical conditions were acceptable, except that some districts complained about too little space for the cold chain equipment. It will be up to the districts to invest in better storage facilities. In two districts the vaccine refrigerators were broken and they were using inappropriate equipment.

The health centres collect vaccines from the districts; this is supposed to be monthly but the safety stock specified in the 1992 EPI manual is two weeks (i.e. less than one supply period). Most of the health centres visited had experienced stock outs of vaccines during the last eight months. More than half of those visited did not have enough stock to provide all antigens at the sessions scheduled for the following week. Under UCI health centres did not keep stock cards, so management of resupply was hit and miss. The new FAMS applies to all supplies and combined with the new HMIS, health workers now have a consistent and integrated system for managing their stock levels. Some hard-to-reach areas rely on periodic special efforts by the district team to bring supplies and assist with providing services to the backlog of eligibles.

Storage in the health centres was, by and large, found to be adequate. The review found that some urban HCs share the district store without separating the stock. In a few health centres the review team found excessive stock of OPV, left over from the last round of NIDs. There is a problem with storage of toxoids that are sensitive to freezing; the team found frozen DTP and only 27% of staff could describe and demonstrate the shake test properly.

The inventory of cold chain equipment is supposed to be updated by the districts twice per year. It should provide a rational basis for relocating working equipment, replacing old equipment and ensuring that the appropriate spares are procured centrally and available to the districts that need them.

How is health reform affecting storage and distribution?

With or without health reform there is a need to improve supplies management of vaccines and other inputs. An integrated supplies management system is being developed and has the potential to improve the flow of essential inputs from the central level through the districts to the points of service delivery. The new system already distributes drugs and other medical supplies on a monthly basis to the districts. The way this system is functioning in practice needs to be assessed as part of identifying options for the distribution of vaccines. In January 1998 MSL was asked to prepare a plan for storing and distributing vaccines, and CBoH was asked to maintain cold chain infrastructure and staff at the provincial (subregional) vaccine stores (Minutes, 1998). When the status of MSL changes and it becomes EDMSS, its management may be contracted out to the private sector. To conclude, the future arrangements for storage and distribution for immunization supplies are not yet settled.

Z3.5 Maintenance, repair and replacement of cold chain equipment, vehicles other equipment

A cold chain inventory in 1997 found that 11% of all 1236 refrigerators and freezers provided for UCI were broken down (Munck and Din, 1997). Approximately half of the broken down units were beyond repair, but the rest could be repaired if spare parts could be made available. About 30% of the equipment was more than ten years old, and breakdowns were more frequent in the older equipment. The inventory showed that there was surplus equipment in some districts and shortage in others. The review team found that 13% of rural HCs had no working fridge, and two districts were using inappropriate equipment because the refrigerators supplied through the programme had broken down.

This raises three issues, which apply both before and after reform: maintenance for the cold chain, optimum distribution of equipment between districts, and writing off old equipment which should be replaced. The latter has been partially addressed by the replacement plan presented to the MOH in 1997.

Districts used to receive support for cold chain maintenance from the provincial offices, which have no official role in the reformed structures. Districts are now supposed to do their own cold chain repairs with technical backing from UCI's national workshop at Old Medical Stores. To function effectively, both the old system and the new system require a constant flow of spare parts appropriate for the stock of repairable cold chain equipment. The national workshop has the technical capacity to repair cold chain equipment from the districts as long as the necessary spare parts are available. The cold chain inventory identified lack of spare parts as a serious problem.

In the old RCW 42 kerosene refrigerators, DTP and TT vaccines easily get frozen when they are not meticulously separated from the evaporator – typically when the partition has been removed. Half of all the working equipment consists of RCW 42s, yet the review team found that only 27% of health centre staff knew the shake test to check whether their vaccine had been frozen. This level of knowledge indicates that three-quarters of responsible staff may fail to recognize a problem with the way their cold chain equipment functions.

Under health reform districts have to plan their capital investments. At the time of the review there were no guidelines for choice of cold chain equipment, but CBoH has precise guidelines for vehicles, motor cycles and trailers. If CBoH approves a vehicle purchase, the district has access to a revolving fund with the payment spread over two or three years (depending on the size of the district's grant). The reforms' focus on financial and administrative systems has meant

that clinical or technical supervision by the DHMT must be integrated with visits for management audit. This means strict logistics planning of time, vehicle use and fuel. In the review, MCH coordinators said that their work was constrained by lack of access to district transport, and 73% of the surveyed units complained about shortage of transport.

Presently vehicles are maintained locally and at the MOH's central vehicle service organization in Lusaka. Under health reform the districts will assume full responsibility for maintenance, for which they must plan and include the costs in their budget.

The effect of health reform on maintenance and repair

Cold chain equipment will need repair regardless of whether there is health reform or not. What matters is to identify the best possible option under changing circumstances. The old system was built around central and provincial workshops and as shown by the data from the cold chain inventory, this system did not manage to keep cold chain equipment functioning at all facilities and district stores. Until now the constraint has been a shortage of spare parts available to the districts, which would enable the trained technicians at district level to do essential repairs and maintenance. Under reforms the DHBs showed that they would not necessarily place a high priority on employing one cold chain technician per district, so the immunization programme's investment in these skills might be dissipated through delinkage. It is not certain how the gap left by the disappearance of the provincial cold chain maintenance function will be closed. The innovative possibility of sharing skilled personnel, for example small districts hiring the technician from a larger, neighbouring district, has not been explored in practice. The best option seems to be strengthening the maintenance capacity available to the districts, including technicians, adequate supplies of the necessary spare parts from the central level, and technical support from the national workshop.

Specialized repairs need specialized parts and skills, which have been built up at the workshop at Old Medical Stores. Privatization of these functions seems not to be a viable option due to the specialized equipment in question. The most viable option seems to be maintaining the central workshop at its present site and preparing for transfer of its administration to the Vehicle Service and Medical Equipment Management Board (a new entity formed in November 1997, but not yet functioning as a board). This would require a reconsideration of roles and functions; for example in the present arrangement equipment repair is at the same location as the national vaccine store, but in practice the daily functions of repairs and stock management are separate. The procurement of spare parts could be done by the CBoH with technical input from the central workshop and donor partners.

Z3.6 Training

At present, immunization services are delivered as part of integrated primary health care by three cadres – Zambian Enrolled Nurse (ZEN), Family Health Nurse and Environmental Health Technician (EHT). The roles are interchangeable; at large urban clinics immunization is usually delivered by ZENs and Family Health Nurses, whereas in small rural facilities EHTs may play a central role in both outreach services and cold chain management.

Supervision has been done mostly by public health nurses (PHNs) based at the district. Some supervisors have a formal training, others have been appointed without the requisite training. PHNs' training was discontinued about ten years ago, yet this cadre continues to play an extremely important role in immunization, both for supervising maternal and child health in the districts and for supervision and planning at provincial/regional and central levels.

There are three levels where specific skills in relation to immunization services are required.

Health facility level

At this level staff with multipurpose competence is required. In order to achieve the relevant competence, pre-service training has to include immunization. To date, nursing students gain most of their knowledge about immunization during practical placements in urban and rural facilities. After they qualify, staff need to maintain and upgrade their skills; until now this has happened through workshops and seminars. Nursing school tutors said that they are not necessarily included in such workshops, and obtain their updating about immunization from more junior staff at health facilities who are overseeing the students' work experience.

Under health reform, the old system for training will be completely reorganized. New primary health care cadres are being created (Public Health Practitioners) or are planned (Community Health Practitioners). These cadres will perform the integrated functions at the service delivery points (health centres and health posts). According to the plan there will be one PHP for every 3000 people and only one cadre at the health centre.

The period of transition includes three steps to ensure that qualified staff have the skills for providing the basic package of services:

- First, all existing cadres at this level will go through an assessment of their current skills and if necessary will be retrained and reorientated towards their new roles and the skills required to fulfil them.
- Second, a new curriculum for the PHPs' basic training is being created; this is closely linked with the assessment and upgrading of existing staff. A consultant specialized in immunization services has been involved in preparing the module on immunization.
- Third, a new system of in-service training is being developed. Districts will become responsible for identifying which staff need in-service training and will allocate budget to purchase the training services they need from designated institutions. One of the objectives is to focus in-service training resources where they are most needed, placing the responsibility for selection of participants with the DHMT.

District level

At this level staff should be competent to do supervision as well as having technical knowledge about all aspects of immunization service delivery. Such competence is presently located with the cold chain technicians and MCH coordinators. There are too few PHNs to fill the established posts and it is uncertain who will fill these posts in the future since the training of PHNs has been discontinued; the review team referred to them as "the endangered species." It is also uncertain whether DHBs will recognize the value of the experienced MCH coordinators and retain them in the delinked health service.

Once trained and in post, the district supervisors need transport and other resources in order to carry out their responsibilities. As mentioned above in the discussion of transport, reforms appear to have encouraged DHMTs to place a higher priority on supervising administrative matters than on technical quality of service provision, and some MCH coordinators feel that their capacity to support improved service quality has diminished.

Central level

At this level competence has to cover the essential functions:

- Initiate policy, develop standards and formulate guidelines
- Planning
- Advocacy, including social mobilization
- Quantification and procurement of supplies and specialized equipment
- Stock management, including spare parts and supplies requiring permanent cold chain
- National level monitoring and surveillance
- Research
- Organizing reviews

For the time being, these functions are distributed within the existing UCI secretariat (see Figure Z4), which also has a role in supervision, training and capacity building. Various problems were encountered, such as major flaws in management of vaccine stocks. At the time of the review there were many uncertainties surrounding the future of the UCI Secretariat and responsibility for essential functions at central level. If these functions are redistributed between CBoH (specialists and managers in three Directorates), Medical Stores Limited (for distribution) and the Vehicle Service and Medical Equipment Management Board then it will be necessary to ensure that the staff concerned have the specialized knowledge, skills and organizational memory now residing within the UCI Secretariat. Ensuring that the designated staff is equipped to address their new responsibilities could be achieved through transfers, or by reinvestment in EPI training.

The effect of health reform on training

One of the centrepieces of health reform is a major overhaul of tasks, necessary skills and staff mix. Therefore, health reform also provides opportunities for improving the quality of immunization services. Policies, standards and guidelines and quality maintenance processes can be established and linked through pre-service training. By placing maintenance of skills in the hands of the districts, health reform also provides an opportunity for rethinking in-service training. This is welcome as workshops and seminars have proved to be less effective than good quality supportive supervision and on-the-job training by peers. In principle this approach has a greater capacity for selecting the right people than the old method of centrally initiated workshops, but it is as yet untried. It will depend upon DHMTs evaluating all their facility staff to establish priorities for in-service training (both individuals and topics), and this evaluation depends on adequate technical and clinical supervision. The review found that 25% of the facilities surveyed had not received a supervisory visit during the three months preceding the team's visit. The review also noted that since the decentralization of budgets to districts, supervision by the DHMT has focused more on administrative matters and less on technical matters. These observations highlight a potential weakness in the strategy of making district management responsible for initiating in-service training.

Another untried element is the existing training institutions, which will have to be rearranged in order to respond to this new demand. The training institutions will have to keep close contact with the relevant sections of CBoH, where new policies and standards are decided and quality of service is monitored. A potential weakness is the separation of supervision from training: the trainers need to find out how effective they have been by continuing to observe their trainees in practice.

The PHNs have played an important role as supervisors and as staff in the UCI Secretariat. This cadre seems to be indispensable for those functions. The review expressed its concern about what will happen in the future as this cadre reaches retirement. Therefore a replacement cadre has to be created which can cover these essential functions at an adequate level of expertise and competence.

Z3.7 Providing routine immunization services

According to the existing policy, immunization is part of the essential package of health services. It is being delivered at community and health centre levels as an integrated component of well child services, which also include growth monitoring and counselling, Vitamin A screening and prophylaxis, and identification and referral of sick children.

By and large, the EPI review found that staff were available in the clinics visited. It was evident that they need supportive supervision in order to improve the quality of immunization services.

Under the current immunization strategy, this preventive service is supposed to be provided on demand (referred to as the supermarket approach) which means that a vial should be opened if a child comes to the clinic and is due to receive an antigen. The review team verified that in practice rural health centres have assumed a pragmatic approach and have established a schedule of immunization days in order to rationalize the use of resources. This issue was subsequently addressed as part of a policy review, along with the issue of whether opened vials of non-reconstituted vaccine could be used at subsequent sessions.

The team looked into the quality of services provided and found the following (see Table Z3):

- Availability of service appears to be somewhat unreliable; fewer than half of the facilities visited had held all of the sessions they had scheduled.
- Screening and referral requires attention; screening for children's immunization was done properly at three out of four sessions, but only one in three sessions screened caretakers for TT immunization. About one in three sessions screened sick children for illness and referred when appropriate.
- Sterility of equipment was considerably better than the technique for administering injected doses. Errors in technique included incorrect site for the vaccine being administered, and in some cases blunt needles. Immunization injections were administered with sterile equipment more frequently than clinical injections. The community survey identified some reports of injection abscesses.
- One in four facilities would face problems in following up defaulters using the Child Register. Recording on the Child Health Card was more complete and accurate.

- Poor communication with clients was identified by observing interactions during the session and through exit interviews with those who had attended the session. At half of the sessions clients were consistently told when to return, and at 44% the clients leaving the session knew when to return. Combined with the cancelled sessions this represents a major missed opportunity.
- About one mother/caretaker in six was told of the reactions she might expect and the measures to take at home. More people (one in four) could correctly describe the expected reactions to immunization, possibly because they had experienced the reactions with a previous child.
- One of the strongest service quality indicators was whether the Zambian members of the review team would take their own children for immunization under the circumstances surveyed. It was alarming that fewer than half of the sessions qualified.

Table Z3: Indicators of service quality at HC sessions offering immunization

Indicator	% of sessions
All of the sessions scheduled last month were held	48%
Observed session started on time	42%
Staff had friendly interchange with clients	72%
Children were screened correctly for immunization	75%
Sick children were screened and referred for immunization	37%
Caretakers screened correctly for TT immunization	35%
Needles and syringes were adequate to meet needs	79%
Sterilizing equipment, spares, fuel & supplies were available	83%
Syringe and needle sterilizations met standards	85%
All EPI injections were given with sterile needle & syringe	89%
All clinical injections given with sterile needle & syringe	80%
EPI injections correct: reconstitution, administration, dose	78%
Sterile technique met standards	50%
Data were recorded correctly on child health card	90%
Data were recorded correctly in Children Under 5 Register	76%
Client was told when to return (observing interaction)	50%
Clients know when to return (exit interview)	44%
Client was told of reaction to BCG and DTP	17%
Clients know reaction to BCG and DTP and what to do (exit int.)	24%
Mother was happy with the service (community survey)	72%
Review Team member would take own child to this HC	47%

Source: 1997 Review of immunization: EPI-INFO .rec files for Cold Chain/Logistics and Service Delivery.

Three quarters of the surveyed clinics had been visited by the DHMT during the three months preceding the team's visit. However, the purpose of the visits had in most cases been administrative with little or no focus on service quality issues.

In the community survey of households with a child under 2, various cases of immunization abscesses were found, mostly in clusters. This indicates that there is a serious problem in the way that some staff administer injections. The survey did not go into details about whether the injection had been curative or immunization. One of the most disquieting problems with abscesses is that they discourage mothers from taking children for immunization.

It was also noted in the community survey that mothers were generally dissatisfied with the quality of the attention they received from staff. Absence of smiles, lack of conversation and being turned away after a long walk were some of the most common complaints.

In some of the areas visited the team found active Health Centre Advisory Committees and Neighbourhood Health Committees for each village or section in the facility's catchment area. Where these committees were functioning they were participating in planning community activities, such as outreach immunization sessions. Funds had become available for outreach immunization and other community activities as part of the health reform.

The effect of health reform on service delivery

The provision of immunization services does not appear to have been dramatically affected by health reform, possibly because services were already somewhat integrated. The most noticeable effect mentioned by some staff was that they were now able to plan and provide outreach activities because they had the necessary budget; providing services nearer to the eligibles' homes improved access in rural areas and reduced congestion in urban clinics. It should be recognized that the planning skills have been built up through five years of preparation by the Health Reform Implementation Team, including problem analysis, developing appropriate action plans, and developing quality standards using the dynamic standard setting system (DYSSSY). Integrated quality auditing has been planned and is being implemented in some places. Structures for community supervision are being established, and the new HMIS is designed to tap the resources available to communities, which should improve immunization by increasing uptake, reducing drop-outs and monitoring aspects of service quality (e.g. scheduled sessions held, staff's communication with clients). The policies, standards and guidelines for immunization need to be updated, and the latest information communicated to service providers. This point reveals perhaps the weakest link in the reformed system, which is the lower priority to supportive technical supervision from the district team at the expense of a new emphasis on administrative matters and management of resources. The attention given to improving service quality in the concepts and design of Zambia's health reform means that the potential for improving quality is evident, and can be realized provided that the requisite resources are available.

Z3.8 Monitoring, Supervision and Quality Assurance

In the majority of health centres, the review team found that the basic elements for staff to monitor activity in their catchment area were in place (Table Z4).

Table Z4: Indicators for monitoring Health Centres' immunization activity

Indicator	%
HC staff knew population of their catchment area	95%
HC staff knew number of under-1s	85%
Wall chart showed targets and immunizations	85%
Catchment area was shown on a map on the HC wall	70%
Schedule posted for outreach sites where immunization given	65%

Source: 1997 Review of immunization.

However, data were not consistently being used at the level of collection to improve the coverage and quality of services.

- The maps were not being used for planning access to all parts of the HC catchment area.
- The high drop out rate between BCG and measles (22%) was not being followed up by appropriate action at community, clinic and district level.
- Clinics get very little feedback except when reports are late or missing.
- Few districts work with disaggregated data in order to monitor the performance of each health centre.

Under the old reporting system, HC staff reported 21 items of data on immunization activity every month. Coverage estimates were compiled by the UCI Secretariat for each antigen and for full immunization. The 1996 Demographic and Health Survey found that 67% of children were fully immunized by their first birthday. However the routine reporting system shows a wide variation between provinces and districts (see Figure Z6); according to the reports sent in, district coverage with measles vaccine ranges from more than 100% down to below 20%. Monthly data on morbidity permitted the UCI Secretariat to map seasonal trends in disease outbreaks, especially measles.

The new integrated HMIS has been designed to reduce the reporting burden on staff at the periphery, and to encourage staff to use all the data that they collect. For immunization the number of items reported monthly has been reduced from 21 to six (BCG, DTP3, OPV3, measles, FIC – all under 1; and pregnancies protected against neonatal tetanus, a more useful interpretation of TT2+). Communicable diseases including acute flaccid paralysis (AFP), measles and neonatal tetanus are to be reported to the District Health Office immediately on ND.1, with the instruction: *“Urgent submission is required, especially in those cases where further diagnosis must take place, where laboratory confirmation is needed quickly, or very rapid spreading of the disease is feared.”* (CBoH, 1997c). A weekly report format (ND.2) is used *“when more than five cases of the same notifiable disease have been diagnosed in one week.”* The HC aggregates these and other data monthly, and uses them to analyse their work. The HC must send data to the district at the end of every quarter. Emphasis is placed on the HC staff and the Health Centre Advisory Committee analysing key indicators, planning relevant actions, and assessing the effects of these actions, using the “public health flag.” This tool compares services delivered with expected demand (a concept which has long been central to monitoring

immunization) for four key indicators, one of which is children fully immunized before first birthday. (The other indicators are percentage of supervised deliveries, availability of four essential drugs, and coverage by active community health workers.) The review team suggested that the fifth, locally chosen indicator could be the drop-out rate between BCG and DTP3, giving time for no-shows and defaulters to be identified and to complete their immunizations on time.

In the new HMIS the districts report quarterly to the CBoH. The new system has been introduced on a pilot basis in 15 districts and CBoH released the first output (for third quarter 1997) in February 1998. During the period of transition (1997 and 1998) UCI Secretariat applies to CBoH for the data to complete its national profile of immunization coverage. The extent to which CBoH's Directorate of Monitoring and Evaluation will do the analysis now completed by the UCI Secretariat is not yet known.

The review team was concerned about the absence of the "zero reporting" concept in the new HMIS; this will be revisited during the first evaluation of the new system. Another concern was that quarterly reporting to CBoH may leave the centre unaware of events within the districts in time to take effective action. On the other hand, health reform gives districts the responsibility for monitoring the situation, analysing the information collected and taking appropriate action.

Outbreaks are supposed to be reported immediately by HCs, and a rapid response needs to take place in the districts; all ten of those who provided financial data to the review team had budgeted some resources for outbreak response. If they have a major problem (e.g. plague) the districts can request assistance from the region or the centre.

The problems with service quality in some catchment areas manifested in injection abscesses are not addressed within the new HMIS. The proposals for updating policy suggest that adverse events following any parenteral procedure should be reported, using a partnership between the community (local health committees and District Health Boards) and the epidemic surveillance system (Chivundu et al., 1998).

At present, the surveillance system is not providing essential information for detection, investigation and control of priority infectious diseases in general and EPI target diseases in particular. The review team was especially concerned about AFP surveillance, which identified 46% of the expected cases in 1996. There is insufficient understanding of the importance of AFP surveillance in the strategy for eradication of polio in Zambia. Only 60% of health workers knew the reasons for AFP surveillance and 55% knew the case definition. Staff at district, provincial and now regional level are not following up on all cases reported, and six out of the nine provinces did not report any AFP case during 1997 (Chivundu et al., 1998). Consequently, it is not surprising that only 15% of expected cases were reported in 1997.

ZDHS (1997) reports that 75.8% of children received measles vaccine before their first birthday, and this level of coverage is not high enough to prevent annual outbreaks. In Zambia the pool of susceptibles (those never immunized plus the immunized who did not seroconvert) has grown larger than would be expected under the WHO policy recommendation to immunize at 9 months because for a decade (1982–1992) the national policy was to immunize at 7 months; at this age about 65% of children will seroconvert (rather than 85% at 9 months). There is still evidence that HC staff are giving early doses, especially during outbreaks; these children may

not return for their “on-time” dose. For those that do return at 9 months, the second dose is tallied and reported as a dose under-1, resulting in overestimates of coverage for under-1s. The net effect of these factors is that every four years a pool of unprotected children accumulates, equal in size to the annual cohort of under-1s (Chivundu et al., 1998). Two-thirds of the clinics visited during the review had reported measles cases in 1996.

The EPI Manual (1992) has chapters on monitoring and evaluation, and guidelines for investigating and controlling outbreaks of measles. In some areas the DHMT has analysed the profile of morbidity over several years and undertaken special efforts to prevent outbreaks. In other areas the emphasis has been on responding to outbreaks when they occur. The UCI Secretariat has issued various guidelines and carried out investigations of outbreaks. A combination of factors: the practice of giving early doses in urban areas (where children under 9 months are still catching measles), low coverage in some rural districts, movement of eligibles between the town and the countryside, uncertainty about denominators, means that the level of protection is not as high as the coverage data suggest. Strategies for controlling measles and preventing outbreaks are currently being discussed; a crucial component will be the epidemic surveillance system, which is at the early stages of redevelopment within the reformed health system.

Under guidance from CBoH, supervision by both the regions and the DHMTs is focusing on administrative matters; clinical and technical supervision is receiving lower priority for the time being. Performance audits are part of monitoring the implementation of the district plans, and are intended to include a range of indicators, some of them covering immunization services. Quarterly performance audits have started in Regions where the Regional team is in place.

Between 1992 and 1996 the HRIT put a major effort into creating awareness about quality assurance; all districts received training in the dynamic standard setting system (DYSSSY) and the triple-A approach (analysis, action, assessment) to improving performance. An extensive exercise in developing standards was conducted in 1993 and 1994. Regular self-assessment is a fundamental component of the HMIS.

At the central level, the biggest challenge seems to be who will be responsible for taking action on data and information from the districts. The machinery for processing information from the HMIS is in place but the epidemiological element is lagging behind. At the time of the review, the old UCI Secretariat was expected to be dissolved by 1 January 1998, and there was uncertainty regarding the new action focal point for immunization. The focal point for action on surveillance and outbreaks should be an epidemiologist, and the focal point for action on management and operational issues (including cold chain) will require different skills; the most appropriate model for Zambia’s reformed health system is not yet clear.

Consequences of health reform for monitoring, supervision and quality assurance

The health reform has prompted the development of a new integrated HMIS. The needs of routine immunization services seem to be adequately covered and the HMIS procedures encourage staff to use their data for prompt action, monitoring and quality assurance.

Quarterly reporting from the district to the centre may be questionable from a traditional centralist perspective. On the other hand, if districts are given appropriate support (for example from the regional team) they will be able to take appropriate action promptly. Close supervision and performance audit will be required in the introductory phase of the new HMIS to ensure that it is used to its full potential.

The health reform has increased the emphasis on quality of services. The approach adopted for the immunization review provides examples of measurable indicators of quality that can be used within the reformed health system.

Z3.9 Impact of health reform

The health reform transition from the old system to the new one has created uncertainty about “EPI management” at the central level. The identification of a focal point for action is a matter of urgency. The updating of policies, standards and guidelines seems to be the first logical step to ensure an updated reference to judge whether services are up to standard and to provide a reference for curriculum design for pre-service and in-service training and supervision.

Until now most of the equipment and all the vaccines have been procured internationally and supplied from UCI stores on a push system. Now the health system is in transition and needs to find a more appropriate system and process for meeting districts’ requirements for specialized items that must still be obtained through international procurement. Increasing the involvement of the government in the procurement process can raise awareness, which can be used to initiate a process of gradual transfer of ownership to national institutions.

The involvement of community members in planning at the level of the neighbourhood and the health centre provides a valuable opportunity for strengthening immunization services, which has been recognized in the new HMIS procedures. Use of data at the point of collection should enable Zambia to improve coverage and completeness of care. The new FAMS should improve availability of supplies at the point of use, and contribute to improving the quality of immunization services. The weakest link at present appears to be the lack of emphasis on technical and clinical supervision of health workers.

Health reform and immunization in Uganda

U1. Introduction

Uganda shares borders with Sudan, Kenya, Tanzania, Rwanda and the Democratic Republic of Congo. The country is endowed with rich natural resources in agriculture, fisheries, hydroelectric power and mining, and was considered to be one of the most advanced in terms of general socioeconomic development at the time of independence in 1962. The relative prosperity continued during the 1960s. However, mounting political problems led to a general breakdown in political and civic life in the 1970s and early 1980s with a collapse in public services and functions. This breakdown of services was reflected in the immunization statistics: in 1973 the immunization coverage of children below 14 years was 70% for BCG, but had dropped to 1% by 1980.

The last census was in 1991 and the population was estimated to be about 19 million in 1997. Nearly 90% of people live in rural areas. At the time of the 1996 NIDs there were six districts with insecurity. Special populations including internally displaced persons, refugees from neighbouring countries and nomads require special strategies to provide immunization to their eligible children. GNP per capita was \$190 in 1994, and female literacy was 50% in 1995.

U2. Decentralization reform

U2.1 Processes and Structures

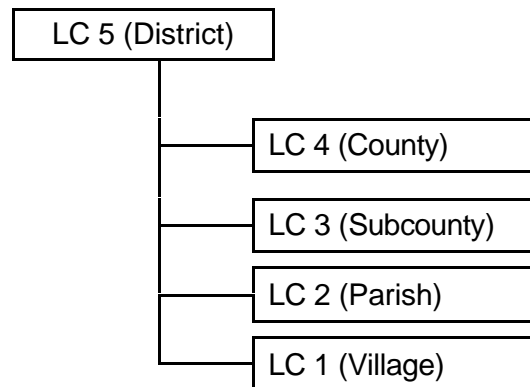
The National Resistance Movement came to power in 1986 with a political manifesto that promised a thorough reform of the political system, public service and the economic sector. High on the agenda was a reform of the political and administrative system, with devolution of power to local government.

Immediately after coming to power, the new government introduced a five-tier local government system, based on Resistance Councils (RCs) with the district as RC5 and the village as RC1. This system was formalized in 1993 in the Local Government Statute, which legalized the Resistance Councils and gave extensive power to an elected Local Council (LC) in areas such as health, agriculture, education and public works. In 1995 the Government of Uganda had a new constitution under which the 1993 Statute was reviewed and passed into law as the Local Government Act in 1997. The local government structure is shown in Figure U1. Primary health care has been transferred from the central control of the Ministry of Health (MOH) to the LC5s (district level) which are also responsible for first level hospitals. Referral hospitals and teaching institutions continue to fall under the remit of the MOH.

At the same time, civil service reform transferred responsibility for selecting and employing personnel from the centre to the districts. The government also imposed a freeze on employment, including existing posts, to reduce the size of the payroll. This was a radical change from the previous system in which all graduates automatically received a letter of appointment from the MOH. The District Service Commission took over personnel

management from the Public Service Commission, applying the same conditions of service. Responsibility for defining qualifications and conditions of service now rests with the Health Service Commission (created in the 1995 constitution) which will articulate the minimum requirements that districts must apply when appointing health staff. Districts have a mandate to create or abolish positions, and may contract out; for example in West Nile a hospital run by an NGO was contracted to supervise health centres.

Figure U1: Local government structure in Uganda, showing LC levels



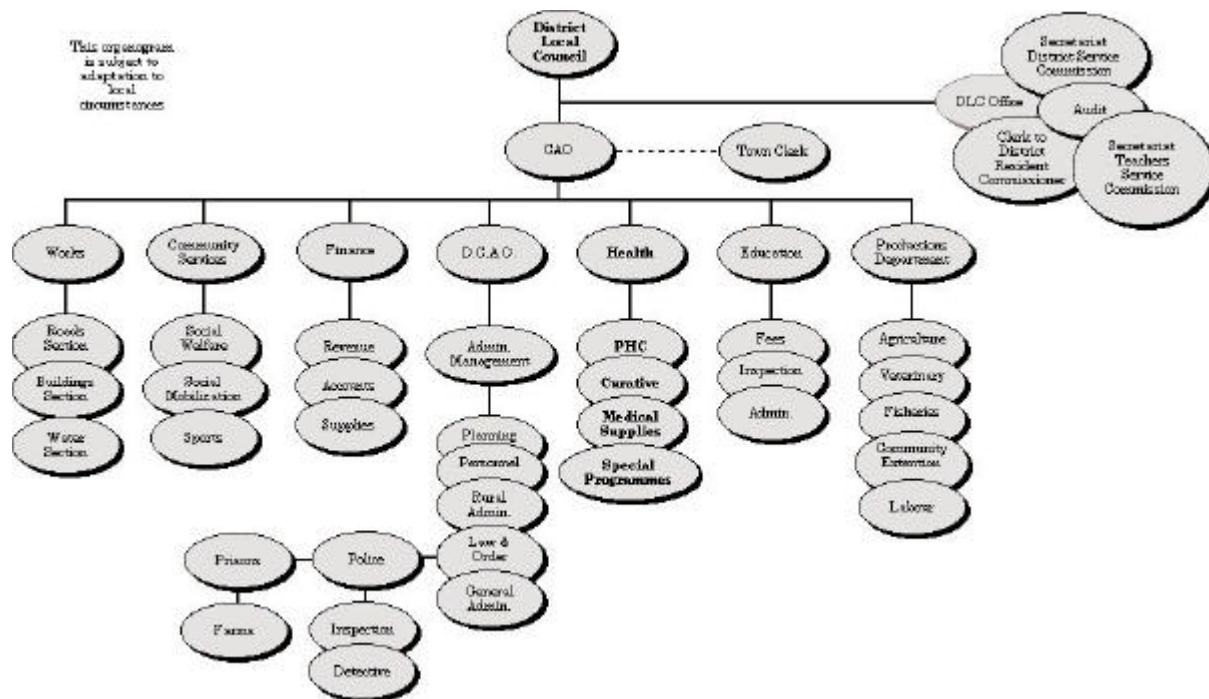
There are also reform programmes covering economic reform, liberalization and privatization, and demobilization of the army. Reforms in Uganda are thus broad based involving a new constitution and decentralization in several sectors.

The new structure for the District Local Councils (DLCs) is shown in Figure U2. According to the District Planning Manual (1996), there should be a Health Department with a PHC Unit, Curative Services Unit, Medical Supplies Unit and Special Programmes Unit. The way functions are distributed within this structure varies between the districts according to availability of staff, their skills and competence, and other local circumstances. The Local Government Act provides for the establishment of a District Health Committee and Health Committees at lower levels.

The head of the District Health Department is the District Medical Officer who carries overall responsibility for district health, for development of the health plan, implementation of the plan and execution of the corresponding budget. He or she is answerable to the chief administrative officer (CAO) of the DLC.

The health sector started its own reform initiative prompted by general structural reform promoted by the World Bank and the IMF. The main problem in the health sector was identified as the inability of the state to continue to finance free health services. In 1987, the Health Policy Review Commission emphasized primary health care as the most appropriate strategy for achieving an impact on priority health problems. This strategy was reiterated in a Ministry of Health White Paper (1993), which emphasized the need to reorient the health system towards primary health care by applying cost-effective interventions based upon health promotion and disease prevention, as well as promotion of equity and social justice.

Figure U2: Uganda: Typical District Administration



In 1994, a World Bank funded study of burden of disease (BOD) was carried out. It resulted in the following package of cost-effective interventions:

- Malaria
- MCH/FP/EPI services
- Hygiene, water and sanitation
- Nutrition
- TB and STD control (including AIDS)
- Treatment of other common diseases and health problems
- Continued surveillance and treatment of special health problems such as guinea worm, schistosomiasis, trypanosomiasis, onchocerciasis and epidemic meningitis

The various reform processes have been moving in the direction of a reformed health system, with responsibility for primary health care and district hospitals devolved to local government at district level. The decentralization reform is being implemented by the Ministry of Local Government's (MLG) Decentralization Secretariat, in which one medical doctor covers the health sector. The role of the MLG is to ensure that district councils (LC5) fulfil their responsibilities for health, and to coordinate and ensure equity of donor resources for health to the districts. In the process the MOH will have redefined its role to being responsible for policy formulation, planning, training, setting of standards and guidelines, inspection and donor coordination. Hence both ministries have a role in donor coordination, MLG through a Donor Coordination Office and MOH through Quarterly Coordination Meetings.

The centrepiece of the reform is that districts have become responsible for developing district health plans according to planning guidelines provided by the two ministries (MOH and MLG). All 45 districts are now decentralized, receiving recurrent budget. The funding for the health plan was originally an unconditional block grant to the districts from the Ministry of Finance; this meant that the health sector had to compete with other sectors, including education and agriculture. The Local Government Act has a provision for allocating funds as a conditional grant, earmarking funds for specific purposes. This provision was activated for health and education in 1997 (see Section U3.2 on Planning and Budgeting). The government hopes to start decentralizing the development budget (for capital expenditures) in fiscal year 1998/99.

The new structure of the MOH has not changed dramatically. It will continue to have two directorates: one responsible for operations and the other responsible for support services. The outline structure of the MOH is shown in Figure U3.

At the central level, the structure of Uganda National EPI (UNEPI) will, by and large, be left untouched by the health reform. There is no official organigram of the UNEPI organization; Figure U4 has been constructed based on the available information. UNEPI has 51 staff at central level: 20 professional/technical and 31 support staff. The district staff dedicated to immunization activities are now part of the 45 district health establishments.

Figure U3: Macro structure of the Ministry of Health, Uganda 1996

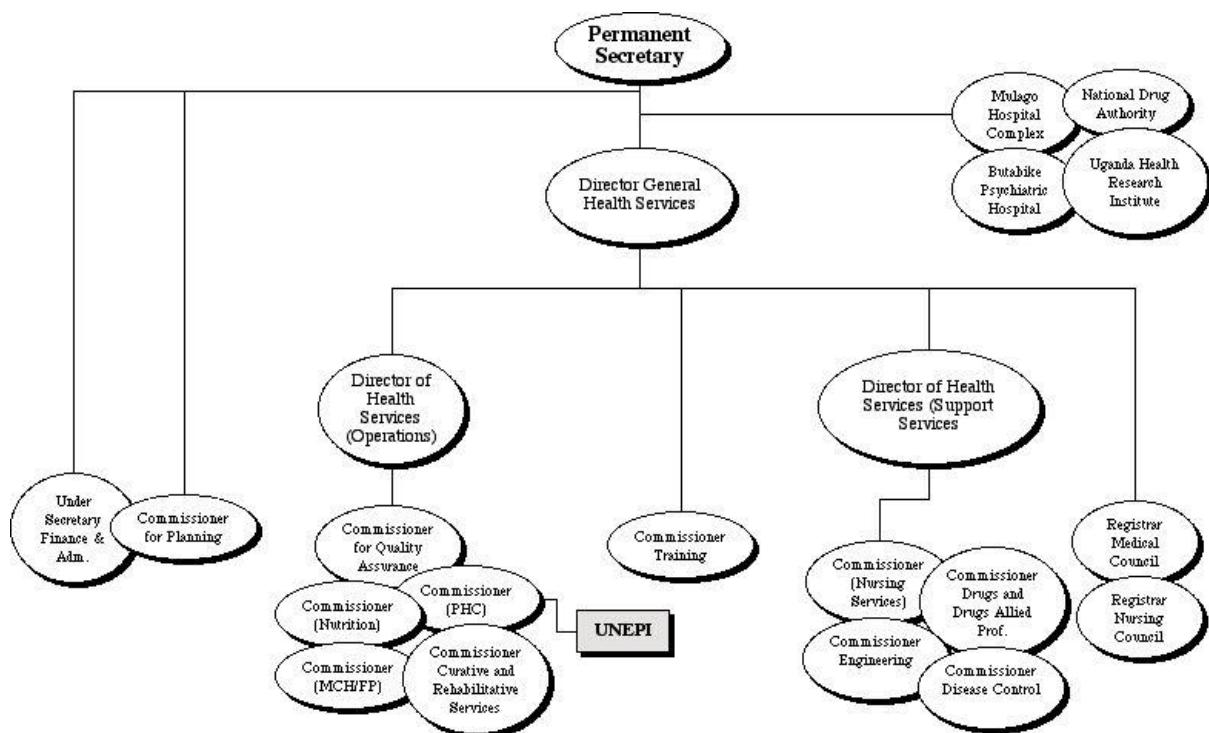
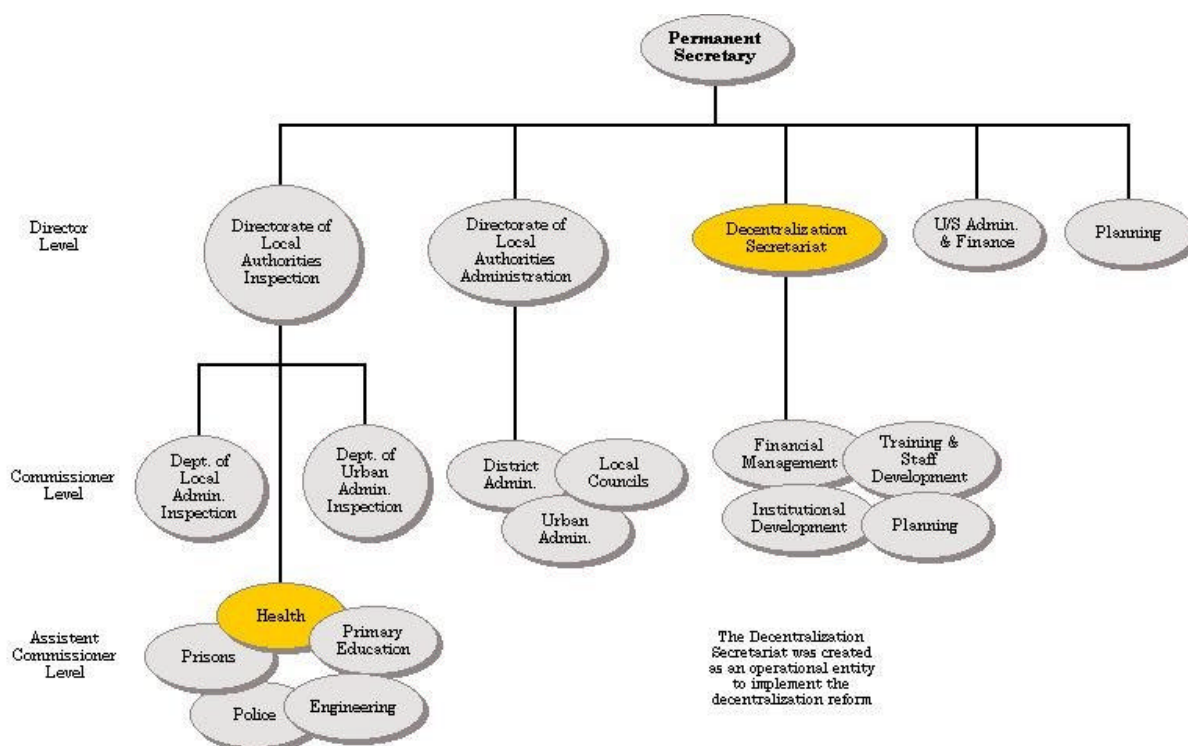


Figure U4: Organigram for Uganda National EPI (UNEPI), October 1997



This organigram has been constructed from the staff list and the job descriptions and therefore it is not an official organigram and may lack in accuracy and precision.

UNEPI has functional connections to:

- PHC (subsidiary of that unit)
- Planning (health management information system)
- MCH (coordination and definition of service policies and standards)
- Nutrition (Vitamin A supplementation)
- Communicable disease control (coordination and definition of policies and strategies)
- Training (coordination and definition of curriculum for pre-service and in-service training)
- Quality assurance (coordination and definition of standards and guidelines and performance measurement)

It is understood that existing programmes in the MOH will not be dissolved or reorganized. Although the existence of UNEPI as a programme is not being questioned, it is nevertheless being affected by the decentralization reform and the health sector reform.

UNEPI has a very strong vertical modus operandi through which it has “controlled” all activities, from the specification of vaccine and equipment requirements, to operations in the districts and at service delivery points. In practice this meant that funds for outreach and supervision came from UNEPI, and the maintenance of the cold chain in the districts was UNEPI’s direct responsibility. However, the reforms have had a profound influence on immunization operations, altering the lines of authority and responsibility. Now funds for

outreach and supervision have to come from the district health budget. UNEPI no longer has direct formal authority over the district cold chain assistant; this person is now employed by the district administration, which has also “inherited” the cold chain equipment. The depletion of trained staff and cut-backs in services at the periphery is also threatening the quality and sustainability of immunization activities (see Section U3.2).

The decentralization reform is first and foremost a political and administrative reform. The emphasis is therefore on building up an institution in each district that is able to provide the political, administrative and technical platform from which district priorities can be set and the corresponding plans developed. This requires a major capacity building exercise for the whole institution including the politicians. It also includes specific technical training of the district health staff to enable them to reconcile district priorities with national health policies and budgetary constraints. UNICEF is supporting the development of community structures for health related matters through a community capacity building project through which four districts had begun to form Parish Development Committees by mid-1997; the project is due to be implemented in all 45 districts by the end of December 2000.

U2.2 Stakeholders and partners

The decentralization reform has, by its very nature, enjoyed support from the highest level of government. It is part of a major reform of political and socioeconomical life and institutions in the country. The main stakeholders in health reform are the MOH, the MLG, the 45 District Local Councils, their constituencies, their civil servants and politicians, and the international agencies (multilateral and bilateral).

The team gained an impression that collaboration between MOH and MLG could be more fully exploited, and the division of roles and responsibilities was not entirely clear.

The international agencies have played an important role in supporting both the reform efforts in general and district health services in particular. Various agencies support a number of district plans (DANIDA, EU, SCF, UNICEF, USAID, World Bank) and the capacity building process. The international agencies have not yet been put to the test with regard to donor coordination and focused support for the district health reform; see Section U3.2 on Planning and Budgeting.

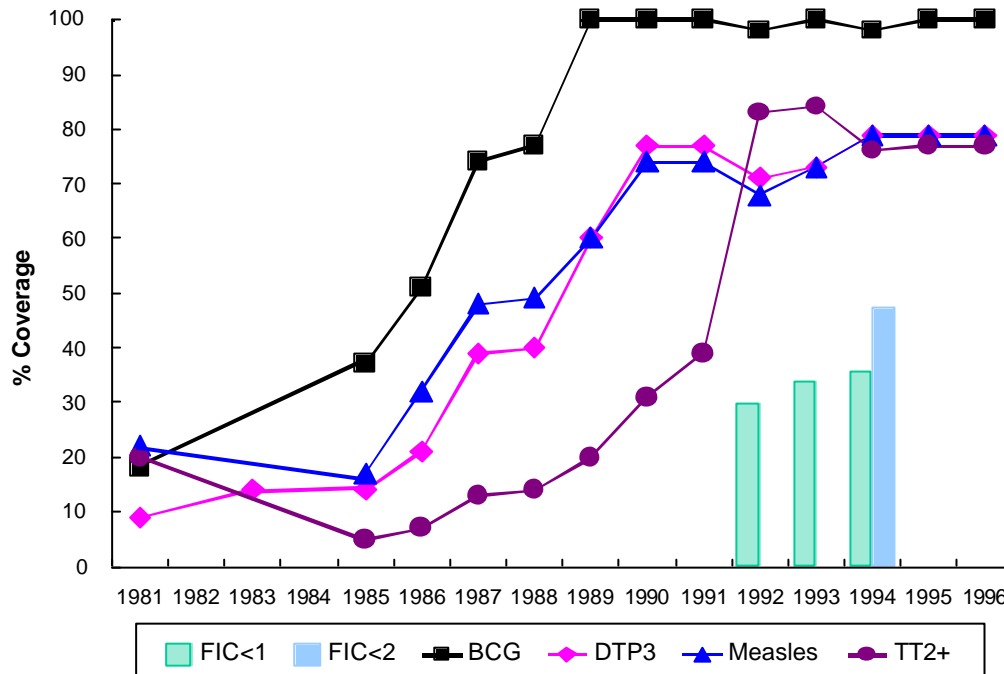
U3 Immunization in Uganda

Vaccination started in Uganda in 1963, when campaigns were carried out against polio. Other campaigns were added against cholera, smallpox and tuberculosis. A long period of instability delayed the formal launch of regular immunization services until 1983. These services started to function properly from 1986, when the Resistance Movement came into power. With generous support from international agencies it has been possible to build up a strong and well functioning national programme known as UNEPI (Uganda National EPI). Measles coverage increased from below 40% in 1986 to 78% in 1990, putting Uganda among the top ten countries in the world for improving coverage for this vaccine. However, coverage for individual doses reported to WHO greatly exceeds the percentage of children fully immunized before their first birthday, measured by the Uganda Demographic and Health Survey (UDHS, 1995) with its self-contained denominators (see Figure U5).

Access to primary health care is almost universal with 92% of surveyed mothers of children under 4 reporting at least one antenatal care visit. Fewer infants (81%) had any immunization, and only 36% completed all doses before their first birthday. The survey data from UDHS (1995) showed that the drop-out rate between BCG and measles (usually the first and last

contact for immunization) was 29% for under-2s and 43% for under-1s. The 1994 programme review named the high drop-out rate, poor communication between health workers and mothers, and the absence of monitoring at health unit and district levels as major obstacles to improving coverage. These obstacles remain (Weeks, 1997).

Figure U5: Uganda: immunization coverage 1981 to 1996



Sources: WHO (1997); Uganda Demographic and Health Survey (1995).

UNEPI is built up around a cluster of essential functions that confer on it the characteristics of a semi-autonomous and vertical programme. The essential functions are:

- Programme management with an Assistant Programme Manager
- Support services such as accounting, secretariat and radio communication
- Transport management
- Surveillance and information management
- Supplies management
- Cold chain maintenance
- Training and health education
- NIDs coordination (Assistant Programme Manager)

Save the Children Fund (UK) provided technical advisers to UNEPI from the early 1980s until 1994.

At district level, immunization services are integrated into health services with some specific immunization activities assigned to district health staff. In some cases UNEPI has proposed that certain staff undertake particular EPI responsibilities, as follows:

- District Health Visitor (DHV) in charge of immunization services in the district
- District Health Educator (DHE), planning immunization services with regard to mobilization (proposed by UNEPI)
- District Health Inspector (DHI) responsible for district immunization plan and budget (proposed by UNEPI)
- District Cold Chain Assistant responsible for installation, maintenance and servicing all gas refrigerators
- Subcounty in-charge (proposed by UNEPI)
- Unit in-charge (proposed by UNEPI)
- Parish level person responsible for mobilization of the target population (proposed by UNEPI)
- Vaccinator to participate in mobilization, immunization service delivery, preparation of immunization material and equipment

The proposals to designate in-charges have stemmed partly from the loss of PHC staff trained in immunization. Funding constraints combined with employment conditions which are considered unattractive compared with the private sector have led to high rates of attrition following delinkage of employment. Both UNEPI and the training institutions have difficulties in filling the gaps left by rapid attrition and turnover.

The USAID grant to UNICEF for EPI in Uganda was reviewed in 1997 (Bartlett et al., 1997), and there has been continuing technical assistance to strengthen the disease surveillance system (Weeks, 1997). UNEPI is preparing for a programme review in 1998 that should provide a comprehensive update on other aspects of the programme within the context of the decentralization reforms.

U3.1 Setting policies, standards and guidelines

With regard to immunization policy, the team was given an undated document developed by UNEPI which provides the general policy framework, including the immunization schedule (vaccines and doses by age) and service delivery strategies (static and outreach). According to this document, immunization services must be available on a daily basis and on demand in order to avoid missed opportunities. Reusable syringes and needles shall be used and equipment has to be standardized and conform to the WHO and the MOH standards. The document does not mention vaccine vial monitors (VVMs), neither does it refer to a policy on use of opened vials of non-reconstituted vaccines.

The document may not be a detailed exposé of policies, standards and guidelines; these may be embedded in training curricula for pre- and in-service training. However, UNEPI does not have an equivalent of the Zambia “EPI Manual” and there seems to be no reference guide for field staff and their supervisors, containing all the specific standards and guidelines pertaining to immunization.

During the field visit, the team noted that OPV vials were available with VVMs but field staff could not consistently explain how to use and interpret the VVM.

In another instance, outreach had been scheduled without due consideration to the time it takes an RCW42 to freeze icepacks.

Therefore, there is certainly a need to specify and to update policies, standards and guidelines. This could happen in conjunction with the upcoming EPI review. It can also be the occasion and the opportunity to recommend that policies and standards be documented in an “EPI Manual”, either as a separate document or as an integrated part of a reference document with a wider scope, such as a manual for the primary health care basic package.

Both health reform and the decentralization reform have indirectly affected the setting of policies, strategies and standards by introducing an element of uncertainty, especially in terms of the internal and external organization of immunization services. The new structures of authority and responsibility mean that the programme has to find new ways of gaining and maintaining support from DLCs and DHCs for immunization services. The community’s confidence in public health services has to be built up and strengthened. Within this environment UNEPI has tried to adjust and update strategies by focusing on community support for immunization and the desired level of support from the district health departments under the DLCs. The mobilization efforts under NIDs provided impetus and experience for developing new approaches.

U3.2 Planning, budgeting and funding

Planning and budgeting for each district is carried out by the DLC (LC5). Until 1993, district plans and budgets had to be submitted to MLG for approval. Then the recurrent budget including health, education, agriculture, water and feeder roads was decentralized. The allocations were based on a weighting system using four variables: size of the district, total population, population of school age, and infant (or under-5) mortality rate. The DLCs received guidelines from MLG on the formats they should use (to make it feasible for MLG to carry out financial monitoring) but were free to allocate the unconditional block grants as they saw fit, addressing the needs of their 11 departments.

During the first two rounds of district planning, it became obvious that district priorities did not always coincide with the programmatic priorities of the MOH. Then the government introduced the policy of universal primary education, implementation of which required a substantial increase in resources. The centre wanted to ensure that the necessary funds would be available.

At the same time, the districts’ second source of funds – revenues raised from local taxes – provided only 30% of the expected amount (partly because it came from graduated tax that is difficult to collect). This local revenue base had been expected to support the payroll. As salaries and wages take first priority, the unconditional block grant was used to meet the payroll, and the shortfalls in funding were accommodated by cutting back on services.

These circumstances led the two ministries to push for conditional grants for health and education, starting in FY1997/1998. However, this was financed from the resources available for the unconditional block grant for FY1996/1997. In that financial year (ending June 1997) districts received close to 90% of their recurrent budget allocation from the centre.

Funds for supervision and outreach in the districts must be included in the district health plans. This area has been relatively neglected or overridden by other district health priorities. The introduction of conditional grants offers the potential to secure funding for PHC and programme activities such as immunization.

Uganda has a Vaccine Independence Plan (VIP) and allocated national funding for vaccines starting in FY1995/96 (DTP). The next year the allocation was increased to include measles vaccine; the government's contribution in FY1996/97 was \$620 000. The procurement is done via UNICEF, which facilitates by covering the late arrival of government funds.

Apart from these vaccines and staff salaries, most of the funding for immunization comes from external sources. UNICEF has consistently provided about \$2 million per year through multilateral donations for operational and commodity support.

The MLG's Donor Coordination Office should be the gateway for considering and approving donor funding, but in practice individual donors have interests in particular programmes (e.g. sexually transmitted infections funded by the World Bank) and/or in geographic areas of the country. There is no such thing as a "basket funding" arrangement, whereby donors commit themselves to putting their resources into a joint pool for funding district health plans and abiding by agreed procedures for planning, disbursement and auditing. MLG is addressing the equity issues raised by *ad hoc* external funding by preparing District Development Profiles; three had been prepared by October 1997.

The Ministry of Planning and Economic Development is responsible for the development budget for all sectors, setting priorities, coordinating funding and identifying gaps. The development budget and responsibility for capital investment is expected to be decentralized in July 1998 (FY1998/99).

The MOH is responsible for providing a national plan for the health sector, then all health activities should comply with this. UNEPI has a strategic planning cycle of 5 years. The latest strategic plan covers the period 1996 to 2001. The main problem identified in this document is the difficulty in breaking the 75–80% coverage barrier.

The goals are to increase coverage for BCG, Polio3, DTP3 and measles to 95–98%, TT2 for pregnant women to 100% and TT2 for non-pregnant women to 50%. The plan for achieving these goals includes better anchoring of immunization services at the various administrative and service delivery levels in the districts, with emphasis on community participation and mobilization at village level. UNEPI plans to increase support to the subcounties, enabling them to support the village level. The identification of "in-charges" at subcounty, unit and parish will support this approach.

UNEPI will also continue to support the district health departments by providing specifications for equipment requirements, material specifications and unit prices in order to have such items included in the district health plans. It is understood that UNEPI will continue to supply districts with specialized items such as cold chain equipment, sterilizers, sterilizable needles and syringes.

Within the strategic planning cycle, UNEPI develops its annual plan and budget based on forecasting the requirements for vaccine, equipment, material and other supplies. It administers funds for centrally controlled operations, including the logistics of delivering vaccines and other supplies.

The areas in which the decentralization reform has most affected planning, budgeting and funding are outreach and district level supervision for which funding has been cut, and the loss of trained PHC staff. UNEPI has felt the impact as a “loss of control” over funds for outreach, supervision by district staff, and maintenance of district cold chain, and as a problem – beyond their control – of recruiting, training and retaining peripheral staff who are qualified to provide immunization services.

U3.3 Procurement and local purchase

UNEPI plays a prominent role in procurement planning for vaccines, equipment and material, in collaboration with agencies supporting the programme. Procurement of vaccines, equipment and material is done through UNICEF.

The districts are now supposed to budget for some of the items used in immunization. According to the UNEPI Strategic Plan 1996–2001, districts have formally taken over the responsibility for providing the following items: soap, cotton wool, kerosene and hand towels. Other items have the potential to be included in the district health budget, but it is uncertain whether district responsibility for purchasing other items will be extended.

It is expected that the resource constraints described above will affect the DLC’s ability to purchase supplies. The planned EPI Review should examine in detail the effect of decentralization reform upon the availability of supplies used for immunization which are now purchased locally by districts.

Presently, gas cylinders are procured centrally and distributed to the district by the UNEPI trucks. Vaccines will continue to be procured centrally through donor channels, which offer attractive prices (through global bulk purchase contracts) and assured terms and conditions for product quality and delivery. Similar arrangements apply to cold chain equipment and spares, and injection equipment and supplies.

Although central procurement will not be affected by health reform and decentralization reform, there are opportunities to be explored, such as handing over the responsibility for procurement to the Medical Stores. Medical Stores has recently been modernized and is now procuring drugs for the whole public sector, including drug items that require cold chain to be maintained during transport and storage. The Statute Supplement from 1993 has a provision for including vaccines in the list of items to be handled by the Medical Stores. The implications of activating this provision would have to be explored with all the parties involved in purchasing and procuring vaccines.

U3.4 Storage and distribution of vaccines

Vaccines are stored at the UNEPI central vaccine stores, which are located within the Medical Stores compound. However this physical proximity is the only aspect of UNEPI’s stock management and distribution system which is integrated with Medical Stores’ management and distribution of drugs and other medical supplies.

Storage capacity includes two cold rooms for BCG, DTP, TT and measles vaccines and 41 deep freezers (35 for OPV and 6 for freezing ice packs). There is a 7–day automatic graphic recorder for monitoring temperature, an alarm system, and a generator to back up the city power line. Six cold chain assistants look after the stock at central level, which is linked to 57 locations country-wide by a radio call system. A report by the University of Makerere concludes that the cold chain at central level is well maintained (Bukonya, 1997).

UNEPI has a fleet of three refrigerated trucks that deliver vaccines and other items (notably gas bottles) to the districts according to a distribution plan prepared by the centre. This is a pure push system with total control maintained by the central staff, who check the district stock levels, and determine how much stock they will issue from the truck.

Each district headquarters has a vaccine store with freezer and refrigerator. The District Health Team includes at least one trained cold chain technician who should supervise the use and maintenance of the cold chain equipment in all the health units in the subcounties and parishes of the district. In mid-1997 there were 72 cold chain assistants covering the 45 districts. The quality of cold chain management and maintenance of equipment at district level varies from excellent, to poor with major shortcomings (Weeks, 1997).

Within each district there are three or four functional subdistrict stores (at LC4 or LC3) whose role is to ensure that vaccines are available closer to the health units providing immunization services. Before the first NIDs in 1995–6, 93 out of 858 subcounties had no established static units and depended on outreach services from neighbouring units. This represents 11% of subcounties, and can be compared with the UDHS finding that in 1994, 14% of surveyed children under 2 had never received any dose of any antigen.

The report on the 1996 NIDs states that there were 1145 static units established and equipped with basic requirements for routine immunization before the first NID. Most of the equipment is RCW42 refrigerators running on electricity or gas, which take 48 hours to freeze four ice packs. The term “cold chain facilities” appears to be used interchangeably with “units of equipment”, making it unclear how many health units (facilities offering services) have a functioning cold chain. In one of the districts visited by the team, immunization is provided not only by government health services (health centres and hospitals) but also by NGOs, religious organizations including missions, the municipality, the police, the prison service, the army, and private practitioners; these all obtain their vaccine from the district store (or subdistrict store). The status of cold chain in the nongovernment facilities is not identified in the materials reviewed.

The health reform and decentralization reform may have affected the management and the maintenance of the cold chain negatively due to the implications of devolution of authority and responsibility. UNEPI intends that the quality of the cold chain and logistics will be reviewed in detail as a component of the programme review scheduled for 1998.

U3.5 Maintaining and repairing cold chain equipment, vehicles other equipment

The structure for managing EPI in Uganda is rooted in the concept that the cold chain is the central core of the system. Emphasis has been placed on establishing static units and training technicians to keep the equipment functioning. The generous ratio of 72 cold chain assistants covering the 45 districts is a reflection of the functional approach adopted. The cold chain assistants are supported by the technicians at central level who advise them by radio how to proceed with a difficult repair.

Although this system may not have worked perfectly in the past, it was within UNEPI's authority to take action that would solve any problems. The decentralization reform means that UNEPI no longer “controls” the district cold chain assistants, and thus feels it has lost control over the maintenance of cold chain in the districts. The reforms mean that a new *modus operandi* must be developed which is appropriate to the new situation.

The status of transport at district level is potentially extremely serious. If the DHT does not receive sufficient funding from the DLC to maintain and repair its vehicles then both resupply and technical supervision will collapse, with fundamental consequences for all health services outside the district headquarters. Alternative arrangements (e.g. transport arranged by the community) may develop, but will take time, during which many eligible children will be exposed to the risk of preventable diseases.

U3.6 Training

The civil service reform was not phased, but decentralized personnel management to the districts in one stroke. Since 1994 there has been a freeze on employment, and the total number of civil servants has been reduced to about half of the original level. The plans to increase the salaries of the remaining civil servants (with financial rewards for those in rural areas) have been hampered by shortfalls in the district revenues from which these payroll increases were to be funded. The reforms have thus resulted in a shortage of health staff trained in immunization, which is now to a certain extent provided by unqualified personnel with inadequate skills. The training institutions or PHC cadre can not train sufficient numbers of PHC staff to fill the gap left by attrition. Nor can UNEPI provide enough in-service training to replenish the shortfall in competence. Those responsible for training spoke of the programme being “completely annihilated at the periphery;” the staff losses and turnover had wiped out their work and UNEPI’s investment in training.

This is in stark contrast to the very strong central UNEPI organization, which is generously staffed with well-trained people whose jobs appear to be secure.

In-service training will continue to be a responsibility of UNEPI, but there is a question of whether it is worth investing in more of the previous style of training if turnover of health workers continues. The districts are now responsible for quality assurance in primary health services. The functional separation of training from supervision and quality assurance is a weakness of the programme; it is not known how the districts and UNEPI will carry out the linked responsibilities of training and quality assurance.

Since district level supervision has been affected by the decentralization reform an important means of learning has been partially lost. It is the general experience from elsewhere that supportive supervision is the best means for improving the performance of service delivery staff. However, continuous and regular supportive supervision is regarded as a recurrent cost. Donors find it easier to provide support for discrete events such as workshops and in-service training courses, partly because of donors’ monitoring and accounting systems. Modifying the culture of workshops and seminars will be difficult, since these events hold many attractions for both participants and other actors.

The ongoing reform provides opportunities for rethinking the paradigms for learning and training in favour of strengthening district level supervision and quality assurance, and peer group support.

U3.7 Providing routine immunization services

Immunization services are part of the basic package of services. It has been stated that “all static health units possess refrigerators, be they run by electricity (regular or solar-power), gas or kerosene, that store vaccines at 4–8°C” (Weeks, 1997). Outreach services are supposed to be provided once per week, giving enough time for the ice packs to freeze. Yet UNEPI has identified a problem with the immunization coverage achieved by static units, as well as poor coverage with outreach services. There are two distinct problems with coverage:

- 1 Within the context of reported data, the drop-out rates are high (23% from BCG to measles) indicating problems with continuity of care which are exacerbated by the quality of interaction between health staff and carers.

Some NGOs use registers for eligibles in the catchment area, but the programme is still considering the design for a universal Child Register, which in many countries is considered the fundamental record for enumerating eligibles (demand), tracking uptake and following up no-shows and drop-outs. Specially designed charts for monitoring drop-outs have been developed and were seen in health units, but this aid has not solved the problem of poor interpersonal communications. Focus group discussions about government health services related that some health workers come late, are rude, abusing patients and mothers, and demand money for immunization. Standards of practice were also criticized, citing roughness of injection technique, and injections given by drunk vaccinators developing abscesses (Cockcroft, 1996). The offending staff may be a small minority but the reputation of the service is damaged.

- 2 Reported coverage is substantially higher than coverage estimates from independent surveys; for example the programme reported 79% coverage for measles immunization in 1994 whereas the UDHS found that 59.6% of surveyed children had this antigen and only 45.2% received it before their first birthday. Drop-out rates (BCG to measles) calculated from UDHS data are also higher: 29% for under-2s, 43% for under-1s.

UNEPI confirmed that reported coverage exceeds the rate found by survey (Bukonya, 1997). The programme’s strategy of linking allowances to numerical targets contributes to this discrepancy, as the emphasis is placed on reported quantity rather than on demonstrated quality.

Deficiencies in community mobilization, support and participation also contribute to the continuing problems of insufficient coverage and poor quality of care. The Baseline Services Delivery Survey found that although households were willing to give their views about the health services they had used, it was a new experience for them to be asked what was wrong with the service; one-third were unable to offer any suggestion for improving government health services (Cockcroft, 1996). The community capacity building project provides an opportunity for involving the community in a more integrated and effective manner.

According to the existing immunization policy and strategies, immunization services should be available on a daily basis and on demand. The national programme has not adopted WHO's guidelines on use of opened vials of non-reconstituted vaccine at subsequent sessions because UNEPI has insufficient confidence in the quality of cold chain at the periphery. This combination of policies implies that wastage of vaccines will be high. The extent to which staff at health units do hold daily sessions, and the attendance per session, needs to be assessed.

A report from the University of Makerere cites poor quality of immunization in some districts due to inadequate facilities, knowledge and skills. Supplies of kerosene were noted to be insufficient. Malpractices included sharpening of reusable needles, sterilization by boiling instead of steam, failure to apply the "no touch rule" when removing sterile equipment from the sterilizer, and staff's inability to give intradermal injections for BCG correctly (Bukonya, 1997). The planned review provides an opportunity for relating operational issues (such as stock management and adequacy of supplies and equipment) to indicators of immunization activity.

The service norms and standards do not appear to be available in any reference document or manual. The lack of a ready reference at the point of service delivery means that staff have no access to guidance in their daily work. The deficiencies in skills noted above – which may result partly from attrition of trained staff – highlights the importance of providing accessible reference material and of not rely on centrally controlled training in a decentralized environment.

The health reform and decentralization reform can be seen as an opportunity to rectify these problems, but the immunization strategies will have to be adjusted according to the availability of trained staff and other resources. The excitement and energy accompanying the districts' new sense of "being in charge" should be linked with moving the programme's emphasis away from numerical targets towards better quality immunization, including identifying and following up eligibles, using locally appropriate solutions.

U3.8 Monitoring, Supervising and Quality Assurance

The strategy for the centre to monitor the DLCs' performance is that inspectors from the MLG's Directorate of Local Government Inspection will visit all local governments to check against standards developed by the relevant line ministries (health, education, agriculture). However the line ministries have not produced definitive standards. Thus the MLG inspectors lack clear criteria for assessing DLC performance.

The first phase of decentralization gave the DLCs great autonomy in allocating their budgets, and in 1993 there were no guidelines against which MLG inspectors could assess financial allocations. If districts do not respond to guidance, the MLG inspectors can, in extreme circumstances, suspend the DLC's powers for up to 4 months. Thus the decentralization of financial responsibility has espoused a laissez-faire approach with legal recourse. The main difficulty with this approach is that the MLG inspectors are about five years behind schedule in their audits.

The District Health Department (DHD) is now responsible for quality assurance within the district. However, it lacks the resources needed for supervising the service delivery points. The extent to which the conditional block grants have ensured that the DHT can carry out its supervision responsibilities requires close monitoring.

Weeks (1997) reported that DHTs seemed to lack direction on investigating and responding to cases and outbreaks, especially neonatal tetanus and measles, and still viewed surveillance as the

responsibility of the central level. By October 1997 only 57% of the expected health unit disease reports for 1996 had been received. Of the 39 districts, 8 had not sent in any reports from any of their health units. This level of non-reporting indicates that much remains to be done in building district capacity in surveillance and monitoring.

U3.9 Special Efforts

(This section is drawn from national immunization days 1996, Final Report).

The 1996 NIDs had a budget of US\$ 3.7 million, excluding the monetized contribution from districts and local communities. During the planning and implementation several problems were encountered, such as the difficulty of mobilizing funding from the DHD budget and from other district sources. The NIDs had presumably not been considered in the district health budget (unconditional grant). It was also difficult to mobilize full support from the health workers, some of whom were not convinced of the need for or urgency of the exercise, and thus failed to encourage the community.

The 1996 NIDs achieved an accumulated national coverage of 95% and 94% in the first and second round respectively. These accumulated figures conceal a wide range of coverage (42% to 150%). Target group estimates are based on projections from the 1991 census and may not accurately reflect the true denominators. In 11 of the 39¹ districts there was an increase in coverage from the first to the second round. The main reason for lower coverage on Round 2 was heavy rains throughout most of the country. During the planning phase, it was realized that the cold chain requirements of the NIDs exceeded the available capacity. (The majority of the cold chain system is equipped with refrigerators that can freeze only four ice packs every 48 hours.) The 74 new freezers ordered for the NIDs had not arrived by the time Round 1 took place, necessitating ad hoc measures to ensure sufficient ice. VVMs improved the confidence of workers administering the vaccine, and “improved the cold chain monitoring system”, but it is not reported whether any vials were discarded because a VVM reached the discard point. The new equipment increased the maintenance cost to the routine immunization system, which does not require that much freezer (-20°C) capacity. The “floaters” purchased for the 1996 NIDs proved too fragile and for the next NIDs were replaced with cold boxes.

Cold chain supervision during the NIDs revealed poor maintenance in the districts and at lower levels, emphasizing the need for the centre to give regular support with preventive maintenance.

The surveillance system for AFP and diseases prevented by immunization was still under development; the planned training and increase in awareness was expected to increase the flow of information and timeliness of reporting. Weeks (1997) noted that if too much emphasis is placed on AFP the surveillance system will be both costly and short-lived, and the programme will not enjoy the benefits of establishing an integrated and sustainable system.

At district level 15–21 people were trained and formed 7–10 teams to supervise the subcounties, making sure that supplies were in place and cold chain was maintained. This supervision was hampered by delayed and insufficient funding at all levels, and duplication of supervisors' roles. Nevertheless, the evaluation report said that support from supervisors was a motivating factor for health workers, and the check list and cascade planning of supervision could be maintained to improve routine immunization service delivery.

¹ The number of districts was increased to 45 during 1997.

In areas where local councillors actively participated in mobilization, the community's response was good. The most effective methods of communication in rural areas were radio announcements, megaphones, church announcements, interpersonal communication and in some areas, film vans. In urban areas the radio stations, TV and newspapers played an important role. Questions and answers booklets were printed but limitation of funds and time meant that printed materials were only available in English language, making them inappropriate to the majority of the population who cannot read English. Inadequate funding and lateness of funds led to late production of social mobilization materials, and insufficient quantities.

It was also noted during the NIDs that rumours abound about the nature of polio immunization. The circulation of negative rumours about immunization was confirmed by the team during its visit in the field.

The effort directed towards polio eradication is a special case; it seems to have been difficult to reconcile this global and national initiative with local district priorities within the DLCs and even within district health departments. Reports from the districts indicated insufficient funding of some activities, especially fuel and personnel allowances. There was no provision for repair and maintenance of vehicles used during implementation. The community viewed the NIDs exercise as a heavily funded project and expected payment in return for its participation. The payments made to health workers, volunteers and social mobilizers set a precedent which cannot be maintained during routine services.

The effect of the 1997 NIDs upon routine services was discussed during the team's visit. The health centres stopped routine activities in order to carry out the special effort, and at central level the time lag for issuing the quarterly immunization report greatly increased. It is anticipated that the full report on the 1997 NIDs will include a detailed analysis of the effect on routine services.

U3.10 Impact of health reform

Some observers have noted that the reforms' shifting of control to district level has created excitement and energy that could be linked with making some necessary alterations in the programme's approach (for example shifting away from numerical targets and towards quality services). The wide range of capacity at district level and the experience to date with establishing parish development committees implies that it will take time for locally appropriate solutions to be identified, developed and implemented. Guidelines for strengthening sustainable immunization services will not be a template or a menu, but a process.

UNEPI is likely to continue with the characteristics of a top down, vertical programme designed to function within a structure that no longer pertains, unless it decides to reformulate itself to function optimally within the new structures and processes.

Annex 2:

Monitoring impact

Introduction

When a government makes fundamental changes in the health sector there is naturally both interest and concern about the effects of these changes. People want to know whether things are better or worse than before. In making such an assessment, it must be considered whether a particular effect can be attributed to reforms, and what independent (exogenous) factors are also at work. The time frame for reforms in each setting must also be considered, and how to determine when have they reached fruition. These difficulties – with attributing cause and effect and with the time scale – suggest that for immunization, the most constructive monitoring is of the intermediate inputs that produce outcomes and, eventually, impact.

POLICIES →	INPUTS →	OUTPUTS →	OUTCOME →	IMPACT
Plans, strategies for best use of resources	Activities	Services provided, documented by reports and surveys	Protected children and women	Reduction in morbidity and mortality
<i>Policies, norms and plans are developed within the local context of available resources: infrastructure, staff, skills, budget.</i>	<i>Preparation, advocacy by health service and others including the community; staff provide sessions at clinic and outreach</i>	<i>Awareness encourages uptake, resulting in immunized children and women. Coverage documents the quantity.</i>	<i>Time passes ...</i>	<i>Health status indicators show improvement over time, reflecting the quality of services provided.</i>

Causes, effects, and external factors

Health status indicators are sometimes implicated in political debate about the competence of those in power and the success or otherwise of their policies. However, it may be the case that long standing social and economic conditions contributed to the government coming to power, or deciding to embark on health sector reform. Problems unrelated to politics may exacerbate the situation: for example the Zambian government is predicting that gross domestic product will fall by between 5% and 9% by 2000 because of the effect of AIDS on the country's productive capacity (Guardian Weekly, Vol.157, No.23, December 7, 1997, p.1); the health sector will be burdened not only with patients but also by reduced funding due to a shrinking revenue base. Elsewhere in Africa the most severe weather ever recorded, attributed to an extreme El Niño, is devastating agricultural production, which will affect revenues and health independently of sector reforms.

A field trial using before-and-after analysis or an experimental-and-control study design can account for outside influences. For example, an intervention may appear to have produced no improvement, but may have prevented a decline in health status (such as if a drought occurred during the trial) which shows up in the control group.

But health sector reforms are not research projects. Even if reforms are phased – geographically, or by level of service – the choice of phasing is not based on the requirements of research. For example districts with the strongest capacity may be the first to implement reforms (as in Ghana). Ultimately the entire health sector is involved, so it is impossible to find a “control group” which would represent the impact of “no reforms”.

- When considering the impact of reforms upon health, one must beware of mistakenly attributing causal relationships where there are merely associations that could be ascribed to other factors.

Defining meaningful boundaries

The concept of assessing impact implies a time frame; within this period, resources are used for activities that provide health care to a population whose health status can be assessed. Field trials of public health interventions are usually expected to run for five years or more before assessing impact on health status. Short term trials give rise to debate about the long term effects of an intervention (e.g. Does preventing infant deaths from malaria merely postpone malaria deaths to a later age? Is there still a net benefit from delaying deaths? *The Economist*, November 22nd 1997).

There is a difficulty over defining meaningful boundaries for health sector reform (Janowsky and Cassals, 1996). Some of the changes involve short term disruptions that are necessary in order to bring about greater benefits in the longer term. For example Zambia’s strategy of redeploying resources is designed to improve families’ access to essential services, including immunization. It is not known how long it will take to work through the repercussions of “delinking” health workers’ employment from the civil service; this is expected to involve both in-service training (for those whose basic skills need improvement) and basic training to replace staff who leave the district health services. An assessment of impact while these developments and adjustments are still in progress would be premature. However, process and progress of change should be closely monitored.

- When looking for the impact of reforms upon health, one must recognize that it will take time for the ramifications and repercussions to work themselves out, for long term investments to bear fruit, and for the health sector to reach a degree of equilibrium.

Monitor process and progress

The purpose of monitoring the changes and adjustments is to focus attention on those components of immunization that are essential for effectively functioning services. Monitoring must be based on an understanding of where immunization fits in the reformed structure of health services. If the broad questions below are answered “no” or “don’t know” then advocacy and creative technical input will be needed to find a positive solution.

At national level

- Are the key functions at national level covered, and in whose job descriptions are they covered?
- Does the total workload of these jobs permit the quality of attention that immunization activities require?

In Zambia monitoring the process of health reforms could include the following:

- Is the process of receiving, reviewing and updating policies, standards and guidelines working effectively? Are the appropriate people invited to international meetings?
- Are the current policies, standards and guidelines included in basic training curricula? Are they in the in-service curricula? This involves monitoring the attendance list and deliberations of the appropriate Working Group or Committee.
- Do the formats for the integrated Health Management Information System cover essential items for reporting national data to the region and hence to HQ for inclusion in global publications? This means that there must be creative collaboration with the HMIS core group, and effective advocacy for minimum data.
- Do the HMIS procedures for notifiable disease surveillance and analysis of samples comply with WHO guidelines and policies?
- Is funding a constraint? If there is a problem, is it with the amount, sources, timeliness, or allocation formulae?

Essential supportive functions

Depending on the structure of the health system, the focal points for these functions may be at the centre, or decentralized; some may even be contracted out.

- Are stocks of vaccines and other consumables adequate for routine requirements (including safety stock levels), and properly managed?
- However resupply is arranged (deliver or collect), is it working reliably?
- Are spare parts and replacements reaching where they are needed?
- Are data aggregated and reported in a complete, timely and reliable manner?
- Is funding a constraint? If there is a problem, is it with the amount, sources, timeliness, allocation criteria, or management of funds?

Providing immunization services

Monitoring immunization services during health sector reforms should be guided by the objective in Section 3, on basic functions:

- Are all vaccines in the schedule provided, and are they potent at the point of use, correctly and safely administered without creating risks to others, properly documented, at a time when the client is susceptible and prior to exposure?

If monitoring identifies any faltering in achievement of this objective, then the causes must be identified, and remedial action agreed and taken by the appropriate persons.

This monitoring is no different from that in vertical programmes. What may differ is the causes of problems and hence the remedies. For example, “delinkage” of employment is not expected to have identical effects in every country.

- If Local Councils or Districts are late with salaries, delinkage may result in staff leaving their positions.
- If incentives attract staff to isolated postings, the population with access to services will increase.

If monitoring tracks the proportion of facilities reporting, both of these outcomes can be detected. In the first case, no news is not good news: there may be no one in post. In the second, an increase in the number of facilities reporting suggests that more eligibles have access to immunization. The next step is naturally to assess levels of activity, and quality.

Monitoring quantifiable indicators and quality

This section is not suggesting that an information system be set up for the following indicators. Some of the indicators will be found in the routine reporting system, others are suggested for tracking the progress of immunization services, and can be investigated during field visits, or through formal studies if this is considered desirable.

Access: eligibles with access to services. This includes two factors: the number of staff providing services, and their distribution with respect to the population. Denominators may be uncertain especially if budget allocations are partly determined by size of population. For example in Zambia, 72% of districts made their own estimate of population (sometimes based on enumeration) and two-thirds of these estimates were higher than official figures. Use of the national norm for travel time to the nearest facility or outreach point produces an indicator (e.g. percentage of catchment population within n minutes of a PHC facility) for monitoring access.

Availability of services. Session size is a useful indicator; the assessment should distinguish between sessions at the facility and outreach sessions, and between urban and rural services. As local planning develops, one should expect to see variations in strategies. For example services to hard-to-reach areas may be timed for seasons when it is easiest to reach them. Staff may go to sparsely populated areas less often than once per month, allowing them to visit more settlements and extend access. The indicator must be designed to monitor these developments (for example don't assume that each month's activity follows the same schedule). For areas served by outreach, and for facilities staffed by one person, it is not appropriate to ask questions such as “is the supermarket approach followed” or “is immunization available on demand” because these strategies lack feasibility; there is no supermarket and the itinerant market stall offers what the health staff can transport to the outreach site.

Inventories of equipment and supplies. If the inputs are missing, late, or insufficient, the activities will be adversely affected. It may be possible to assess whether inputs are sufficient from routine records (e.g. stock issued compared with session frequency and attendance). These data are often collected as part of a periodic evaluation or review (see below).

Transport and logistics are needed to move supplies and personnel. These inputs are among the most sensitive to resource constraints and management's choice of priorities. If there is a problem, peripheral areas are typically the first to lack supplies or supervision. Transport and logistics can be monitored using indicators of distance or travel time from supply point to the facility, staff in post (see access), and routine reporting.

Coverage, drop-outs, doses on time. These classic indicators provide powerful information about completeness and continuity of care, and reflect qualitative aspects such as reliability of services (scheduled sessions held, supplies in stock), rapport with parents, and their confidence in quality of services. Monitoring must be supportive to health workers, focusing on solving problems, and must avoid suggesting that the objective is a numerical target.

Support from supervisors. Asking the facility staff "*When was the last time a supervisor visited?*" gives a closed interval which is much more informative than asking whether a supervisor visited within the last *n* weeks. "*What did the supervisor do during the last visit?*" gives an indication of the quality of supervision. The supervisor's activities should also be monitored. Reforms in Zambia have introduced supervision that consists of a type of management audit. Clinical supervision of service provision is also required; long intervals between visits may indicate problems with staffing levels, workload, priority setting, or transport.

Financial information. Falling allocations, shortfalls and late funds will all have an adverse effect on activities. What is the per capita financial allocation to health (compared with other units of the same type in this District, in other Districts)? In multisectoral reforms health will be competing with other sectors. Last year, what percentage of the approved amount was actually received? This year, how much of the expected amount (pro-rated for months or quarters) has been received to date? These indicators can be monitored separately for government allocations and donor funding. With delinkage, staff must have confidence that their employers will pay them. Are salary payments complete? up to date? if not, when was the last salary received? how much is the shortfall? Have travel claims and allowances been settled in full? if not, how much is outstanding?

Immunization within a wider agenda. If immunization is one component of maternal and child health services then monitoring should be within that wider context. This offers some opportunities; for example where coverage for antenatal care is reported, this can be linked with coverage for the first immunization contact for the baby. Coverage for Vitamin A could be linked with immunization to promote completeness of preventive services. Where reforms have encouraged greater involvement of the community, health staff may receive assistance from the neighbourhood groups or village committees in identifying eligibles, following up those due for immunization, and organizing services in isolated or hard-to-reach areas. Community representatives may also give feedback to the health staff about clients' views of services (e.g. were scheduled sessions held? were the staff welcoming and friendly? did they inform parents of side effects and when to return for the next dose?). Monitoring should encompass these developments, which have the potential for significant contributions to utilization rates and quality of services.

Monitoring should attempt to cover potential dangers, such as populist demands of local politicians distorting the emphasis of services, or requiring staff to provide services with inadequate resources. For example demands for daily sessions at the clinic as well as evening outreach sessions may be incompatible with the icepack freezing capacity of the existing cold chain equipment, or with the allocation of vaccine. By identifying the problems, monitoring can bring the technical issues and their implications to the attention of powerful local decision makers and facilitate a safer and more feasible strategy for providing services.

Reviews: a special case of monitoring

It is a national level function to decide when to do a review. However the performance of this function appears to be somewhat *ad hoc*, for in practice the frequency of reviews varies widely between countries. In South Africa the nine provinces have agreed to be reviewed once every three years, and the national team organizes a rolling schedule of three provincial reviews per year. In 1997 Zambia had its first review for 13 years.

Health sector reform has altered the context within which the original EPI reviews took place. The modules developed by WHO in 1993 are technically out of date and lack modules for interviewing key groups in health reform processes. Recent experience in Zambia demonstrated how difficult it is to modify those modules; after months of effort by the Core Group, the review team abandoned the 1993 modules and designed new formats.

Planning the review provides an opportunity to identify people who would not necessarily have been interviewed or involved in a vertical EPI, but who have a role in the changing health structures. The review will emphasize the public health orientation and rigorous technical requirements of immunization services. Pharmacists who have mainly been concerned with curative services can gain greater understanding of universal eligibility for newborns and the implications for stock management and logistics. Local council staff with multisectoral responsibilities can gain greater insight into the preventive aspects of health services. Political leaders can appreciate the technical constraints for providing safe and effective immunizations.

Steps in reviewing immunization services within the context of health reforms:

- Carry out reviews often enough so that there is continuity between them; build on the findings and recommendations of the previous one when planning the next.
- Use the review as an opportunity to spread ownership of immunization's objectives.
- Identify who should be involved: as resource persons; as team members; as interviewees; in debriefing; in developing recommendations; in reaching consensus on next steps. This may include political representatives or branches of government in addition to the MOH.
- Design the review to fit the country's laws, management structures and health services. If policy is to integrate immunization within maternal and child health services, then the review should be designed to fit this policy. If health boards and neighbourhood advisory committees have a role in health services, then the review should include interviews with them.
- Use the process of designing and preparing the review as an opportunity for clarifying agendas and objectives. For example assessment of health staff's skills and practices should be connected with curriculum development for basic and in-service training. The objectives of health reform should be recognized, and local constraints which guide choice of strategies should be respected (e.g. "immunization on demand" is not a practical policy for all settings).

- Incorporate indicators which will permit an assessment of whether technical policies, standards and guidelines should be updated (e.g. use of opened vials at subsequent sessions; use of the information system for continuity and completeness of care). WHO's current guidelines provide the menu of technical issues for consideration.
- Schedule fieldwork and choose facilities to visit so that the review team **observes immunization in practice**.
- Allow enough time to analyse findings, discuss their implications, agree on recommendations, and discuss next steps with key decision makers for health. These people may be spread throughout the health administration (as in Zambia) or may include other sectors (as in Uganda). More time must be allowed than in a vertical programme review to ensure that the review team can schedule meetings with this wider set of people.

Conclusion

The recommendation is to use monitoring in the broadest sense both for national level functions and for activities at district level and facilities. Attempting to monitor impact on health status is not encouraged in this guideline because of difficulties with attributing cause and effect, and with deciding when changes have been fully implemented. However, focusing on activities and their quality will contribute to a positive outcome and benefits to health.

Annex 3:

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Glossary

AFP	acute flaccid paralysis
ARI	acute respiratory infection
BCG	bacille Calmette-Guérin (vaccine)
BOD	burden of disease
CAO	chief administrative officer
CBoH	Central Board of Health
CDD	control of diarrhoeal disease
CHP	Community Health Practitioner
DANIDA	Danish International Development Agency
DFID	Department for International Development (formerly ODA)
DGIS	Dutch International Development Agency
DHB	District Health Board
DHC	District Health Committee
DHD	District Health Department
DHE	District Health Educator
DHI	District Health Inspector
DHMT	District Health Management Team
DHT	District Health Team
DHV	District Health Vaccinator
DLC	District Local Council
DTP	diphtheria–tetanus–pertussis (vaccine)
DYSSSY	Dynamic Standard Setting System
EDMSS	Essential Drug and Medical Supply Store
EHT	Environmental Health Technician
EPI	Expanded Programme on Immunization
FAMS	Financial and Administrative Management System
FIC	fully immunized child/children
FY	fiscal year
GNP	gross national product

Glossary (continued)

GRZ	Government of the Republic of Zambia
HC	health centre
HMIS	health management information system
HRIT	Health Reform Implementation Team
IMCI	Integrated Management of Childhood Illness
JICA	Japan International Cooperation Agency
LC	Local Council
MCH	maternal and child health
MLG	Ministry of Local Government
MMD	Movement for Multiparty Democracy
MOH	Ministry of Health
MOF	Ministry of Finance
NGO	nongovernmental organization
NHC	Neighbourhood Health Committee
NID	national immunization day
NT	neonatal tetanus
ODA	Overseas Development Agency (now DFID)
OPV	oral polio vaccine
PHC	primary health care
PHN	public health nurse
PHP	public health practitioner
PSG	policies standards and guidelines
RC	Resistance Council
SCF	Save the Children Fund
SIDA	Swedish International Development Agency
TST	time, steam, temperature
TT	tetanus toxoid
UCI	Universal Child Immunization
UDHS	Uganda Demographic and Health Survey
UNEPI	Uganda National Expanded Programme on Immunization
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development

Glossary (continued)

V&B	Department of Vaccines and Biologicals (WHO) (formerly Global Programme for Vaccines and Immunization (GPV))
VIP	Vaccine Independence Plan
VVM	vaccine vial monitor
WASHE	Water and Sanitation, Hygiene Education (project)
WB	World Bank
WHO	World Health Organization
WHO/AFRO	WHO Regional Office for Africa
ZDHS	Zambia Demographic and Health Survey
ZEN	Zambia Enrolled Nurse