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HEALTH SYSTEMS AND POLICY ANALYSIS

POLICY BRIEF

When do vertical (stand-alone) programmes have a place in health systems?

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This policy brief, written for the WHO European Ministerial Conference on Health Systems, 25–27 June 2008, Tallinn, Estonia, is one of the first in what will be a new series to meet the needs of policy-makers and health system managers.

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Key messages

- The available evidence on the relative benefits of vertical versus integrated delivery of health services is limited and too weak to allow for clear conclusions about when vertical approaches are desirable.
- The limited evidence available suggests that integrated approaches to delivering health services, compared with vertical approaches, improve outcomes in selected areas including HIV, mental health and certain communicable diseases. In several countries in the eastern part of the WHO European Region, for example, vertical programmes appear to have impaired the effective management of HIV, tuberculosis, substance abuse and mental health.
- Nevertheless, vertical programmes may be desirable as a temporary measure if the health system (and primary care) is weak; if a rapid response is needed; to gain economies of scale; to address the needs of target groups that are difficult to reach; to deliver certain very complex services when a highly skilled workforce is needed. In practice, most health services combine vertical and integrated elements, with varying degrees of balance between them.
- When vertical programmes may be desirable, policy-makers could consider two policy options: (1) time-limited vertical programmes with clear strategies to avoid negative spillover effects for the health system and non-targeted populations; and (2) indefinite programmes, with mechanisms at both the strategic and operational levels to enhance links between the vertical and horizontal elements of the health system.
- Political economy within a particular context and technical factors related to the health system will influence the extent of integration. As powerful interest groups are likely to oppose the integration of vertical programmes, policy-makers should develop strategies to offset such resistance.
- Where vertical governance, funding and service delivery systems exist, integration will be difficult and changes in service delivery must be underpinned by legal and regulatory adjustments aimed at linking the governance, organization and funding of vertical programmes with mainstream health systems.

Executive summary

The terms vertical and integrated are widely used in health service delivery, but each describes a range of phenomena. In practice, the dichotomy between them is not rigid, and the extent of verticality or integration varies between programmes – including (1) a vertically funded, managed, delivered and monitored programme; (2) one with integrated funding, organization and management but separate delivery; and (3) a fully integrated approach comprising comprehensive primary health care services. Most health services combine vertical and integrated elements, but the balance between programmes in these elements varies considerably. Hence, when vertical and horizontal and programme design are being discussed, clarity is needed on the programme element being referred to: (1) governance arrangements, (2) organization, (3) funding and (4) service delivery.

The debate on the comparative effectiveness of vertical versus more systemic approaches can be traced back to the 1960s, with several subsequent peaks in interest related to specific events or issues, such as following the 1978 Declaration of Alma-Ata on primary health care;[1] in the 1980s with the success of the smallpox eradication programme; and the proposal of the 1993 *World development report: investing in health for "essential packages of care"*.[2] More recently, the debate has been rekindled due to the growth in funding targeted at specific diseases and services from sources such as the Global Fund to Fight AIDS, Tuberculosis and Malaria and WHO's emphasis on strengthening health systems and primary care.The arguments for vertical programmes are, in the main, driven by the assumption that concentrating on a few well-focused interventions is an effective way to maximize the effect and time response of the available resources rather than waiting for changes in the health system so that the delivery of better services would be viable. The arguments against vertical programmes tend to assert that they are value driven, often have limited chance of sustainability and have negative spillover effects on health systems and non-targeted populations.

Despite wide-ranging discussion over the past 50 years, evidence on the relative benefits of vertical versus integrated service delivery is limited. Most is from low- and medium-income countries and too weak to make very clear

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1 *Declaration of Alma-Ata*. Copenhagen, WHO Regional Office for Europe, 1978 (http://www.euro.who.int/AboutWHO/Policy/20010827_1, accessed 1 May 2008).

2 *World development report 1993: investing in health*. Washington, DC, World Bank, 1993 (http://www-wds.worldbank.org/external/default/main?pagePK=64193027&piPK=64187937&theSitePK=523679&menuPK=64187510&searchMenuPK=64187283&siteName=WDS&entityID=000009265_3970716142319, accessed 1 May 2008).

conclusions about when vertical approaches are desirable. Nevertheless, the limited evidence available suggests that horizontal or integrated approaches, compared with vertical approaches, do improve outcomes in selected areas, including HIV, mental health and certain communicable diseases. In several countries in the eastern part of the WHO European Region, vertical programmes appear to have impaired the effective management of HIV, tuberculosis, substance abuse and mental health. In other settings, they have led to a duplication of services, created high opportunity costs for health services and communities and impaired effective resource use. At the same time, the limited evidence suggests that vertical programmes can have positive spillover effects on health systems by strengthening surveillance systems, enhancing quality control at laboratories, promoting leadership and improving donor coordination. As such, they may be desirable when rapid response is needed, as a temporary measure if the health system (and primary care) is weak and to address the needs of target groups that are difficult to reach.

In seeking to make the best use of vertical programmes, policy-makers may consider two approaches: time-limited vertical programmes and indefinite vertical programmes. Once the time duration is agreed, each approach has several more focused policy options that can be developed. With time-limited vertical programmes, clear strategies should be developed to avoid negative spillover effects for the health system and non-targeted populations, including plans laying out mechanisms for integration into mainstream health services at a later date. These strategies should also articulate how the vertical programmes can be used to strengthen health systems and especially primary care. Nevertheless, in many contexts integration may not be feasible and vertical programmes will last indefinitely. For indefinite programmes, there should be mechanisms at the strategic and operational levels to enhance links between the vertical and horizontal elements of the system.

At the structural level, mechanisms include: (1) shared governance arrangements with strong stewardship over the intersection between vertical and horizontal programmes; (2) systems that allow joint planning, monitoring and evaluation with the mainstream health system; and (3) mechanisms that allow pooling and joint management of funding. At the operational level, mechanisms include: (1) delivery of vertical programmes through provider structures used for delivering general health services; (2) establishing clear mechanisms for ongoing dialogue between vertical and horizontal programme managers; and (3) joint development and use of shared care guidelines for clinicians.

In practice, the evidence, political economy within a particular context and technical factors related to the health system and political clout of policy-makers will influence the extent of integration and determine the solution that

emerges. As powerful interest groups are likely to oppose integrating vertical programmes, policy-makers should develop strategies to offset such resistance. Vertical governance, funding and service delivery systems make integration difficult, and changes in service delivery must be underpinned by legal and regulatory adjustments aimed at linking the governance, organization and funding of vertical programmes with the mainstream health system. These legal and regulatory changes should also lay the foundations for governance arrangements that foster integration, enable pooling of funding for different programmes and create an environment conducive to structural and operational integration that emphasizes the users of services rather than the disease.

Policy brief

Policy issue

Few issues related to the organization of health systems and service delivery have attracted as much attention as the debate on vertical versus integrated health programmes. The literature has focused on the comparative effectiveness of vertical (disease- or service-specific) versus more systemic approaches since the 1960s, and both approaches have been widely implemented in low- and middle-income countries and in high-income countries. In vertical approaches (also referred to as stand-alone, categorical, disease management or disease control programmes), interventions are provided through delivery systems that typically have separate administration and budgets, with varied structural, funding and operational integration with the wider health system. In the integrated model (also known as horizontal approaches or programmes), services do not have separate administration or budgets and are typically delivered through health facilities that provide routine or general health services.

In many countries, vertical programmes have enjoyed success in several instances, such as in eradicating smallpox and in reducing the incidence of death and morbidity from vaccine-preventable disease. However, along with these successes, limited integration of vertical programmes with general health services has led to duplication of efforts in some countries, inefficiency in care delivery and fragmentation of the health system *(1)* and has been seen as the root cause for the failure to eradicate malaria (Box 1).

As such, calls for integrated service delivery are increasing, but service integration means different things to different people. Moreover, in practice few programmes are entirely vertical. Most health services combine both vertical and integrated elements, although to varying degrees. So why revisit this issue now? In recent years, substantial growth in global funding targeted at

Box 1. Sometimes verticality works and sometimes it does not

Smallpox eradication is the most frequently cited example of a successful vertical programme that has succeeded without adversely affecting the functioning of the health system *(2)*.

It is argued that the malaria eradication programme failed to achieve its objective of global eradication, as active case surveillance was not integrated with general health services *(3)*, with suggestions that malaria control programmes should be integrated into primary health care services *(4)*.

specific diseases and services, from sources such as the Global Fund to Fight AIDS, Tuberculosis and Malaria and the GAVI Alliance (formerly the Global Alliance for Vaccines and Immunization), has promoted renewed interest in the debate on vertical versus horizontal programmes *(5)*. Acknowledgement is also increasing that strong health systems are needed to enable vertical programmes to meet their objectives *(6)*. WHO, in recognizing that the constraints faced by vertical programmes are less due to technical content and more to the shortcomings of health systems *(7)*, has thus called for strengthened health systems as a necessary starting-point for successfully scaling up communicable disease programmes *(8)*.

In addition, a key reason for the re-emergence of vertical programmes is that the general health services in low-income countries have often failed to deliver "high-priority" interventions, compelling many multilateral organizations, bilateral international agencies, new global partnerships (such as the Global Fund) and philanthropic organizations to invest in disease-specific public health programmes. The Millennium Development Goals adopted by the United Nations, which specify indicators structured around the eight goals linked to conditions, have further encouraged the development and growth of multiple vertical programmes. Understanding the political economy of the new international health architecture and the argument of certain funding agencies that vertical approaches compel more efficient and targeted investment without damaging health systems is therefore also crucial in understanding the renewed interest in the debate on horizontal versus vertical programmes.

This policy brief thus has three objectives and is structured accordingly:

- to unpack what is meant by a vertical programme versus an integrated one;
- to assess the available evidence and lessons on when vertical programmes have a role to play in health systems; and
- to indicate under what circumstances vertical programmes have a role to play in health systems and to note the factors policy-makers need to take into account when considering implementing vertical programmes.

In addressing these objectives, one should note that good evidence on the applicability of vertical programmes is very limited. Further, a core question in this debate is not whether a vertical programme can effectively deliver services (the type of question an evaluation would typically address) but rather when vertical programmes have a place in health systems. As these are difficult and complex issues on which to generate clear and robust evidence, the review draws on a wide range of material and aims to provide tentative lessons policy-makers may find useful when approaching this issue. In this regard, this policy brief will be particularly relevant to policy-makers in low- and middle-income

countries, in which the health systems have many vertical aspects, and to donor representatives of higher-income countries.

The brief also focuses on implementing health programmes at the national, subnational or programme level rather than interventions beyond the health sector. Vertical global aid initiatives and the global aid architecture are important and are mentioned briefly but are otherwise beyond the scope of this brief.

What is meant by vertical versus integrated programmes?

The terms vertical and integrated do not have a singularly accepted understanding (Box 2). For the purposes of this brief, however, they are defined as follows. Vertical programmes are "so called because they are directed, supervised, and executed, either wholly or to a great extent, by a specialized service using dedicated health workers" *(9)*. In contrast, an integrated programme is "the process of bringing together common functions within and between organizations to solve common problems, developing a commitment to shared vision and goals and using common technologies and resources to achieve these goals" *(10)*.

Box 2. Definitions

Vertical programmes (also known as stand-alone, categorical or free-standing programmes or the vertical approach) refer to instances where "the solution of a given health problem [is addressed] through the application of specific measures through single-purpose machinery" *(1)*.

In contrast, integrated programmes (also known as horizontal programmes, integrated health services or horizontal approaches) seek to "tackle the overall health problems on a wide front and on a long-term basis through the creation of a system of permanent institutions commonly known as 'general health services'" *(1)* and include "a variety of managerial or operational changes to health systems to bring together inputs, delivery, management and organization of particular service functions" *(11)* or are described as "a process where disease control activities are functionally merged or tightly coordinated with multifunctional health care delivery" *(12)*.

In many countries, a number of vertical programmes are bundled to address "a circumscribed number of diseases … selected for prevention in a clearly defined population" *(13)* and delivered together as a cluster in primary care. Examples include service packages such as the WHO Integrated Management of Childhood Illness (IMCI) strategy *(14)* or harm reduction programmes for HIV, where the services are delivered vertically within or in parallel to the general health services. In other instances, this bundling is taken a step further, an approach, also known as selective primary health care (or minimal package of activities) *(15)* to bring together the most cost-effective medical interventions and vertically deliver these as a cluster.

In practice, vertical programmes take very different forms. For example, they may be defined according to the nature of the service provided (such as a stand-alone programme for reproductive health services and sexually transmitted infections or mental health), by the nature of the population they serve (such as programmes targeted at sex workers, prisoners or injecting drug users) or by both (such as a sexual health programme for sex workers).

Further, programmes vary enormously in the nature and degree of verticality. The governance, funding and delivery of a programme may be run in a stand-alone fashion. For example, tuberculosis clinics in many countries in the Commonwealth of Independent States have dedicated budgets with limited flexibility, separate management structures and separate service delivery channels *(16)*. Other programmes may be stand-alone in some dimensions but not in others. For example, in many countries immunization services have a separate management unit within health ministries and separate funding channels, as they rely extensively on donor funding. However, they are delivered through the same network of service providers as most other health services. In other instances, immunization services may be funded from the same budget, provided through the same health care facilities and have similar governance structures but still have a vertical element and are offered as dedicated services by dedicated teams in specific time periods (such as a once-weekly clinic).

Integrating such services may mean making them more widely available and/or linking them to other services. This type of service integration might, for example, mean offering mothers counselling on family planning when they come for childhood immunization or integrating a range of treatments for different childhood illnesses within one treatment protocol, as is the case for IMCI. In this instance, integrating programmes does not mean combining their funding or changing the facilities through which they are delivered. Instead, it involves examining the details of service delivery arrangements within a health care facility (use of treatment protocols and hours of service provision) and seeing how they might be better arranged.

Europe has interesting cases of partly horizontal and partly vertical arrangements, sometimes with common funding and different delivery mechanisms. For example, many countries in the eastern part of the WHO European Region have sanitary-epidemiological systems, and the public health services in the Netherlands operate as a vertical column with limited involvement of primary health care services.

The extent of verticality varies by programme. Oliviera-Cruz et al. *(17)* suggest that "the dichotomy between vertical and horizontal is not as rigid [in practice] as it may seem in theory". Instead of a rigid vertical–horizontal divide, a continuum exists – ranging from a vertically managed and delivered programme

such as the Global Polio Eradication Initiative to the Expanded Programme of Immunization, to IMCI, to a fully integrated approach of delivery, such as primary health care *(17)*. Cairncross et al. *(18)* share this view, arguing that the Global Polio Eradication Initiative is more vertical than the Expanded Programme of Immunization – which itself may be part of a family of interventions based on primary health care.

When vertical and horizontal and programme design are discussed, the programme element being referred to must therefore be clear: (1) governance arrangements, (2) organization, (3) funding and (4) service delivery.

Arguments for and against vertical programmes

This section presents the widely accepted arguments for and against vertical and horizontal programmes, followed by a summary of the available research evidence presented in two parts.

- The first part is systematic reviews (those that fit Cochrane criteria and that typically include randomized controlled trials, interrupted time series and controlled before-and-after studies) and wider literature reviews that have not followed Cochrane criteria.
- The second part is the results of a rapid review specifically undertaken for this brief focusing on: (1) communicable diseases; (2) mental health; and (3) immunization services (including the Expanded Programme of Immunization integrated into primary health care versus vertical mass immunization campaigns). The literature was analysed with the aim of broadly assessing the benefits and disadvantages of integrated programmes and horizontal approaches compared with vertical approaches.

The findings presented here represent a broad range of studies rather than restricting the policy brief to systematic review evidence alone. This was done for the following reasons.

- Relatively few studies have rigorously assessed the impact of measures to change the vertical or horizontal orientation of a health programme, and only one published systematic review has synthesized this evidence, focusing solely on integrated programmes in low- and middle-income countries and with a narrower remit than our study.
- Although randomized controlled trials or systematic reviews of these randomized controlled trials may be the gold standard for assessing the impact of interventions, the nature of the intervention (how vertical and horizontal programmes are organized) is very heterogeneous, and this is useful to describe.

- Many questions policy-makers have concern the process and political economy of reforms – issues that are highly context specific and that systematic reviews or impact studies typically do not address well.

In addition to strict systematic reviews, we therefore consider uncontrolled before-and-after studies, natural experiments, economic evaluations, qualitative case studies and other relevant research that can provide valuable information on the advantages and disadvantages of vertical and horizontal programmes.

Arguments for vertical programmes

Greater service specialization and concentration

The most important rationale for vertical programmes is driven by the assumption that concentrating on a few well-focused interventions is an effective way of maximizing the impact and time response of the available resources. Waiting for changes in the health system to occur so that the delivery of better services would be viable (such as staff training and efficient supply systems) would simply be unacceptable for some. From this perspective, a call for systemic or multifactor approaches would introduce unnecessary delays in obtaining the desired results.

Increased profile for a high-priority disease or service

The support galvanized by the United Nations Children's Fund (UNICEF) and other partners around universal childhood immunization in the 1980s and 1990s has been replicated more recently for HIV, tuberculosis and malaria – leading to the establishment of the Global Fund as well as disease-specific initiatives such as Roll Back Malaria – and for neglected diseases such as schistosomiasis.

Better accountability

By making clear who is responsible for delivering what and what budget is available, vertical programmes promote a more transparent environment for accountability. More transparent governance arrangements and clearer lines of accountability suit bilateral and international agencies, which are publicly accountable.

More rapid results in weak health systems

Vertical programmes are likely to lead to more rapid results than strategies that attempt to strengthen broader systems as a platform for service delivery, especially in weak health systems. Although effective public health interventions must be underpinned by strong health systems and especially stronger primary health care if they are to be sustained in the medium and long term, time-limited programmes with focused efforts that avoid negative spillover effects can be beneficial.

Better chance of success in weak states

In weak states or states in conflict where health systems are already disintegrated, vertical programmes might be the only means of ensuring the delivery of at least selected priority services.

Arguments against vertical programmes

Value driven

Vertical programmes have been criticized for being value driven *(19)*, lacking an empirical foundation *(20)* and excessively focusing on efficiency gains *(21)*. Many vertical programmes are externally driven and top-down in their approach, leading to inadequate engagement of local populations in planning or implementation. Hence, they can distort priorities and undermine local ownership and the responsiveness of local health services to the needs of service users.

Negative spillover effects

Many critics have argued that vertical programmes create negative spillover effects for the non-participant or non-targeted population. In particular, vertical programmes are criticized as they lead to service fragmentation, create barriers to access, cause waste and inefficiency, promote clinical, social and cultural iatrogenesis *(22)* and crowd out prevention and access to general services for the majority of the population *(23)*. Note that such discussions centre around negative spillovers for the health system and non-participants rather than the net effect on the health system and the population as a whole.

Reduced chance of sustainability

It is argued that vertical programmes waste resources as they encourage duplication and inefficiency and may overburden staff, such as through multiple reporting channels. By creating unjustifiable differences of pay and status – that lead to employee dissatisfaction – and consuming scarce resources that could be used elsewhere, they reduce health system effectiveness while reducing the chances of being sustainable once the additional resources from external donors cease *(24)*.

Groups opposing health system reform

Vertical programmes can create vested interest groups that may obstruct later reforms designed to integrate services, which are unlikely to serve the personal interests of stakeholders in the vertical programme.

Discouraging comprehensive approaches

Vertical programmes hinder the development of comprehensive approaches needed to tackle social inequity and the wider determinants of health *(25)* – thereby negatively affecting the health development process *(26)*.

Responsive to diseases and not to the users of services

By their nature, vertical programmes are robust if the conditions they are designed to address have a single specific cause and less likely to be effective in responding to conditions that have multiple causes or comorbidity, such as cardiovascular diseases, cancer, tuberculosis, HIV and disability. This is a major shortcoming, as the disease focus undermines responsiveness to the needs of service users and continuity of care – as people with multiple conditions or risk factors (such as a person living with HIV who is an injecting drug user, has tuberculosis and is engaged in sex work) cannot get a full range of services in one place or at one time. For example, in many countries in the eastern part of the European Region, providing effective treatment and preventive interventions might require a person to attend a tuberculosis institute, an HIV institute, a "narcology" institute and a sexually transmitted infections dispensary, which is a complex task. Thus, vertical programmes cannot achieve results without mobilizing other parts of the health system – a powerful reason to avoid verticality. Perhaps it is not surprising that the 13 countries with the highest rates of multidrug-resistant tuberculosis in the world are in the WHO European Region *(27)*.

Review of research findings

We identified four published reviews that explored the evidence on the effectiveness of horizontal and vertical programmes. Only one was a systematic review *(11)*, and the other reviews by Mills *(9)*, Unger et al. *(12)* and Oliviera-Cruz et al. *(17)* included studies using a wide range of research methods.

In their systematic review, Briggs and Garner *(11)* identified only five published studies of reasonable quality that met Cochrane criteria for inclusion and evaluated integrated care. These studies made three types of comparison: (1) integrating care by adding a service to an existing service (mothers attending a immunization clinic were encouraged to have family planning services); (2) integrated services versus single special services (making services for sexually transmitted infections available to sex workers in a "normal" (integrated) clinic, in an after-hours clinic or by a "special" (vertical) team, and providing family planning services at a maternal and child health centre or separately at another clinic); and (3) packages of enhanced child care services (IMCI) versus routine

child care. The authors concluded that no clear evidence in low- or middle-income countries suggested that integrating vertical programmes into primary health care improved service delivery or people's health status.

The review by Mills in 1983 *(9)* focused on Africa and analysed the evidence from an economic perspective. Although the review identified a lack of evidence and called for studies to provide more robust information on the costs and cost-effectiveness of these programmes, it concluded that certain characteristics of vertical programmes (such as set objectives, clear plans, well-defined operating procedures, targeted activities and dedicated monitoring and evaluation systems) enable them to achieve efficiency gains. Conversely, with integrated services, frequent shortage of resources (such as health workers, funding, equipment and drugs), inadequately trained staff and poor supervision hinder efficiency and effectiveness.

The study by Oliviera-Cruz et al. *(17)* explored the relative merits of vertical and horizontal delivery modes and reviewed the impact of vertical programmes on health systems. The authors cited evidence and arguments that horizontal programmes foster more holistic approaches to health – with health service planning that is better aligned with the local context – and encourage delivery of a range of services in accordance with national policies and local needs *(28)*. At the same time, the criticisms of horizontal programmes in undermining the efficiency and effectiveness of vertical programmes designed to rapidly achieve results are also highlighted.

Benefits of vertical programmes are attributed to the presence of clear objectives and plans *(9)* with short-time horizons – appropriate for focused efforts within a fixed time period to address a condition *(29)*. Based on articles included in the review of Oliviera-Cruz et al. *(17)*, vertical programmes are deemed to be particularly suitable when the service delivery capacity is low and when interventions are complex and differ from routine tasks *(18)*. The authors point to criticisms of vertical programmes in that they establish parallel delivery structures, deplete human resources from mainstream services, fail to strengthen health systems *(30)*, duplicate efforts and divert the attention of health workers from routine tasks *(31)*, do not promote community self-reliance *(32)* and create substantial risk of poor sustainability once donor funding ends *(33)*. The authors provide an overview of the positive and negative effects of vertical programmes at three levels: community and household, health services delivery and health sector policy and strategic management (Table 1) and conclude from the very limited evidence reviewed that "… on balance vertical programmes have strengthened health systems rather than undermined them".

Table 1. Impact of vertical programmes on health systems

Level	Positive impact	Negative impact
Community and household	Programme aimed at eradication of dracunculiasis (Guinea worm) led to community mobilization with a focus on disadvantaged groups and the establishment of a surveillance system *(34)* The Global Polio Eradication Initiative promoted social mobilization in the middle-income countries of Latin America *(35)* and India *(36)*, with increased confidence in health systems and a rise in demand	High dropout rate of volunteers, limited use of community for other health problems and inefficiency due to the use of single-community workers *(36)* Constrained interaction between the Expanded Programme on Immunization and Global Polio Eradication Initiative in Benin and Niger due to lack of social mobilization*(36)* Conflicts between local demand and immunization targets as well as high opportunity costs for communities and health services *(36)*
Health services delivery	Smallpox eradication programme was able to use existing workforce rather than establish a parallel structure *(35)* Geographic mapping and numbering households for regular visiting (from the malaria eradication programme), organizing and delivering effective immunization services establishing active surveillance systems, quality control within laboratory network (from the yaws eradication programme) *(35)* Distribution of vitamin A during national immunization days *(37)*	Inefficient use of health workers who make repeated visits to communities for a single purpose *(36)*
Health sector policy and strategic management	Strengthened managerial, surveillance and laboratory capacity and promoting leadership *(35)* Improved donor coordination *(36)*	Inefficient distribution of resources for routine Expanded Programme on Immunization services and other health services *(37)*

Source: Oliviera-Cruz, Kurowski & Mills *(17)*.

The authors note concerns that integrating vertical programmes into mainstream health services may reduce the chances of achieving programme objectives *(37)* but cite successful examples of integration with beneficial effects on health outcomes – for example, integration of schistosomiasis programmes into primary health care services in Saudi Arabia *(38)* and Brazil *(39)* with successful control of the epidemic and effective integration of a tuberculosis programme into the district health system in South Africa *(40)*.

The fourth review by Unger et al. *(12)* set out to answer the question of how disease control programmes should be implemented to strengthen health systems and to examine whether integrating disease control activities can jeopardize health care delivery. The authors develop a framework for categorizing disease control programmes, distinguishing between (1) vertical programmes with no integration at all, (2) integrated programmes with operational and administrative integration (with general health services) and (3) indirect programmes that are operationally integrated but administratively vertical, designed to avoid administrative and bureaucratic bottlenecks and favoured by donors. The authors analyse earlier studies exploring the adverse effects of integrated programmes on primary health care workers *(41–43)*, saying that these studies dealt with "indirect programmes" rather than integrated programmes with full operational and administrative integration. The authors recommend that, although a few vertical programmes (such as those aimed at hard-to-reach groups) should never be integrated, for others two conditions should be met before integration: (1) the programme should be integrated with general or family practice health care services and hence the system needs to have existing capacity to provide such services and (2) operational and administrative integration should occur concurrently. They propose a code of best practice for disease control activities suggesting that: (1) in general they should be integrated in health centres that offer patient-centred services (except in certain specific, well-defined situations); (2) they should be integrated into not-for-profit (rather than for-profit) government or nongovernmental organization health facilities; (3) they should be well planned in advance and consider how they will interact and integrate with existing services; and (4) they should be designed and operated to strengthen health systems *(12)*.

Integration in three programme areas: some findings

Communicable diseases

In the Russian Federation, several case studies that have used multiple approaches show that the persistence of vertical programmes for tuberculosis *(44)* and substance abuse *(45)* has been destructive. More broadly across

several countries in the Commonwealth of Independent States, the persistence of vertical programmes for communicable diseases appears to have increased the fragmentation of health systems, making coordinating care particularly difficult and providing no compensating benefits to communicable disease control (46). Given the adverse impact of these vertical programmes in countries in the eastern part of the WHO European Region, it is not surprising that they now face the most rapidly growing HIV and multidrug-resistant tuberculosis epidemics in the world *(47,48)*.

Integrated programmes have an important role to play in relation to communicable disease epidemics, where multiple and interacting factors are simultaneously at play and influence how these epidemics evolve. Comprehensive approaches that encourage holistic and multisectoral emphasis are thus more likely to succeed than vertical programmes *(49,50)*. Evidence suggests that integrated programmes have benefited the management of neglected tropical diseases. For example, integrating schistosomiasis control activities into primary care has led to improved outcomes *(39,51)*.

Similar benefits are realized when services for sexually transmitted infections are integrated into primary care. For example, including sexually transmitted infections treatment in primary health care in the United Republic of Tanzania led to a 40% reduction in HIV incidence and a cost-effective *(52)* intervention that was critical to demonstrating strong links between sexually transmitted infections and HIV transmission *(53)*. Integrating education, diagnostic and treatment services for sexually transmitted infections into primary health care (compared with dedicated sexually transmitted infection clinics) also led to a significant reduction in the prevalence of sexually transmitted infections in those attending primary health care, with a reduction in HIV-1 incidence *(54)*. In the United States of America, increased awareness of different modes of sexual transmission of HIV among adolescents receiving services in a primary health care setting led to greater likelihood of condom use during sexual intercourse, unlike the adolescents in the control group, who had lower condom use and a higher incidence of sexually transmitted infections *(55)*. Similarly, integrated counselling for sexually transmitted infections and HIV in high-income primary health care settings as compared with routine primary health care led to significant differences in risk perception in the groups attending integrated services, although outcomes did not differ *(56)*. However, the benefits of integration are not universal. In several countries, integration has led to reduced efficiency compared with the vertical services for sexually transmitted infections *(57)* and overtreatment *(58)*. Despite favourable evidence, in many countries scaling up integrated sexual and reproductive health, HIV and AIDS services face formidable political, financial and service barriers *(59)* and constraints due to weak health systems and lack of resources *(60)*.

Mental health

Integrating mental health services into primary health care has been strongly recommended in high-income countries because mental health accounts for 40% of primary care consultations, and physical health and mental health needs (which frequently coexist) can therefore be simultaneously addressed with long-term follow-up and support *(61)*.

The available evidence from high-income countries indicates the benefits of integration, with significantly greater utilization of services, fewer emergency department visits and improved physical health *(62)*. These findings apply to several different mental disorders. For example, integrating the treatment of depression into primary health care improves acute and long-term outcomes *(63–68)* and is cost-effective *(69)*. Similarly, for panic disorders, incorporating services into primary health care compared with standard primary health care without integration leads to more anxiety-free days and no significant differences in total costs *(70)*. Integrating services for Alzheimer's disease into primary health care shows no significant impact on depression scores but leads to less caregiver stress and fewer cumulative physician or nurse visits *(71)*.

In most countries in the eastern part of the WHO European Region, mental health services are vertically organized, with the health system creating barriers to effective care delivery *(72)*. However, integrating mental health services with general health services and social care improves the management of people with mental disorders, with reduced need for inpatient hospital beds *(73)*.

However, not all studies confirm the benefits of integration for mental health services. For example, in the United States, enhanced specialty services compared with integrated care for depression led to significantly higher declines in the severity of depression than the integrated model *(74)*.

Expanded Programme on Immunization

WHO launched the Expanded Programme on Immunization in 1974 to reduce vaccine-preventable mortality and morbidity. Until then, external donors delivered most immunization programmes in low- and medium-income countries as vertical programmes (such as the Global Polio Eradication Initiative, mass immunization campaigns and pulse polio immunization campaigns), with less than 5% of children immunized globally during their first year of life against six target diseases: diphtheria, tetanus, pertussis (whooping cough), poliomyelitis, measles and tuberculosis *(75)*. Although the Expanded Programme on Immunization has many characteristics of vertical programmes, it is less vertical than the Global Polio Eradication Initiative, mass immunization campaigns and pulse polio immunization campaigns *(17,18)*, and it has been integrated into primary health care services in many countries. The global

Expanded Programme on Immunization approach has succeeded in achieving an annual coverage of 500 million immunization contacts with children, with associated reduction in the incidence of vaccine-preventable diseases and near eradication of poliomyelitis *(76)* and a significant decline in notifications and deaths related to the diseases covered by the Programme reported in the WHO Region of the Americas *(77)*, Abu Dhabi *(78)*, Indonesia *(79)*, The former Yugoslav Republic of Macedonia *(80)*, Nigeria *(81,82)* and Sierra Leone *(83)*.

Studies that have analysed the Global Polio Eradication Initiative to assess its impact on wider health systems identified positive benefits, such as capacity building through training of staff, investment in infrastructure and capital-intensive equipment, improved relations with the community, increasing confidence of the population in health care services, social mobilization and intersectoral collaboration *(1,84–89)*.

Lessons and policy implications

The lack of studies comparing horizontal and vertical approaches is surprising. The evidence base clearly demonstrating the advantage of one approach over the other is thus limited and is further complicated by the wide variation in the terms used in defining vertical or integrated programmes. Given the limited evidence base, generalizing that one approach is distinctly better than the other would be imprudent. Instead, a pragmatic stance needs to be adopted when considering which approach is suitable for a particular context. This section discusses key considerations when the suitability of a particular approach is considered or in shifting from a vertical to a horizontal approach.

When do vertical programmes have a place in health systems?

Although integrated services are preferable in general, vertical programmes may make sense in several specific circumstances. Many of these circumstances were presented earlier and are discussed further below in light of the limited evidence available.

Production of services

Management theory and current health care practice suggest that, for certain services that exhibit low variability in the content of the service package or the characteristics of service users, achieving learning-curve gains from concentrating the provision of services in dedicated provider units should be possible. Examples of these in both low- and middle-income countries and high-income countries include elective surgery for high-volume procedures such as cataracts and hernias. In others, economies of scale may be achieved, such as in mental health and stroke rehabilitation services.

As the cost and production functions vary in each country, locally generated evidence is needed to reach clear conclusions about the appropriate form of service delivery. Further, economies of scale are only likely to occur once a certain level of production is reached. This will vary according to the demand patterns, throughput, case mix and the supply-side characteristics of the production unit. Further, experience in many high-income countries shows that certain specialties or interventions can be concentrated within integrated organizational structures without resorting to vertical programmes. Hence, the experience from one setting may not be readily transferable to another.

Rapid response

In some instances, rapid response may be desirable to cope with public health emergencies, such as heat-waves, floods, meningitis in congregate settings or avian influenza. In practice, this may call for a verticalized approach that mobilizes dedicated resources from the mainstream health system and other emergency services. In such cases, the vertically oriented response should exist for as long as the emergency persists, but clear plans should be made for how to reintegrate services back into the regular health system.

Services for which health systems do not function

Vertical approaches are likely to be more appropriate if a service is urgently needed but systems are simply too weak and routinely used resources too limited to be able to provide it through the regular channels. However, if such vertical approaches are allowed to proliferate, they are likely to result in a patchwork of uncoordinated services. Simultaneous and concerted strengthening of the health system needs to occur to avoid such a situation.

Demand factors

For some programmes, the target client group may not be readily accessible to the health system providers. This may be due to several reasons: they are not frequent users of general health services; they face access barriers due to sociocultural factors (such as stigma) that lead to avoidance behaviour or geographical barriers (in difficult-to-reach areas with limited transport); there is a fear of legal action (such as among injecting drug users or sex workers); or inability to pay for services (as is the case for many poor people in low- and middle-income countries). For these groups, targeted interventions (on a continual basis or as intermitted campaigns) are more appropriate to achieve rapid coverage.

Competencies of human resources

The availability of human resources, their competencies and their ways of working influence the design of health services. Delivering complex and

integrated health services within primary care or community settings (such as for mental health) may not be feasible given the resource constraints, even though the evidence indicates one benefit of such approaches. Further, health personnel who have worked in specialized environments typically find difficulty in returning to more integrated environments, thus creating groups strongly resistant to integration.

Making changes in vertical and horizontal programmes

In determining whether and how to shift towards more integrated approaches, policy-makers could consider six key questions as an aid to decision-making (the first three are drawn from Criel et al. *(90)*).

- Is the integration desirable (will it add value)?
- Is the integration possible (for example, given the skills of the human resources and infrastructure)?
- Is the integration opportune (to strengthen the health system)?
- Is there a clear plan for how the integrated services will be managed?
- Is there a clearly defined process for integration that describes the phasing and sequencing? How will political opposition be managed?
- Are monitoring and evaluation processes in place that will alert decision-makers if problems arise?

Any answers to these questions necessarily depend on the context. In particular, the political economy and technical factors related to health system organization and funding will influence the extent to which integration can be achieved and must be carefully considered. These are discussed in turn.

Political economy

Although there are good reasons why vertical programmes make sense under certain specific conditions, some of the most difficult issues policy-makers face with vertical programmes concern political economy.

In some contexts, an external shock (such as civil war, economic crisis, change in political orientation and new laws) or a desire to make a clean break with the past creates an opportunity to modify organizational structures and service delivery mechanisms towards more integrated approaches. In other contexts, various groups with vested interests have resisted this. For example, the political economy of the vertical versus horizontal debate in the WHO European Region – and especially in the eastern part of the Region, where vertical programmes persist – has been complex and shaped by the relationship between donor countries and recipient countries (with donors driving the verticality). The legacy

of vertical programmes represents a further complexity. In many of these countries, powerful vested interests have created great difficulty in achieving any meaningful reform of health system organization, funding and delivery. This applies especially to tuberculosis, HIV and injecting drug use (91), with strong resistance to horizontal programmes, which are regarded as "foreign", "naïve, idealistic and unachievable" *(92,93)*. Here any modifications to service delivery would need to be accompanied by changes in health system governance arrangements, organization and funding along with regulatory and legal reforms, and this creates barriers to change.

Health system factors

As the funding and organizational arrangements of a health system are built up incrementally over time, they substantially influence the extent to which that system is conducive to developing an integrated delivery system.

In many health systems, programmes for public health interventions, communicable diseases and mental health have traditionally been organized as vertical services, with parallel organizational structures that report directly to the health ministry and often with ring-fenced funding streams that offer no flexibility to shift funds between programmes. In Europe, this is particularly true in countries in the eastern part of the Region that have parallel programmes for "diseases of social importance": tuberculosis, HIV, substance abuse, sexually transmitted illness, diabetes and mental health. In these countries, even when health professionals or local policy-makers are willing to and state that they aim to achieve operational integration with mainstream health delivery systems, organizational structures and funding mechanisms act as barriers *(94)*. This also applies to some Latin American countries that have organized services around diseases or age groups *(95)*.

For low- and middle-income countries, reliance on external funding for health systems may be the most critical factor in determining the extent to which services are organized vertically. External funding from multilateral and bilateral donor agencies and increasingly from philanthropic organizations is often provided for specific diseases or services. Examples are the Global Fund with HIV, tuberculosis and malaria; UNICEF with IMCI; the GAVI Alliance with immunization services; and the United Nations Population Fund (UNFPA) with reproductive health. Although these agencies also emphasize developing health systems, the governance and reporting structures for the disease- and service-specific programmes these agencies fund may encourage verticalization and hinder integration into mainstream health system and/or primary care level. Even in countries where external funding has been pooled via sector-wide approaches and "budget support", parallel vertical funding and reporting structures prevail. Although these constraints clearly make the integration of

services more difficult, policy-makers need to negotiate with funding agencies that are promoting vertically oriented programmes and ensure that any negative spillovers are minimized.

Policy considerations for implementing vertical programmes

As technical and political economy considerations vary in different contexts, so does how vertical programmes are integrated into mainstream health services. This, in turn, affects the policy options available.

The first policy consideration relates to the duration of the programme: whether the vertical programme will be time-limited or indefinite. Once this is agreed, several policy options exist for each case.

Time limited

Ideally, vertical programmes should be time-limited with clearly laid-out strategies to avoid negative spillover effects for the health system and promote integration into mainstream health services later. These strategies should also articulate how the vertical programmes can be used to strengthen health systems, especially particular primary care.

With this option, policy considerations should focus on developing mechanisms to mitigate the risk of negative spillover effects on the health system, especially to prevent vertical programmes from:

- depleting human resources from mainstream health services;
- diverting scarce managerial and clinical staff time to managing the programme;
- overburdening procurement and supply-chain management systems;
- fragmenting health system monitoring and evaluation systems by creating duplicate structures;
- creating salary inflation and differential pay and incentive structures that adversely affect the motivation of staff in the mainstream health system;
- reducing regular funding and reducing the chance of sustainability once the programme ends; and
- undermining trust between providers and the users and stifling community-driven initiatives by imposing externally conceived top-down solutions.

Indefinite time horizon

In many contexts, due to the fragility of the state, the limited capacity of the health system and weakness of primary care, integration may not be feasible

and vertical programmes will have an indefinite life. Where this is the case, links between vertical programmes and the mainstream health system can be enhanced at both the strategic and operational levels in several ways.

Linkage at the strategic level can be improved through shared governance arrangements with strong stewardship over the intersection between vertical and horizontal programmes; by establishing mechanisms that allow joint planning, procurement, monitoring and evaluation with the mainstream health system; and through mechanisms such as sector-wide approaches that allow pooling of funding and joint management of the funds.

Operational linkage can be improved by ensuring that vertical programmes are not delivered through separate delivery structures but via mainstream service provider units (to create an opportunity for service users to simultaneously access general services if needed); by establishing clear mechanisms for regular dialogue between vertical and horizontal programme managers; and by jointly developing shared care guidelines that emphasize user focus and allow the timely movement of clients between vertical programmes and general health services.

Conclusions

The limited evidence suggests that both vertical and horizontal programmes can be beneficial in different contexts. Although vertical programmes have hindered effective responses to malaria, tuberculosis and HIV epidemics in several settings, in others horizontal programmes have yielded demonstrable benefits for several conditions, such as vaccine-preventable diseases, HIV, mental health and schistosomiasis. However, given the limited evidence, generalizing that one approach is superior to the other would not be prudent.

Both approaches have strengths and weaknesses, which vary depending on the condition(s) addressed and the particular context. The condition addressed, target group, health system capability, production specificities and contextual factors all need to be taken into account when deciding which approach may be suitable as well as the urgency of making services available. The benefits of vertical programmes are that they focus on the population need for a particular disease, use specialist staff (who generally manage just one condition), have dedicated resources and operate in a project mode with clear objectives to be achieved in defined (and often short) time scales. Consequently, it is suggested that they tend to be more efficient than horizontal approaches in achieving objectives. In contrast, horizontal approaches focus on the individual, use generalist personnel who deal with multiple symptoms and conditions, respond to user needs as well as demand and are more holistic in scope, often with inter- and intrasectoral links. Unfortunately, however, the benefits of each approach are most likely to be realized if their inherent weaknesses are

addressed and if there is careful alignment with the context and the health system.

Further, there is no reason why vertical and horizontal approaches should not coexist. A vertical programme may be used as an interim strategy to efficiently deal with the problem in question but with explicit efforts to strengthen the health system and eventually achieve integration as and when feasible. Such an approach would ensure that, in the short term, programme objectives and efficiency are not compromised while the scale of operations is gradually expanded through a strengthened health system, the capacity of which is augmented to cope with other needs.

In the short term, the limited evidence base, highly varied contexts and differences in health system capacity call for pragmatism rather than approaches driven by values or dogma. However, as this policy brief illustrates, what is also needed is a robust evidence base that can inform decisions to ensure appropriate policies to address burgeoning health challenges in an efficient and effective manner.

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