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According to WHO’s definition, a health system comprises all organizations, institutions and resources devoted to producing actions whose primary intent is to improve health. Most national health systems include public, private, traditional and informal sectors. The four essential functions of a health system have been defined as service provision, resource generation, financing and stewardship.¹

There is an absolute need for functioning health systems in order to ensure fulfilment of the health-related MDGs. Strengthening health systems poses a challenge anywhere, and in the African Region we have particular characteristics and national situations which require special applications.

If a health system is to succeed in delivering health services to people it needs the following key resources:

1. Political leadership that defines the social goals of the system: this involves ensuring strategic policy frameworks exist and are combined with effective oversight, coalition-building, regulation, attention to system-design and accountability.
2. A range of interventions for health promotion, prevention, and rehabilitation as well as for treatment. Good health services are those which deliver effective, safe, quality personal and non-personal health interventions to those that need them, when and where needed, with minimum waste of resources.
3. The right number and mix of health workers with the appropriate skills. A well-performing health workforce is one that works in ways that are responsive, fair and efficient to achieve the best health outcomes possible, given available resources and circumstances.
4. The required medicines, technologies, and facilities. A well-functioning health system ensures equitable access to essential medical products, vaccines and technologies of assured quality, safety, efficacy and cost-effectiveness, and their scientifically sound and cost-effective use.
5. Timely and reliable information, research evidence and capabilities in knowledge management. The acquisition, generation, sharing and use of information, research evidence and knowledge is critical so that the system can be adapted to changing circumstances, improve and develop.
6. Robust and equitable mechanisms and institutions for long-term financing. A good health financing system raises adequate funds for health, in ways that ensure people can use needed services, and are protected from financial catastrophe or impoverishment associated with having to pay for them. It provides incentives for providers and users to be efficient.

These key resources are interdependent. Weakness of any one not only constrains the functioning of the system as a whole; it also limits the potential for scaling up the delivery of interventions so that they reach all who need them. Limiting factors include shortage of skilled health workers, poor governance or inefficient mechanisms for medicine purchase and distribution.

The Ouagadougou Declaration proposed by ministers of health on primary health care and health systems and the Framework for its implementation described by Barry et al in this issue of The Monitor represent an important step and opportunity to strengthen health systems in the African Region. The Ouagadougou Declaration focuses on nine major priority areas. The paper describes a framework developed to embrace each of these priority areas, together with recommendations for consideration by Member States in the development of their own country frameworks.

Also in this issue of The Monitor, Lusamba et al provide a background to the Algiers Declaration on Research for Health by describing the evolution of global and regional efforts to strengthen health research systems. The paper also describes the significance of the Declaration and the Framework for its implementation. A related article by Kebede et al focuses on the various knowledge gaps that are particularly important for the African Region as well as constraints to narrowing the gap. It presents a number of keys actions that countries can institute to narrow the knowledge gap as described in the Framework for Algiers Declaration.

The human workforce is another building block in the effort to improve health systems in the African Region. And Awases et al give an update of the situation.

The paper by Kirigia et al reviews research into the technical efficiency of zone hospitals in Benin. And concludes that there is some scope for providing outpatient curative and preventive care and inpatient care to extra patients without additional investment. This would entail leveraging of health promotion approaches and lowering of financial barriers to access to boost the consumption of underutilized health services, especially health promotion and disease prevention services.

Taking a look at another specific case, this time in Brazzaville, Trapsida et al examine the issue of providing access to the city’s populations to a range of artemisinin-based therapies.

Public health laboratories need to be strengthened in order to improve health systems, and Ndihokubwayo et al propose a range of actions for building national laboratory capacity.

This issue is rounded out by this quarter’s Communicable Disease and Epidemiological Report.

Luis Gomes Sambo
Regional Director
The Algiers Declaration on Narrowing the Knowledge Gap to Improve Africa’s Health was adopted during a Conference held in Algiers, Algeria, in June 2008. The Conference, which brought Ministers from the African Region together with researchers, nongovernmental organizations, donors, and the private sector, renewed commitments to narrow the knowledge gap in order to improve health development and health equity in the Region. This paper describes the background to the Algiers Declaration and the Framework for its implementation and their significance in assisting countries’ efforts to strengthen health systems in the Region.
strategic directions for scaling up essential health interventions to achieve health-related Millennium Development Goals (MDGs) using the PHC approach for strengthening health systems.

The two conferences recommended that WHO develop a Framework for the Implementation of the Ouagadougou Declaration on Primary Health Care and Health Systems in Africa and a Framework for the Implementation of the Algiers Declaration in the African Region to Strengthen Research for Health. After a broad consultation involving regional and global stakeholders, these frameworks were drafted by WHO-AFRO. Subsequently, The Fifty-ninth session of the Regional Committee for Africa (bringing together ministers of health from all 46 countries of the Region), held in Kigali, Rwanda, approved both Frameworks.

BACKGROUND TO ALGIERS

Much of the current focus on promoting health research to solve the health problems of developing countries has its roots in a landmark report to the Nobel Conference in Sweden in 1990. The Commission on Health Research for Development explained that only 5% of global health research investment was being directed to conditions accounting for 95% of global disease.

By 1993, the Council on Health Research for Development had been formed, followed by the Global Forum for Health Research in 1996. In 2000, both organizations joined with WHO and the World Bank to stage a landmark conference bringing together over 800 people from more than 100 countries in Bangkok, Thailand. The participants reviewed the national, regional, and global state of health research, and resolved to strengthen national health research systems.

Four years later, in Mexico, a ministerial summit on health research issued a statement for countries to develop national health research policies and to increase investment in health research. This statement was considered and endorsed at the 58th World Health Assembly in May 2005, and the critical role of high-quality research in the achievement of health-related development goals was acknowledged.

Several major summits have been held by African leaders, with support from global partners, to advocate for more investment in equitable, secure, and sustainable health systems. An informal session of the 55th Regional Committee for Africa, meeting in Maputo, Mozambique, in 2005, resulted in a call for long-term collaborative efforts for health research. Ministers of health urged that these efforts should be owned and spearheaded by countries facing the highest disease burden.

At high-level meetings in Abuja, Nigeria, and Accra,
Ghana, in 2006, ministers of health agreed that an African perspective on health research for achieving sustainable health development was needed, with a particular focus on achieving the MDGs and the control of neglected tropical diseases. The Abuja meeting was the first time that African ministers of health made a commitment to support health research, accelerate efforts to develop and implement appropriate health research policies at national and regional levels, and foster collaboration and leadership in promoting essential national health research in Africa. The Accra meeting enabled delegates from Africa, Asia, and Latin America to declare a greater commitment to health research with respect to their countries’ development, and discussed existing gaps in health research necessary for improving public health and for achieving the MDGs. Participants at both meetings discussed the critical issues that limit the translation of research into health policy and systems development, and identified strategies for the use of health research for disease control and the improvement of public health in countries with the highest disease burden.

At its 54th session (2004) the WHO Regional Committee for Africa adopted a strategy on health information systems\(^1\). Later, at its 56th session (in August 2006), the Regional Committee selected Bamako, Mali, to host the 2008 Global Ministerial Conference on Research for Health (the first time that this conference was held in Africa). At the global level, an international group was set up by WHO headquarters to prepare for the conference. The Regional Committee also adopted a health research agenda\(^2\) and strategic orientations for knowledge management\(^3\) in the African Region. Both envisage the establishment of national mechanisms for comprehensive baseline assessments and preparation of strategic directions to be integrated with national health policies and plans.

The Ministerial Conference on Research for Health in the African Region was held in Algiers, the Republic of Algeria, from 23 to 26 June 2008, and brought ministers from the African Region together with researchers, NGOs, donors, and the private sector, in order to strengthen commitments and to agree on a common declaration for submission to the 2008 Global Ministerial Forum on Research for Health in Bamako, Mali. The Algiers Declaration was adopted by the ministers of health and heads of delegations who were present in Algiers. The Declaration was subsequently endorsed by all 46 health ministers of the African Region during the 58th Session of the WHO Regional Committee held in Yaoundé, Cameroon, 1 to 5 September, 2008.

Other WHO Regions held conferences similar to the Algiers conference, and each of them drew up declarations and key points for action suitable for their respective Regions. These declarations and findings fed into the Bamako Global Ministerial Forum, which was held from 17 to 20 November 2009, which took note of them in the framing of the Bamako Call to Action. The Bamako Call to Action is consistent with the Algiers Declaration, and as such endorses its implementation.

These high-level meetings of ministers of health from Africa highlight the collective desire to address health development challenges, as well as to improve the relevance and application of knowledge for health development in Africa.

A Framework for the implementation of the Algiers Declaration that was drafted by WHO was extensively discussed on a regional multi-disciplinary consultation held in Brazzaville (April 2009). The Framework was subsequently endorsed by the 59th Session of the WHO Regional Committee for Africa held in Kigali, Rwanda (September 2009).
THE ALGIERS DECLARATION AND THE FRAMEWORK FOR ITS IMPLEMENTATION

The Framework requests Member States to establish a broad multidisciplinary national working group to initiate the implementation of the Ouagadougou Declaration and the Algiers Declaration as well as establishing and strengthening a unit within ministries of health to coordinate efforts in this area (as detailed in the paper in this issue).

Ministries of health are expected to lead this process. However, other sectors, including other sector ministries such as education, science and technology, agriculture; as well as private sector (both profit and non-profit) are important partners in the process.

International partners should support country efforts by ensuring that external resources are increased, predictable, coordinated, and are aligned to country priorities and plans. Countries should make an extra effort to ensure that their plans at coordinating their knowledge processes at creation, acquisition, sharing and use should not be undermined by external pressures.

It is expected that the Framework will substantially help countries to accelerate the implementation of the recommendations for narrowing the knowledge gap. Countries need to adapt and use the framework to implement the Algiers Declaration in order to strengthen their health systems. Narrowing the knowledge gap through generation of new knowledge, and effective and efficient application of existing knowledge, will contribute to improving health outcomes in the Region.

If countries implement the series of steps in the Algiers Framework they would pave the way for strengthening their health systems. This can be achieved by developing the content, process and use of technology aimed at improving:

- the availability of relevant and timely health information;
- management of health information through better analysis and interpretation of data;
- the availability of relevant, ethical and timely research evidence;
- the use of evidence by policy-makers and decision-makers;
- improving dissemination and sharing of information, evidence and knowledge;
- access to global health information; and
- the use of information and communication technologies.

ACKNOWLEDGEMENTS

We gratefully acknowledge the contributions of all those who have actively participated in, and assisted, the preparations and conduct of the Algiers Ministerial Conference and the follow up regional consultation in Brazzaville that discussed the Framework for its implementation.

REFERENCES

1 World Health Organization, Regional Office for Africa. Priority interventions for strengthening national health information systems; WHO Regional Committee for Africa, Fifty-fourth session, June 2004.
The Ouagadougou Declaration on Primary Health Care and Health Systems in Africa focuses on nine major priority areas: 1) leadership and governance for health, 2) health services delivery, 3) human resources for health, 4) health financing, 5) health information systems, 6) health technologies, 7) community ownership and participation, 8) partnerships for health development, and 9) research for health. This paper describes a framework constructed for implementing the necessary activities in each of these priority areas, and proposes recommendations for consideration by Member States in the development of their own country frameworks. The framework for implementing activities related to health information and research for health which have been taken into account in the Algiers Framework are discussed separately elsewhere in this issue.
The objective of the Conference was to review past experiences on Primary Health Care (PHC) and redefine strategic directions for scaling up essential health interventions to achieve health-related Millennium Development Goals (MDGs) using the PHC approach for strengthening health systems through renewed commitment of all countries in the African Region.

The Conference recommended that WHO develop a framework for the implementation of its Declaration, and this framework is described here.

BACKGROUND

There is a global movement to renew PHC, a call that has been echoed at international, regional and national conferences, including WHO Regional Committee meetings. The most recent call was by WHO’s Executive Board.

The calls for a renewal of PHC reaffirm the commitment of Member States to the values of equity, solidarity and social justice, and the principles of multisectoral action, community participation and unconditional enjoyment of health as a human right by all. The calls represent the ambition to deal effectively with current and future challenges to health, mobilizing health professionals and lay people, government institutions and civil society around an agenda of transformation of health-system inequalities, service delivery organization, public policies and health development.

The Ouagadougou Conference was thus a part of this global movement, marking 30 years since the adoption of the Alma-Ata Declaration in 1978. The conference was organized in collaboration with the Government of Burkina Faso, UNICEF, UNFPA, UNAIDS, African Development Bank and the World Bank. Over 600 participants attended from the 46 Member States of the WHO African Region and from other continents.

In order to facilitate concrete actions, Member States requested the development of a generic framework for implementing the Ouagadougou Declaration. This Implementation Framework seeks to meet this request while recognizing that countries have different capacities for implementing the Declaration. In this context, the recommendations herein are generic and are to be adopted and adapted depending on country-specific situations.

GUIDING PRINCIPLES

The following guiding principles were consolidated from the Alma-Ata Declaration on Primary Health Care and other relevant policy documents and declarations, some of which are cited in the Ouagadougou Declaration:

1. **Country ownership**: Exercising committed leadership in the development and implementation of national development strategies through broad consultative processes.

2. **Adequate resource allocation and reallocation**: Allocating and reallocating adequate resources and using them efficiently to provide integrated essential health services with the aim of achieving universal access to high impact interventions.
Intersectoral collaboration: Recognizing the need to institutionalize coordinated intersectoral action in order to improve health determinants.3,6

Decentralization: Redistributing authority, responsibility and financial and other resources for providing public health services among different levels of the health system.7

Equity and sustainable universal access: Ensuring equal access to essential health services through proper planning, resources allocation and implementation processes that improve health services utilization by poor and vulnerable groups, taking into account gender.8

Aid harmonization and alignment: Ensuring that donors provide untied, predictable and coordinated aid that is aligned to national health development priorities and using country procurement and public financial management systems.

Mutual accountability for results: Ensuring that government and partners have transparent frameworks for assessing and monitoring progress in national health development strategies, health sector programmes and agreed commitments on aid effectiveness.

Solidarity: Ensuring that financial contributions made by all contributors (workers, the self-employed, enterprises and government) to the health system are pooled and that health services are provided only to those who need them.9

Ethical decision-making informed by evidence: Ensuring that the PHC approach is based on the best available scientific evidence and monitored and evaluated to continuously assess population health impact.

Leadership and governance for health
Governance for health is a function of government that requires vision, influence and knowledge management, primarily by the Ministry of Health which must oversee and guide the development and implementation of the nation’s health-related activities on the
government’s behalf. Governance includes the formulation of the national health policy and health strategic plans (including defining a vision and direction) that address governance for health and health equity; exerting influence through regulation and advocacy; collecting and using information; and accountability for equitable health outcomes.  

Provision of oversight through collaboration and coordination mechanisms across sectors within and outside government, including the civil society, is essential to influencing action on key health determinants and access to health services, while ensuring accountability. Improving leadership at national and sub-national levels and building capacity will facilitate effective engagement with the private sector to ensure universal coverage.

The Ouagadougou Declaration calls on Member States to update their national health policies and plans according to the Primary Health Care approach, with a view to strengthening health systems in order to achieve the Millennium Development Goals, specifically those related to communicable and noncommunicable diseases, including HIV/AIDS, tuberculosis and malaria; child health; maternal health; trauma; and the emerging burden of chronic diseases.

In relation to leadership and governance, countries are encouraged to consider the following recommendations for implementing the Ouagadougou Declaration:

(a) Implement key recommendations of the WHO Commission on Social Determinants of Health relating to health governance and health equity.  
(b) Develop and adopt a comprehensive national health policy (NHP) that is integrated into the country’s overall development strategy through a broad-based, country driven, inclusive and participatory decision-making process.  
(c) Develop and implement a comprehensive and costed national health strategic plan (NHSP) that is consistent with the NHP, taking into account multiple sources of funding within a realistic resource package.  
(d) Develop and implement subsequent operational plans at the local (district) level of health systems, as planned for in the NHSP.  
(e) Ensure the functionality of the Ministry of Health’s organizational structures to facilitate the implementation of the NHP and NHSP.  
(f) Update and enforce public health laws in line with the NHP to facilitate the implementation of the
Ouagadougou Declaration and other health-related strategies, and

Reinforce the oversight of health development across sectors in consultation with civil society, professional organizations, and other stakeholders; and ensure transparency and accountability through regular audits.

HEALTH SERVICE DELIVERY

The ultimate goal of the health system is to improve people’s health by providing comprehensive, integrated, equitable, quality and responsive essential health services. A functional health system ensures the enjoyment of health as a right by those who need it, especially vulnerable populations, when and where they need it as well as the attainment of universal coverage.

Health services delivery needs to be organized and managed in a way that allows effective and affordable health interventions that are people-centred and reach their beneficiary populations regardless of their ethnicity, geographical location, level of education and economic status. It is important to emphasize that consistent community actions towards health promotion and disease prevention are the most efficient and sustainable ways of ensuring better and equitable health outcomes.

The following recommendations for improving the performance of health service delivery are proposed for countries’ consideration:

(a) Review essential health packages, taking into consideration high priority conditions and high impact interventions to achieve universal coverage.
(b) Develop integrated service delivery models at all levels, taking into account the referral system regardless of the organization and nature of the services (promotive, preventive, curative and rehabilitative) so as to improve the economic efficiency and equity of health services delivery.
(c) Design health systems that provide comprehensive and integrated health care, ensure patient safety and improve accessibility, affordability and equity in service utilization.
(d) Institutionalize health services at community level using appropriate mechanisms that are fully described in the NHP and NHSP.
(e) Develop mechanisms to involve all private health providers to ensure a continuum of care among all citizens, regardless of their economic status.
(f) Ensure the availability of appropriate, relevant and functional health infrastructure, and
(g) Design service delivery models utilizing the priority health interventions as an entry point and taking into account the need to ensure universal coverage.

HUMAN RESOURCES FOR HEALTH

Human resources for health (HRH), or the health workforce, refer to all persons primarily engaged in actions intended to enhance health. Health service providers are the core of every health system and are central to advancing health. Their numbers, quality and distribution correlate with positive outcomes of health service delivery. The objective of HRH management is therefore to ensure that the required health workforce is available and functional (effectively planned for, managed and utilized) to deliver effective health services.

In relation to human resources for health, the Ouagadougou Declaration calls for strengthening the capacity of training institutions, management, and staff motivation and retention in order to enhance the coverage and quality of care in countries. The following recommendations are proposed for Member States’ consideration:

(a) Develop comprehensive...
policies and plans for health workforce development within the context of national health policies and plans.

(b) Advocate for the creation of fiscal (budgetary) space for improved production, retention and performance of the health workforce, including negotiating for a percentage of development funding.

(c) Strengthen the capacity of training institutions to scale up their production of health managers, decision-makers and health workers, including a critical mass of multipurpose and mid-level health workers who can deliver promotive, preventive, curative and rehabilitative health care based on best available evidence.

(d) Improve systems for the management and stewardship of the health workforce to improve recruitment, utilization, task-shifting and performance, including at the community level.

(e) Develop and implement health workforce motivation and retention strategies, including management of migration through the development and implementation of bilateral and multilateral agreements to reverse and contain the health worker migration crisis.

(f) Generate and use evidence through strengthened human resource information subsystems, observatories and research to inform policy, planning and implementation, and.

(g) Foster partnerships and networks of stakeholders to harness the contribution of all in advancing the health workforce agenda.

HEALTH FINANCING
Health financing refers to the collection of funds from various sources (e.g. government, households, businesses and donors) and pooling them to pay for services from public and private health-care providers, thus sharing financial risks across larger population groups. The objectives of health financing are to make funding available, ensure rational selection and purchase of cost effective interventions, give appropriate financial incentives to providers, and ensure that all individuals have access to effective health services.

In relation to health financing, the following recommendations are proposed for consideration by Member States:

(a) Elaborate comprehensive health financing policies and plans consistent with the National Health Policy and National Health Strategic Plan. The health financing policy should be incorporated into national development frameworks such as PRSPs and MTEFs.

(b) Institutionalize national and district health accounts within health management information systems for better tracking of health expenditures.

(c) Increase the efficiency of the public and private health-care sectors through efficiency analysis, capacity strengthening, rational priority setting, needs-based resource allocation, and health system organizational and management reforms to curb wastage of resources, among others.17,18

(d) Fulfil the Heads of State pledge to allocate at least 15% of the national budget to health development, as well as adequate funds to the operational plans at the local level, which include the implementation of PHC and health promotion.

(e) Advocate with the Ministry of Finance and partners to target the US$ 34–40 per capita required to provide the essential package of health services.19

(f) Strengthen financial management skills, including competencies in budgeting, planning, accounting, auditing, monitoring and evaluation at district/local levels, and then implement financial decentralization in order to
promote transparency and accountability.

(g) Develop and implement social protection mechanisms, including social health insurance and tax-funded systems, to cushion households from catastrophic (impoverishing) out-of-pocket expenditures on health services.

(h) Improve coordination of the various financing mechanisms (including donor assistance) that reinforce efforts to implement national health policies and strategic plans, and

(i) Advocate with health development partners to fully implement the Paris Declaration on Aid Effectiveness and its Action Plan.

**HEALTH TECHNOLOGIES**

Health technologies includes the application of organized technologies and skills in the form of devices, medicines, vaccines, biological equipment, procedures and systems developed to solve a health problem and improve quality of life. E-health applications (including electronic medical records and tele-medicine applications) and traditional medicines are included within the scope of health technologies. Health technologies are essential when they are evidence-based, cost-effective and meet essential public health needs.

In relation to health technologies, the following recommendations are proposed for Member States’ consideration:

(a) Elaborate national policies and plans on health technologies within the context of overall national health policies and plans.

(b) Increase access to appropriate health technologies, including essential medicines, traditional medicines, vaccines, equipment, devices, e-health applications, procedures and systems.

(c) Carry out an inventory and take into account maintenance of medical equipment based on national equipment development and maintenance plans.

(d) Promote appropriate prescribing and dispensing practices, and educate consumers on safe and optimal use of medicines.

(e) Ensure enhanced availability and affordability of traditional medicine through measures designed to protect and preserve traditional medical knowledge and national resources for their sustainable use.

(f) Establish or strengthen national pharmacovigilance
systems for health technologies, including herbal medicines.

(g) Undertake appropriate studies with laboratory support for monitoring the emergence of antimicrobial drug resistance and for combating production, distribution and use of substandard and counterfeit medicines.

(h) Ensure availability and access to reliable and affordable laboratory and diagnostic services.

(i) Develop norms and standards and strengthen country capacities to ensure the quality, safety, selection and management of appropriate health technologies based on needs and national infrastructural plans.

(j) Package medicines and diagnostics such that they are user-friendly in the field.

(k) Develop national medicine formularies.

(l) Enforce national policies and regulations to ensure safety and quality of appropriate health technologies.

(m) Build sustainable capacity in pharmaceutical management as a fundamental component of functional and reliable health systems.

(n) Establish a mechanism to determine national requirements and forecast needs for essential medicines, commodities, essential technologies and infrastructure.

(o) Put in place, review or strengthen transparent and accountable procurement, supply management and distribution systems to ensure continuous availability of quality, safe and affordable health technologies, and

(p) Undertake national assessments of availability and use of information and communications technology in health technologies.

COMMUNITY OWNERSHIP AND PARTICIPATION

Community ownership in the context of health development refers to a representative mechanism that allows communities to influence the policy, planning, operation, use and enjoyment of the benefits arising from health services delivery. This results in increased responsiveness to the health needs of the community. It also refers to the community taking ownership of its health and taking actions and adopting behaviours that promote and preserve health. Community organizations, NGOs as well as intersectoral interaction play an important role in facilitating creation of an enabling environment for communities to accept their roles.

In general, community-based activities have been left largely to community-based and nongovernmental organizations, often without appropriate policy on community participation in health development or coordination, guidance and support by public-sector institutions. There exists a proliferation of externally-driven processes that do not promote community ownership. In addition, health services have tended to use vertical approaches rather than building on what already exists in the communities from other sectors, including local authority structures and functions.

In order to improve community ownership and participation, the following recommendations are proposed for Member States’ consideration:

(a) Develop a policy and provide guidelines to strengthen community participation, including youth and adolescents, in health development.

(b) Promote health awareness and foster the adoption of healthier lifestyles.

(c) Consolidate and expand the use of health promotion to address determinants of health.

(d) Strengthen community management structures; link consumer activities to the health services delivery.
system; and enhance the community’s participation in decision-making, priority-setting and planning.

(e) Provide appropriate technical backup to community healthcare providers through on-the-job training, mentoring and support supervision, and provide appropriate tools and supplies as required for their duties.

(f) Empower communities and ensure their involvement in the governance of health services through appropriate capacity-building.

(g) Establish and strengthen community and health service interaction to enhance needs-based and demand-driven provision of health services, including reorienting the health service delivery system to reach out and support communities, and

(h) Strengthen coordination and collaboration with civil society organizations, particularly CBOs and NGOs, in community health development.

Partnerships for Health Development

Partnerships for health are relationships between two or more organizations that jointly carry out interventions for health development. Each partner is expected to make financial, technical and material contributions. An effective partnership requires government stewardship and mutual respect between partners, as well as accountability to ensure coordinated action aimed at strengthening health systems. Intersectoral action for health among health and non-health sectors is a key strategy to achieve policy coherence and for addressing, more generally, the social determinants of health and health equity.

Global momentum towards the attainment of internationally-determined health goals has led to a growing number of high-profile initiatives. These include the GFATM, GAVI, Stop TB, Roll Back Malaria, PEPFAR, and the Catalytic Initiative, among others.

In order to strengthen partnerships for health development, the following recommendations are proposed for Member States’ consideration:

(a) Use mechanisms such as the International Health Partnership Plus (IHP+) and Harmonization for Health in Africa initiatives to promote harmonization and alignment with the PHC approach.

(b) Increase the development and use of mechanisms such as sector-wide approaches, multi-donor budget support and the development of national health compacts (agreements between governments and partners to fund and implement a single national health plan in a harmonized and aligned manner) to strengthen health systems.

(c) Adopt intersectoral collaboration, public-private partnerships and civil society participation in policy formulation and service delivery.

(d) Explore South-South cooperation within the African Region, and

(e) Ensure community awareness and involvement in global initiatives to increase transparency and promote global accountability mechanisms in order to improve health development.

ROLES AND RESPONSIBILITIES OF STAKEHOLDERS

Countries

The Ouagadougou Declaration will be implemented through government commitment and use of the PHC approach countrywide to improve the health status of the people. Country stakeholders include governments, communities and the civil society, including NGOs, professional associations and private health-care providers. Countries should recognize the pivotal role of communities...
and effectively involve them in health development. Existing coordination mechanisms should be reinforced including strengthening national intersectoral committees taking into account the current context of PHC renewal.

AFRICAN UNION COMMISSION AND REGIONAL ECONOMIC COMMUNITIES

(a) The African Union Commission can provide support by:

i facilitating wide dissemination of the Ouagadougou Declaration among political leaders and governments;

ii ensuring that public policies take into account the health dimension, in line with the AU Health Strategy 2007–2015;

iii continuing leadership and advocacy with national authorities and international health partners to mobilize additional resources for implementation of primary health care and health system strengthening.

(b) Regional economic communities could support by also continuing advocacy with international financial institutions to contribute more resources for harmonious implementation of the Declaration in countries.

OTHER STAKEHOLDERS AND PARTNERS

Other stakeholders include UN agencies, bilateral partners, financial institutions, international and global health initiatives and foundations. They could support national and local coordination mechanisms, and provide integrated support to countries to strengthen their national health systems. They could also support countries to build their institutional capacities for coordination.

WHO country teams should incorporate the priority areas of the Ouagadougou Declaration in the development of their updated country cooperation strategies. Other UN agencies, as well as bilateral partners, could also take into account the Declaration in the development of their plans. International funding institutions could increase their financial support to facilitate the implementation of the Declaration by governments. Stakeholders could work towards effective harmonization and
alignment to maximize support to countries for the implementation of the Declaration.

MONITORING AND EVALUATION

The Ouagadougou Declaration requested WHO, in consultation with Member States and other UN Agencies, to establish a regional health observatory and other mechanisms for monitoring the implementation of the Declaration, and to share best practices. In collaboration with all the relevant partners whose roles are specified in the Declaration, WHO will set up a regional health observatory based on this Implementation Framework. To this end, WHO will develop a monitoring framework for the implementation of the Declaration; identify selected and standardized indicators to show trends in progress made by countries; and promote the sharing of best practices among countries.

Countries therefore are expected to strengthen monitoring and evaluation to measure their progress; improve implementation; and provide relevant and good quality data in a timely manner to allow the processing of indicators at the regional level. To ease the processes of collecting, analysing and reporting data to the WHO Regional Office, the monitoring framework will provide guidance on types of information, possible data sources for each indicator and periodicity of reporting.

CONCLUSION

In conclusion, countries are expected to use this Framework, adapted to their own specific situations, by taking into account the progress made and the efforts needed for better and more equitable health outcomes. The Regional Committee is requested to endorse the Framework and urge Member States to put in place monitoring frameworks that feed into the national and regional observatories. Partners are expected to support countries in a harmonized and predictable manner that reduces fragmentation during the implementation of the Ouagadougou Declaration. It is expected that the implementation of the Ouagadougou Declaration by countries will contribute in accelerating progress towards the achievement of the MDGs, and reduce the inequities and social injustices that lead to large segments of the population remaining without access to essential health services.

ACKNOWLEDGEMENTS

PROCESS OF DEVELOPING THE FRAMEWORK

The development of the framework described here was accomplished through exceptional leadership, guidance and coordination provided by Dr Luis Gomes Sambo, the Director for the WHO Regional Office for Africa. In accordance with the nine priority areas identified in the Ouagadougou Declaration, the Division of Health Systems and Services Development shared responsibilities for drafting the Framework among selected staff in the Regional Office and Intercountry Support Teams. A small team comprising the programme managers of health policies and service delivery, health financing and social protection and the Regional Advisor on Human Resources for Health Management participated in a three-day meeting in Pointe Noire, Republic of Congo, to improve the first draft.

The framework was reviewed as a draft by Programme Managers in the Division of Health Systems and Services Development in relation to their areas of work and health promotion in DNC. The draft was then opened to wide consultations at country level. A number of countries made substantive inputs through the WHO Country Offices. All the inputs and the draft were extensively discussed during a regional consultative meeting which was attended by representatives from the ministries of health, academic and research institutions, all levels of WHO partners (UNICEF, UNFPA, World Bank, UNAIDS) and NGOs. The invaluable contributions made by the individuals representing these stakeholders are highly appreciated. The consolidated draft was submitted to Members of the Programme Sub-Committee, whose inputs were integrated. During the 59th Regional Committee held in Kigali, Rwanda in September 2009, Ministers of Health in the African Region adopted the Framework and requested WHO support for its adaptation and adoption at country level.

The Regional Director, Dr Luis Gomes Sambo recommended expanding the discussions on priority areas of the Framework in future Regional Committee meetings.

PROCESSUS DE DEVELOPPEMENT DU CADRE

Le développement du cadre ici décrit a été exécuté avec brio sous l’autorité, le conseil et la coordination du Dr Luis Gomes Sambo, le Directeur pour le Bureau Régional de l’OMS en Afrique. Conformément aux neuf domaines prioritaires identifiés dans la Déclaration de Ouagadougou, la Division des Systèmes et Services de Santé a partagé les responsabilités, pour préparer le cadre, entre le personnel sélectionné au Bureau Régional et des Équipes Inter-pays. Une petite équipe, composée de responsables de programme pour les
políticas de saúde e a prestação de serviços, o financiamento da saúde e proteção social, assim que o Conselho Regional em recursos humanos para a saúde ter participado à reunião de três dias à Pointe Noire, República do Congo, em que foi adotado o quadro orientador.

Dans sa version préliminaire, le cadre a été passé en revue par des responsables de programme de la Division des Systèmes et Services de Santé, en fonction de leurs attributions professionnelles et en lien avec la promotion de la santé à la Division de la Prévention et de la lutte contre les Maladies non Transmissibles (DNC). La version préliminaire a alors été soumise à de larges consultations au niveau des pays. Un certain nombre de pays ont formulé des remarques importantes par le biais des Bureaux de pays de l’OMS. Toutes les remarques et la version préliminaire ont fait l’objet de discussions approfondies durant une réunion de consultation régionale, à laquelle des représentants des ministères de la santé, des institutions universitaires et de recherche, tous les niveaux de l’OMS, des partenaires (UNICEF, UNFPA, Banque mondiale, ONUSIDA) et des ONG ont participé. Les contributions inestimables effectuées par les individus qui représentent ces parties prenantes sont grandement appréciées. La version remaniée a été soumise aux membres du Comité du Programme, dont les remarques ont été intégrées. Durant le 59e Comité régional qui s’est tenu à Kigali au Rwanda en septembre 2009, les ministres de la santé de la Région Africaine ont adopté le cadre et sollicité le soutien de l’OMS pour son adaptation et son adoption au niveau des pays.

Le Dr Luis Gomes Sambo, Directeur Régional, a recommandé d’entretenir les discussions aux domaines prioritaires du cadre durant les futures réunions du Comité régional.

PROCESSO DE DESENVOLVIMENTO DO QUADRO ORIENTADOR

O desenvolvimento do Quadro Orientador descrito neste resumo foi conseguido graças a uma liderança, orientação e coordenação excepcional por parte do Doutor Luis Gomes Sambo, o director do Escritório Regional da OMS para África. De acordo com as novas áreas prioritárias identificadas na Declaração de Ouagadougou, a Divisão de Sistemas de Saúde e Desenvolvimento de Serviços partilhou as responsabilidades do desenvolvimento do quadro orientador com colaboradores selecionados a nível do Escritório Regional e com as Equipas de Apoio Inter-pais. Uma pequena equipa composta por gestores dos programas de políticas de saúde e prestação de serviços, financiamento da saúde e proteção social e pelo conselheiro regional dos Recursos Humanos para a Gestão da Saúde participaram num encontro de três dias em Pointe Noire, República do Congo, para melhorar o primeiro projecto de documento.

O quadro orientador foi revisto pelos gestores dos programas da Divisão dos Sistemas de Saúde e Desenvolvimento de Serviços, no que respeita às respectivas áreas de trabalho, e pelo gestor do programa de promoção da saúde na Divisão de Doenças Não Transmissíveis. O projecto de documento revisto foi então submetido a consultas públicas a nível dos países. Diversos países deram contributos substanciais através dos Escritórios Nacionais da OMS. Todas as contribuições e o próprio projeto de documento foram submetidos a uma discussão extensa durante uma reunião regional de consulta em que participaram os representantes dos Ministérios de Saúde, instituições académicas e de investigação, representantes da OMS de todos os níveis, parceiros (UNICEF, UNFPA, o Banco Mundial, UNAIDS) e ONGs. Os contributos valiosos feitos pelas pessoas em representação destas instituições são muito apreciados. O projecto de documento consolidado foi entregue aos membros do Sub-Comité de Programa, cujos contributos foram também integrados. Durante a 59ª sessão do Comité Régional em Kigali, Ruanda, realizado em Setembro de 2009, os Ministros de Saúde da Região Africana adoptaram o Quadro Orientador e pediram à OMS ajuda para a sua adaptação e adoção a nível nacional.

O Director Regional, Doutor Luis Gomes Sambo, recomendou o alargamento da discussão em áreas prioritárias do Quadro Orientador em futuras reuniões do Comité Regional.

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HUMAN RESOURCES FOR HEALTH IN THE WHO AFRICAN REGION: CURRENT SITUATION AND WAY FORWARD

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The paper provides information about the efforts and commitments by Member States and the various opportunities created by Regional and global partners, including the progress made. The paper also explores issues and challenges related to the underlying factors of the HRH crisis, such as chronic underinvestment in health systems development in general, and specifically in human resources for health development, migration of skilled health personnel as a result of poor working conditions and remuneration, lack of evidence-based strategic planning, insufficient production of health workers and poor management systems.

THE PAPER PROPOSES MULTIPLE ACTIONS TO BE UNDERTAKEN BY COUNTRIES, INCLUDING A SIGNIFICANT INCREASE IN INVESTMENT TO ENSURE THAT THE REQUIRED HEALTH WORKERS ARE IN PLACE AND FUNCTIONAL.
The African Region is faced with severe shortages of doctors and nurses, having only 590,198 health workers against an estimated 1,408,190 required. This situation is compounded by inappropriate skill mixes and gaps in service coverage. The estimated critical shortages of doctors, nurses, and midwives alone is over 800,000.

Underlying factors of the problem include chronic underinvestment in health systems strengthening in general and in health workforce development in particular. The shortages of health workers has implications on the health systems, and on global and local priorities. Weak health systems and limited capacity to achieve the Millennium Development Goals (MDGs), especially MDGs 4, 5, and 6. The main bottleneck in scaling up maternal and child health care is lack of skilled human resources for health (HRH). As a result, coverage of key MCH interventions such as births attended by skilled attendants and PMTCT are low. Overall, rates of births with skilled birth attendants remain low in SSA countries averaging only 42%.

In 1998 and 2002 Member States of the WHO African Region discussed and adopted resolutions to strengthen their HRH. These resolutions recommended priority interventions such as policy formulation and planning for the development of the health workforce, education, training, and skills development, administration and management, research, and regulation of health professions. World Health Assembly resolutions also recognized the importance of human resources in health care delivery systems and proposed possible actions for reversing the negative effects of migration, strengthening nursing and midwifery, and scaling up the production of all categories of health workers. Weak health systems limited capacity to achieve the MDGs, especially MDGs 4, 5, and 6.

In support of this process, WHO guidelines for policy formulation and planning were developed for use by countries. Tools and guidelines to ensure quality and relevance of education and training were developed and used by countries. Five WHO collaborating centres for human resources for health were established, and five Regional training centres continue to receive WHO technical and financial support.

WHO organized dialogues with professional bodies and associations, including consultation with deans, nurses and midwives, sub-Regional bodies such as ECSA, SADC, WAHO, OCEAC, and civil society groups such as EQUINET, NEPAD, on HRH and related issues.

Several approaches in health workforce management were implemented in some countries. For instance, new career profiles were established in Côte d’Ivoire and Mauritania; new contractual arrangements were set up in Benin, Kenya, and Uganda; and increases of salaries with donor funding in Malawi. Various macroeconomic initiatives were used to recruit and motivate the health workforces in Cameroon, Cape Verde, Malawi, and Zambia. Guidelines and recommendations for increasing access of health workers in remote and rural areas through improved retention have been developed.

Furthermore, at the World Health Assembly and 2009 Regional Committee meeting, there has been discussion and debate regarding the draft Code of Practice for international recruitment over the last two years as a tool for managing migration.

The status of the health workforce in the African Region was assessed...
in the 46 Member States through surveys; these resulted in the development of a database and country fact sheets. An African Health Workforce Observatory was established, and national health workforce observatories have been launched in a number of countries. Health workforce managers from 40 countries were given training.

At the Regional level, the African platform for health workforce development consisting of Regional stakeholders is being established to support countries in addressing the crisis. Collaboration with partners such as the African Union, the Regional economic communities, the European Commission and the Global Health Workforce Alliance was significantly enhanced. More stakeholders and partners are willing to commit resources for health workforce development in countries.

Despite these actions and some encouraging results, the African Region is still experiencing an unprecedented crisis in the health workforce. The purpose of this paper is to provide information on the progress made and propose a range of actions for the way forward.

ISSUES AND CHALLENGES

FUNDING FOR HEALTH WORKFORCE DEVELOPMENT

Over the past 10 years, there have been many opportunities to invest in the development of the health workforce, but these opportunities have not all been used optimally. For example, countries are yet to fully explore the opportunities available through poverty reduction strategies; debt cancellation; the Global Fund to Fight AIDS, Tuberculosis and Malaria; and the GAVI Alliance. Equally, although ministries of finance are supporting health systems strengthening, they are reluctant to endorse wage increases from external aid, since such funds have been demonstrated to be unpredictable and unsustainable.

Low budgetary allocations to the social sector, in particular to health, are an impediment to strategies for training, recruiting and retaining health workers. Thus, the apparent high rates of recurrent expenditure
remuneration of health workers for most public budgets in real terms translate to salaries as low as US$ 23–40 per month for a general medical practitioner and much lower for other cadres. Within this context, the main challenge is how to mobilize the requisite additional financial resources from both domestic and external sources and use them appropriately to reverse the current HRH crisis.

**POLICY AND PLANNING FOR THE WORKFORCE**

Some 27 of the 46 Regional countries have a health workforce policy and 31 have a plan. Although the policies and plans have improved in quality, they are often not evidence-based, since the often lack important data and information and fail to link with the health priorities of the country. They are often not well costed and not well implemented and monitored. Most are developed without the full involvement of the private sector and other important stakeholders. The challenges include how to fully involve other stakeholders to develop comprehensive and integrated policies and plans and adequate resources to ensure their implementation. Many countries have some national level HRH technical working groups that include a range of partners and stakeholders. These generally require strengthening so that they can realize the potential to evolve into more robust forums for policy and plan development. Some countries have used these effectively while in others they are still weak. The HRH units in ministries of health that are mandated to coordinate and facilitate health workforce policy and planning, are weak in many countries in terms of capacity to perform these strategic functions amidst other challenges.

**PRODUCTION OF HUMAN RESOURCES FOR HEALTH**

Training institutions are not producing a sufficient and consistent supply of health workers to replenish the dwindling HRH mainly owing to attrition and years of underinvestment in institutional capacity. This underinvestment has resulted in dilapidated and inadequate health infrastructure, insufficient teaching staff and an inappropriate skills mix of graduates. Meanwhile, considerable funding is spent on training workshops for priority health programmes; however, such training is inefficiently linked with the training institutions and hence does not contribute to ensure sustainability in the production and continuing professional education of the health workforce.

Uncoordinated efforts between Ministry of Health and Ministry of Education often result in poorly articulated strategic decisions. There is some indication that intakes and outputs from medical and health sciences training institutions are increasing. Some countries such as Algeria, Benin, Burkina Faso, Cote d’Ivoire, Cape Verde, Ethiopia, Ghana, Mauritania, and Nigeria have doubled their outputs but (as indicated in Figure 1) many of them are still below the 2.3 health workers per 1000 population threshold.

However for some of the countries the output of doctors will decline if drastic measures are not taken to increase the intake of pre-service and to retain health workers. For example, the projections made for Swaziland show a decline in medical doctors based on the current average annual intake of medical students to Cuba, Russia and South Africa, the present average annual graduation rate, and the present attrition rate of 7.9% per annum. Figure 2 shows the projection of the number of doctors that will be in-post and the requirements by 2029. To keep pace with population increase, a total of 246 doctors are required by 2029. If loss rates, intakes and graduation rates remain the same as at present, there will be 74 doctors in post by 2029. The attrition rate is already quite high at 7.9%. A significant investment in training therefore is needed to
reverse the situation depicted in Figure 2.

As for the nurses and based on the present ratio of nurses to population, by 2029 a total of 2,826 nurses are required to keep pace with population growth. Figure 3 shows that if the 2009 intakes, graduation rate and loss rate were maintained, then by 2029 a total of only 1,682 nurses will be available.

**MOTIVATION AND RETENTION**

A study\(^5\) on the migration of skilled health workers in 2002 in six African countries showed a decline in the number of available health workers. About two-thirds of those interviewed expressed an intention to migrate, underscoring the gravity of the situation. Health workforce shortages have become acute in 36 countries in the African
Region 6 This crisis continues to worsen with the attrition of health workers resulting from the impact of HIV/AIDS on the workers themselves.

Difficult working conditions characterized by heavy workloads, lack of equipment, poor salaries and diminished opportunities for advancement contribute to the state of demotivation and poor performance of staff. These conditions are worse in rural areas, giving rise to inequitable staff distribution compared to urban areas (as depicted in Table 1) where the majority of health workers are in provinces with major urban cities such as Lusaka and the Copperbelt, with 23 percent and 21 percent of all health workers respectively.

The outcome is increased migration from public to private sector, from rural to urban areas, or emigration. One strategic challenge is to change the inequitable distribution of health workers and thus serve both rural and urban areas. In addition, some countries are unable to recruit trained workers owing to budgetary constraints.

**MANAGEMENT**

Most health workforce divisions in ministries of health do not have the capacity to carry out their human resources functions, including stewardship and leadership. Furthermore, health workforce issues are complex and go beyond the health sector. Effective management of the health workforce therefore remains a key challenge, and the responsibility of not only the Ministry of Health but also the public service authorities.

Though partnerships for health workforce development may have improved, there is not enough progress at country level owing to fragmented efforts and insufficient coordination.

**INFORMATION AND RESEARCH**

The existing information and research evidence show problems of inadequacy, inconsistency, duplication and poor linkages in the available data; in addition, countries lack systems to process and manage information to ensure easy access for decision-making. One of the main challenges confronting this crucial area is how to set up mechanisms to process and manage data to ensure easy access.

**ACTIONS PROPOSED**

Given the current situation and challenges, it is proposed that countries should substantially invest in implementing multiple and sustained actions to ensure that the required health workforce is in place and functional. The following proposed actions focus on interrelated strategic areas.

1. **Create fiscal space**: Countries should identify and implement innovative ways of creating fiscal space for health workforce
development which should be institutionalized. These include implementing the decision to spend at least 15% of national budgets on the health sector and take advantage of existing opportunities such as debt relief. Concerted efforts should be made to increase budget ceilings to allow governments to improve wage bills that allow for recruitment of more health workers or mobilization of donor funds to increase remuneration and incentive packages. Policy decisions should be made on using a negotiated percentage of development funding for priority health programmes, to support implementation of strategic components of health workforce plans. Advocacy at Regional and global levels should continue to solicit for substantial financial investment in health systems development that includes human resources.

2. **Accelerate formulation and implementation of comprehensive policies and plans:** Effective planning is essential for future human resource needs based on current shortfalls and linked to the potential to recruit and retain an expanded health workforce. Therefore, countries are encouraged to develop and implement evidence-based comprehensive HRH policies and plans, with involvement from numerous sectors and stakeholders. The plans should forecast supply and demand for the whole health system, including priority programmes, and should be costed and operationalized for implementation. At the Regional level, a multidisciplinary pool of African HRH experts should be strengthened to support countries in HRH planning and key workforce interventions.

3. **Produce more human resources for health:** Increased investment is needed in pre-service training to produce more health workers. Countries need to strengthen the capacity of training institutions for scaling up production of health workers, including midlevel cadres to deliver promotional, preventive and curative health care in an integrated manner. Key actions for capacity building include reforming and upgrading training institutions, as well as exploring innovative ways of expanding training capacity, such as public-private partnerships, south to south and north to south collaboration. The process should start with evaluation of both private and public educational institutions to ensure an appropriate skills mix based on the health needs of the population. Accreditation mechanisms to certify academic institutions, education programmes and training performance should be prioritized. Utilization of WHO collaborating centres and Regional training institutions should be optimized for training and research.

4. **Improve management systems:** Countries are urged to give priority to improving the skills, equipment and status of health workforce departments to enable them to carry out their strategic functions. Professional bodies (regulatory and professional associations) should be empowered within national legislation to protect people’s health, including promotion of professional ethics, as well as the interests of health workers. In order to address skills and competency gaps for effective service delivery, continuing professional education should be promoted as part of in-service training, including distance learning. Technical support for strengthening health workforce management systems in countries should be provided from the Regional level.

Emerging evidence from an ongoing WHO survey of health workforce divisions/units in the ministries of health show
that each country has national HRH directorates within MOH, but with limited capacity such as staffing and are not well represented at decentralized levels in many of the countries. The District level HRH systems are considered weak in all the countries with many aspects of health workforce development still centralized.

5 Develop and implement retention strategies: Countries are encouraged to make policy decisions for attracting and recruiting more health workers as a matter of urgency within specific country contexts. The current employment and deployment policies and practices should be reviewed, and new opportunities for recruitment should be considered. Strategies to improve the utilization, performance, working conditions and retention of health workers should be considered. Strategies, including bilateral and multilateral agreements, for managing migration should be developed and implemented.

6 Generate evidence: Countries are encouraged to strengthen effective collection and management of human resource information with core data sets and indicators useful for policy, planning and implementation. Countries should consider establishing national observatories as mechanisms for knowledge management, information-sharing and evidence for health workforce development. The Regional Health Workforce Observatory and its national counterparts are accelerating Regional monitoring and evaluation, formulation of a research agenda and advocacy for research implementation. The Observatory also shares best HRH innovative interventions such as management of salaries and incentives, evidence for sustainability of investment into HRH, and others.

7 Foster partnerships: Countries are urged to strengthen, sustain and formalize mechanisms for intersectoral partnerships, including the private sector, NGOs and the diaspora, for health workforce development. One key role of these partnerships is to contribute to the planning, implementing and monitoring of national health workforce policies. The stewardship role of national authorities should lead the process and harness the contribution of all the players in the planning production and utilization of health workers.

Regional level mechanisms for intersectoral partnerships should also be formalized and strengthened for coordinated support to countries. Strengthening and supporting of African institutions such as the the African Health Workforce Observatory, African Platform for HRH, the Association of Medical Schools in Africa (AMSA), and Regional economic bodies should be encouraged for following up global, international and national commitments and resolutions. Such mechanisms should address the need for additional financial resources from both domestic and external investments.

REFERENCES

1 It is 817,992 according to the World Health Report 2006, WHO.
The objectives of this study were to measure the technical and scale efficiency of hospitals in Benin.

DEAP software was used to analyze the technical efficiency among a sample of 23 zonal hospitals in the Republic of Benin over a period of five years, i.e. 2003 to 2007.

The yearly analysis revealed that 20 (87%), 20 (87%), 14 (61%), 12 (52%) and 8 (35%) of the hospitals were run inefficiently in 2003, 2004, 2005, 2006 and 2007 respectively; and they needed to either increase their outputs or reduce their inputs in order to become efficient. The average variable returns to scale (VRS) technical efficiency scores were 63%, 64%, 78%, 78% and 86% respectively during the years under consideration.

There is some scope for providing outpatient curative and preventive care and inpatient care to extra patients without additional investment into the abovementioned health services. This would entail leveraging of health promotion approaches and lowering of financial barriers to access to boost the consumption of underutilized health services, especially health promotion and disease prevention services.

Contexte : les objectifs de la présente étude consistaient à mesurer l’efficacité technique et d’échelle des hôpitaux au Bénin.

Méthodes : le logiciel DEAP a été utilisé afin d’analyser l’efficacité technique sur un échantillon de 23 Hôpitaux de Zone de la République du Bénin sur une période de cinq ans, allant de 2003 à 2007.

Résultats : l’analyse annuelle a révélé que 20 (87%), 20 (87%), 14 (61%), 12 (52%) et 8 (35%) des hôpitaux étaient respectivement gérés de manière inefficace en 2003, 2004, 2005, 2006 et en 2007 et qu’ils avaient en outre besoin soit d’augmenter leurs recettes ou de diminuer leurs dépenses pour devenir efficaces. Les notations d’efficacité technique relatives aux Rendements d’Echelle Constant (REC) moyens étaient respectivement de 63%, 64%, 78%, 78% et de 86% pour les années considérées.

Conclusion : il est possible de fournir des soins curatifs et préventifs à des patients non-hospitalisés (en consultation externe) et des soins aux patients hospitalisés à d’autres patients sans investissement supplémentaire dans les services de santé ci-dessus mentionnés. Cette vision impliquerait d’accroître les démarches d’encouragement de la santé et de réduire les obstacles financiers en termes d’accès afin de stimuler la consommation des services de santé sous-utilisés, en particulier ceux de promotion de la santé et de prévention des maladies.

Introdução: Este estudo teve como objectivo medir a eficiência técnica e dimensional dos hospitais no Benin.

Metodologia: Foi utilizado software DEAP para analisar a eficiência técnica de uma amostra de 23 hospitais de zona na República de Benin durante um período de tempo de cinco anos, ou seja, entre 2003 e 2007.

Resultados: A análise anual revelou que 20 (87%), 20 (87%), 14 (61%), 12 (52%) e 8 (35%) dos hospitais funcionaram de modo inefficiente em 2003, 2004, 2005, 2006 e 2007 e necessitaram ou de aumentar os seus outputs ou de reduzir os seus inputs para se tornarem eficientes. Os retornos médios variáveis da eficiência técnica foram 63%, 64%, 78%, 78% e 86% respectivamente durante os anos avaliados.

Conclusão: Existe alguma margem para fornecer mais cuidados terapêuticos e preventivos a doentes externos e internados sem investimento adicional nos serviços de saúde supracitados. Isto implica a dinamização das abordagens de promoção da saúde e a redução das barreiras financeiras para aumentar a utilização de serviços de saúde não aproveitados, especialmente a promoção da saúde e os serviços de prevenção de doenças.
The per capita total expenditure on health at average exchange rate was US$26 in Benin, which was two times lower than that of the Region, and US$8 lower than the bare minimum of US$34 per capita (which does not include costs of scaling up) recommended by the WHO Commission for Macroeconomics and Health. Approximately 50.2% of total expenditure on health came from government sources. Private spending on health constituted 49.8% of the total health expenditure; with about 94.9% of it coming from household out-of-pocket expenditures. Such high out-of-pockets expenditures constitute a barrier to efficient health service utilization.

The country has a total health workforce of 10,275 (1.485 health workers per 1000 people). About 68.1% of the total workforce is made up of technical health workers (e.g. physicians, nurses, dentists) and the remaining 31.9% are the health management and support workers. The overall health workforce density of Benin is lower than the Regional average health workforce density of 2.626 per 1000. Benin is one of the 57 countries in the world experiencing health workforce crisis. This implies that there is great need in Benin to utilize efficiently the available health workforce.

The Benin health system consists of three levels. First, the central level, organized around the ministry of health headquarters, whose mandate is to develop policies and norms and standards, mobilize resources, and oversee the overall management of the system. Second, the intermediate level includes six regional directorates of public health, whose mission is to translate national health policy into action and provide supervisory support to the peripheral level. Finally, the peripheral level is organized in 34 operational public health zones. Each zone covers a population of 100,000 to 200,000 inhabitants. Each zone has a hospital, health centres and village health posts/units. There is approximately a total of 491 public health centres; 34 zone public hospitals; 5 Department/provincial hospitals; 5 specialized public hospitals; 34 religious missions clinics; and 1,409 private-for-profit clinics.

Since the available health system inputs are limited, it is necessary to ensure that they are optimally used in providing health services to the greatest number of people possible. Unfortunately, to date no study in Benin has addressed the following questions: Are hospitals producing maximum outputs with the available inputs? Are hospitals operating at an optimal scale? Or are (dis) economies of scale rampant (i.e. inefficiency due to largeness or smallness of hospital size)? This study was meant to contribute to bridging that knowledge gap. Its specific objectives were to measure the technical and scale efficiency of hospitals in Benin over five years (2003–2007).
Economic efficiency is a product of technical efficiency and allocative efficiency. Due to dearth of data on health system input prices, the study reported in this paper was limited to measurement of hospital technical efficiency, comprising of both pure technical and scale efficiency components.

Efficiency analysts usually have a choice of employing either econometric or mathematical programming methods, such as Data Envelopment Analysis (DEA), to estimate technical and scale efficiency. In this study, we chose to use DEA due to its capability of estimating efficiency of hospitals that typically use multiple inputs to produce multiple outputs.

DEA has widely been used in measurement of technical efficiency of hospitals in Asia, Europe, and North America. However, applications of DEA among hospitals in the WHO African Region are few. This is the first study to attempt measurement of hospital efficiency in the Republic of Benin.

Under the assumption of variable returns to scale (VRS), DEA measures the technical efficiency (TE) of hospital z compared with n hospitals in a peer group as shown in the model below.

The DEA model below determined weights $u_r$ and $v_i$ from the data and assigned them to each input and output so as to maximize the efficiency rating $TE_z$ of the hospital being evaluated. The above model was run 23 times to obtain the efficiency scores for each hospital in the sample. The relative hospital efficiency scores are bounded between 0% (completely inefficient) and 100% (technically efficient). Therefore, any hospital that scores 100% is deemed technically efficient; and any hospital with a technical efficiency score of less than 100% is deemed technically inefficient.

### Table 1. Health workforce in the Republic of Benin

<table>
<thead>
<tr>
<th>Health workers</th>
<th>Total number</th>
<th>Density per 1 000 population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians</td>
<td>311</td>
<td>0.045</td>
</tr>
<tr>
<td>Nurses</td>
<td>5 789</td>
<td>0.84</td>
</tr>
<tr>
<td>Dentists</td>
<td>12</td>
<td>0.002</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>11</td>
<td>0.002</td>
</tr>
<tr>
<td>Public and environmental health workers</td>
<td>178</td>
<td>0.03</td>
</tr>
<tr>
<td>Community health workers</td>
<td>88</td>
<td>0.01</td>
</tr>
<tr>
<td>Laboratory technicians</td>
<td>477</td>
<td>0.07</td>
</tr>
<tr>
<td>Other health workers</td>
<td>128</td>
<td>0.02</td>
</tr>
<tr>
<td>Health management and support workers</td>
<td>3 281</td>
<td>0.47</td>
</tr>
</tbody>
</table>

Source: WHO [6]
The sample consisted of 30 hospitals. However, complete inputs and outputs data was available for only 23 of those hospitals; i.e. 68% of the 34 total number of zone hospitals in Benin. Thus, the final analysis was based on the latter group of hospitals.

One of the researchers visited all the hospitals in the sample. At each of the hospitals he met with the medical officer in charge, explained the purpose of the study, and was given access to the relevant inputs and outputs records. He complemented the hard data from the hospital records with interactive interviews with the people in charge of different hospital departments. The inputs and outputs data were collected for 2003, 2004, 2005, 2006 and 2007.

The DEA was estimated with four inputs: total number of doctor/physician hours; total number of other staff (nurses, midwives, laboratory technicians, radiologists, anaesthetist, paramedical assistants) hours; non-salary running costs, which includes all non-personnel expenditures, e.g. expenditures on pharmaceutical, non-pharmaceutical supplies, fuel, utilities (water, electricity, telephone); and number of beds (a proxy of capital inputs). There were two outputs: (i) outpatients visits; and (ii) number of hospital admissions. The study reported in this paper used the DEA software developed by Coelli30 to measure the yearly technical efficiency and yearly scale efficiency.

RESULTS

TECHNICAL AND SCALE EFFICIENCY

Table 2 presents the median, mean and standard deviations for the outputs and inputs of hospitals in Benin. Figure 1 summarizes the frequency distributions of technical and scale efficiency scores for hospitals in year 2003, 2004, 2005, 2006 and 2007. In 2003, 2004, 2005, 2006 and 2007, out of the 23 hospitals, approximately three (13%), three (13%), nine (39%), eleven (48%) and fifteen (65%) hospitals respectively had a variable returns to scale technical efficiency score of 100%. Hospitals with values of 100% are deemed technically efficient in the associated year.

The individual hospitals’ technical and scale efficiency scores during the five years are presented in Table 3. The yearly analysis has revealed that 20 (87%), 20 (87%), 14 (61%), 12 (52%) and 8 (35%) of the hospitals were run inefficiently in 2003, 2004, 2005, 2006 and 2007 respectively; and they needed to

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<th>Mean</th>
<th>STDEV</th>
<th>Median</th>
<th>Mean</th>
<th>STDEV</th>
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<th>Mean</th>
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<td>24 361</td>
<td>21 285</td>
<td>13 440</td>
<td>23 259</td>
<td>18 894</td>
<td>11 520</td>
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<td>17 143</td>
<td>11 520</td>
<td>22 735</td>
<td>18 289</td>
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<td>114 983 765</td>
<td>164 324 479</td>
<td>179 151 042</td>
<td>111 327 784</td>
<td>158 108 000</td>
<td>189 188 762</td>
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<td>141 994 607</td>
<td>205 855</td>
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<td>197 547</td>
<td>56 453 980</td>
<td>139 482 785</td>
<td>141 994 607</td>
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<tr>
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<td>73</td>
<td>103</td>
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* Nurses, midwives, lab + x-ray + anaesthetist + para + assistants.
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<td>0.421</td>
<td>0.438</td>
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<td>0.17</td>
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<td>Median</td>
<td>0.236</td>
<td>0.619</td>
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<td>0.239</td>
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Note: CRSTE = constant returns to scale technical efficiency; VRSTE = variable returns to scale technical efficiency; Scale = scale efficiency; DRS = decreasing returns to scale; IRS = increasing returns to scale; CRS = constant returns to scale.
either increase their outputs (or reduce their inputs) in order to become efficient. The average VRS technical efficiency scores were 63%, 64%, 78%, 78% and 86% respectively during the years under consideration. This finding implies that if the hospitals were operating efficiently, they could have produced 37%, 36%, 22%, 22% and 14% more output (number of outpatient visits and admissions) using their current levels of input endowment. Alternatively, the hospitals could produce their current levels of health service output with 37%, 36%, 22%, 22% and 14% less of their existing health system input endowment.

**SCALE EFFICIENCY**

In 2003, 2004, 2005, 2006 and 2007, out of the 23 hospitals: four (17%), two (9%), two (9%), three (13%) and eight (35%) hospitals displayed constant returns to scale (CRS). These hospitals were operating at their most productive scale sizes.

Increasing returns to scale (IRS) were found during the five years in 18 (78%), 20 (87%), 16 (70%), 18 (78%) and 13 (57%) hospitals respectively. If a hospital displays IRS, it should expand its scale of operation in order to become scale efficient. Three (13%), one (4%), five (22%), two (9%) and four (17%) hospitals manifested decreasing returns to scale (DRS). In order to operate at the most productive scale size, a hospital exhibiting DRS should scale down its scale of operation.

The average scale efficiency score in the sample was 51% in 2003, 46% in 2004, 52% in 2005, 59% in 2006 and 77% in 2007, implying that there was room for increasing total outputs by about 49% in 2003, 54% in 2004, 48% in 2005, 41% in 2006 and 23% in 2007. This can be accomplished through appropriate adjustment in the size of the scale-inefficient hospitals, where feasible. However, due to indivisibility of physical facilities this may not be possible.
SCOPE FOR OUTPUT INCREASES AND IMPLICATIONS FOR POLICY

The inefficient hospitals in Benin could operate as efficiently as their peers on the efficiency frontier either by increasing their outputs or reducing utilization of their inputs. The total output increases and/or input reductions needed to make inefficient hospitals efficient are reported in Table 4. In 2007, for example, the inefficient hospitals combined would need to increase the outpatients visits by 260,066 (70%) and the number of admissions by 13,786 (12.4%) in order to become efficient.

Concerning hospitals with outputs falling short of the DEA targets, MoH policy makers could improve their efficiency by improving access to under-utilized health promotion, preventive and outpatient services, e.g. family planning services, antenatal and post natal care, hospital deliveries, child growth monitoring, immunization, HIV/AIDS education, Insecticide Treated Bed Nets, antimalaria treatment for fever, potable drinking water and clean sanitation. Utilization for underutilized preventive and curative services can be boosted through use of health promotion methods, e.g. health education, behaviour change communication, social marketing, information education communication (IEC), social mobilization, advocacy and lobbying; and through implementation of prepaid national health financing schemes, either tax-funded health services or national social health insurance, which dramatically lower financial barriers to health services access when needed.

Alternatively, if it is very difficult to reduce inefficiencies by increasing utilization of currently underutilized essential health services, policy-makers could improve efficiency through transfer of human resources for health and beds to primary level health facilities experiencing shortages. Savings of non-salary running costs could be invested in strengthening of primary level health facilities and community health out-reach activities. Those health service levels are critically important in the quest to achieve the health-related United National Millennium Development Goals.

LIMITATIONS OF THE STUDY

First, DEA does not capture random noise (e.g. epidemics, natural and man-made disasters), and thus, it inadvertently attributes any deviation from frontier to inefficiency. Thus, by using DEA we may have over estimated the existing magnitudes of inefficiencies.

Second, it would be argued that the ultimate output of hospitals is the aggregate change in health status of the patients who received hospital outpatient and inpatient services. However, due to paucity of data on health status

Table 4. Output (input) increases (reductions) needed to make inefficient hospitals efficient, 2003–2007

<table>
<thead>
<tr>
<th>Year</th>
<th>Outpatient visits</th>
<th>Admissions</th>
<th>Doctors hours</th>
<th>Other staff hours</th>
<th>Non-salary running costs (CFA)</th>
<th>Beds</th>
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<tr>
<td>2003</td>
<td>Total actual values</td>
<td>348 308</td>
<td>117 382</td>
<td>560 294</td>
<td>5 362 296</td>
<td>3 779 463 009</td>
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<tr>
<td></td>
<td>Shortfall/excess</td>
<td>526 716</td>
<td>114 421</td>
<td>81 239</td>
<td>777 886</td>
<td>2 260 502 078</td>
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<tr>
<td>2004</td>
<td>Total actual values</td>
<td>341 707</td>
<td>108 172</td>
<td>534 966</td>
<td>4 248 939</td>
<td>3 636 483 989</td>
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<tr>
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<td>Shortfall/excess</td>
<td>676 868</td>
<td>108 705</td>
<td>82 912</td>
<td>141 055</td>
<td>2 064 645 397</td>
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<tr>
<td>2005</td>
<td>Total actual values</td>
<td>327 832</td>
<td>108 561</td>
<td>529 374</td>
<td>4 819 017</td>
<td>3 384 595 267</td>
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<tr>
<td></td>
<td>Shortfall/excess</td>
<td>202 455</td>
<td>25 414</td>
<td>88 908</td>
<td>92 230</td>
<td>1 881 004 350</td>
</tr>
<tr>
<td>2006</td>
<td>Total actual values</td>
<td>329 566</td>
<td>114 744</td>
<td>522 908</td>
<td>5 162 219</td>
<td>3 742 508 898</td>
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<tr>
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<td>110 329</td>
<td>15 133</td>
<td>85 616</td>
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<td>1 326 425 061</td>
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<tr>
<td>2007</td>
<td>Total actual values</td>
<td>370 995</td>
<td>111 126</td>
<td>532 164</td>
<td>5 345 215</td>
<td>3 208 104 047</td>
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<tr>
<td></td>
<td>Shortfall/excess</td>
<td>260 066</td>
<td>13 786</td>
<td>55 823</td>
<td>15 781</td>
<td>792 034 581</td>
</tr>
</tbody>
</table>

Note: Values for outpatient visits and admissions are deficits/shortfalls; values for inputs (doctor and other staff hours, non-salary running costs, beds) are excess.

* Nurses, midwives, laboratory technicians, radiologists, anaesthetist, paramedical assistants.
indices such as Quality Adjusted Life Years or health disability indicators such as Disability Adjusted Life Years, this study used intermediate outputs, i.e. number of outpatient visits and number of hospital admissions. On the other hand, even if it were possible to use health outcomes, there would be issues of attribution and consequently the need to adequately control for exogenous factors.

Third, it was not possible to adjust for the quality of both outputs (e.g. successful outpatient visits and inpatient admissions in terms of full recovery from illness, severity of disease differences) and inputs (e.g. more skilful and hard working health workers).

Fourthly, it was not possible to assess the extent to which observed efficiency variations are explained by differences across health zones in socioeconomic status, epidemiology, geographical and financial access to a hospital, variation in operationality of referral systems, and variation in complementary primary level facilities and quality of care differences.

Finally, unavailability of health system inputs prices hampered estimation of allocative efficiency, and hence, calculation of total economic efficiency of hospitals. Thus, the technical efficiency estimates reported in this paper should be viewed as an underestimate of the actual levels of waste prevailing in the hospitals of Benin.

**CONCLUSIONS**

This study has quantified both the technical and scale efficiency of 23 hospitals in Benin; identified the input reductions and/or output increases needed to make inefficient hospitals efficient; and magnitudes and sources of total factor productivity in each hospital.

The analysis revealed that 20 (87%), 20 (87%), 14 (61%), 12 (52%) and 8 (35%) of the hospitals were run inefficiently in 2003, 2004, 2005, 2006 and 2007 compared with the most efficient hospitals in the sample. The under-utilization of health services could be attributed to high out-of-pocket expenditures and quality of care issues. In 2007, all the hospitals manifesting variable returns to scale technical inefficiency would need to increase the number of outpatient visits by 260 066 and inpatient admissions by 13 786 so as to become technically efficient. Therefore, there is some scope for providing outpatient curative and preventive care and inpatient care to extra patients without additional investment into the abovementioned health services. This would entail leveraging of health promotion approaches and lowering of financial barriers to access to boost the consumption of underutilized health services, especially health promotion and disease prevention services.

Alternatively, depending on the decision of policy-makers, the hospital inefficiencies could be ameliorated transferring 55 823 doctors/physician hours; 15 781 hours of other staff (nurses, midwives, laboratory technicians, radiologists, anaesthetist, paramedical assistants); and US$1 584 069 of non-salary running funds to peripheral health facilities and community health programmes.

In their health financing strategy for the African Region, the Fifty-Sixth WHO Regional Committee for Africa recommended that member countries should institutionalize efficiency monitoring within national health management information systems (NHIS). Therefore, NHIS capacities ought to be enhanced to routinely capture the input, input prices and output data which could be used to monitor economic efficiency among hospitals and lower level facilities.
CONCEPT AND MEASUREMENT OF TECHNICAL EFFICIENCY OF ZONE HOSPITALS

A hospital can manifest either constant returns to scale (CRS), increasing returns to scale (IRS) or decreasing returns to scale (DRS). Returns to scale inform health decision-makers what happens if, for example, they increase all hospital inputs by the same proportion. This could result in three scenarios: (i) CRS – doubling of all inputs results in doubling of outputs; (ii) IRS – doubling of all inputs may lead to more than a doubling of output; and (iii) doubling of all inputs leads to less than doubling of output. The implications for policy depend on which scenario prevails.

Figure A1 shows a production function where a hospital employs medical doctor hours to provide inpatient health services. It portrays two production frontiers. The first production frontier, which is a straight line 0GCH, assumes CRS. The second frontier, depicted by a concave line ABCD, assumes variable returns to scale (VRS).

For example, if a hospital is producing at point ‘E’, using 0F medical doctor hours to attend to 0Y₁ number of admissions, it is technically inefficient assuming either CRS or VRS. Under a CRS technology, hospital ‘E’ could have cared for a larger number of admissions (0Y₃) with the same number of medical doctor hours (0F). If there are CRS, technical efficiency (TE_{CRS}) of hospital ‘E’ is given by the ratio $TE_{CRS} = \frac{F_E}{F_H}$.

Similarly, under VRS technology, hospital ‘E’ could have attended to 0Y₂ admissions employing the same number of medical doctor-hours 0F. Pure technical efficiency (TE_{VRS}) assuming VRS is measured as $TE_{VRS} = \frac{F_E}{F_D}$.

A technically efficient hospital has a technical efficiency score of one (or 100%), whereas the inefficient ones have a score less than one (or less than 100%). For example, supposing that the pure technical efficiency of hospital ‘E’ was 75%. This implies that the hospital could have attended to 25% more admissions than it is currently attending to with the same number of doctor hours. Alternatively, hospital ‘E’ could reduce medical doctor hours by 25% and still attend to its current number of admissions.
In Figure A1, scale inefficiency is the difference between EH (technical efficiency under CRS) and ED (technical efficiency under VRS). Practically, scale efficiency (SE) is calculated as the ratio of technical efficiency under CRS and technical efficiency under VRS: \[ SE = \frac{FH_{FD}^{TE} / CRS}{TE / VRS} \] or \[ SE = \frac{Y_{E} / B^{TE} / CRS}{TE / VRS} \]. Scale efficiency compares the average product of the hospital at 'E' to average product at the technically optimal point 'C'. This comparison tells us if the hospital has scale inefficiency due to being too small (in the IRS portion of the production function, e.g. E), or too large (in the decreasing returns to scale portion of the production function, e.g. D).

Scale efficient hospitals have a score of one (or 100%), whilst the inefficient ones have a score less than one (or less than 100%). For example, if the scale efficiency score for hospital 'E' was 85%, it means that about 15% of inefficiency is accounted for by unsuitable hospital size (inefficiently large or small). Since in Figure 1 a hospital producing at 'E' is operating in the IRS portion of the production function, it implies that the hospital is too large and there is scope of downsizing by 15% while attending to its current level of admissions.

REFERENCES
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En République du Congo, le paludisme demeure la première cause de mortalité et de morbidité. Aussi, le pays a-t-il révisé sa stratégie de prise en charge du paludisme avec l’introduction des combinaisons thérapeutiques à base d’artémisinine (CTA) en 2006. Dans le cadre de la mise en œuvre de la « Déclaration d’Abuja », le Gouvernement a décrété en 2007, la gratuité du traitement antipaludique pour les enfants de 0 à 15 ans et les femmes enceintes. L’objectif de cette étude est d’évaluer le degré de mise en œuvre de la nouvelle orientation politique. L’étude a été réalisée dans la ville de Brazzaville. Les données ont été collectées dans les structures pharmaceutiques publiques, privées et confessionnelle. Malgré les efforts déployés par le Gouvernement, la présente étude démontre que seule une proportion de 46% des patients ayant participé à l’enquête a bénéficié de la mesure de gratuité bien que les CTA soient disponibles dans les structures pharmaceutiques. Il faut également souligner que seules 7% des formations sanitaires enquêtées ont assuré des prestations à l’ensemble des patients reçus. La mesure de gratuité n’est pas uniformément appliquée dans les centres de santé. Le taux de satisfaction varie de 0% pour 4 centres à 100% pour un centre. Le faible taux d’accès des patients à la mesure de gratuité et la cherté du traitement antipaludique risquent d’hypothéquer la mise en œuvre de la nouvelle orientation politique en matière de lutte contre le paludisme.
L’Afrique sub-saharienne est le continent le plus touché par le paludisme avec 86% du nombre total estimatif d’épisodes et 91% des décès dus à cette maladie à l’échelle mondiale en 2006.1

En République du Congo, le paludisme est la première cause de mortalité et de morbidité. Chez les enfants de moins de 5 ans, il représente 42% des motifs d’hospitalisation et 71% des causes de décès.2

La lutte contre le paludisme figure parmi les priorités nationales inscrites dans les documents d’orientation et de développement tels que: le Document de stratégies de réduction de la pauvreté, le Plan national de développement sanitaire et le cadre de dépense à moyen terme. Cette préoccupation est également en droit de ligne avec les initiatives, résolutions et réunions aux niveaux global et régional tels l’initiative ’Faire reculer le paludisme’, l’appel lancé par les Chefs d’Etat de l’Union africaine en 2006 à Abuja pour un accès universel aux services de lutte contre le VIH/SIDA, la tuberculose et le paludisme et l’appel du Secrétaire général des Nations Unies en faveur d’un taux de couverture de 100% des interventions de lutte contre le paludisme d’ici 2010.

Cette lutte intègre la prévention, notamment la lutte anti vectorielle ou encore l’utilisation de moustiquaires imprégnés ainsi que le traitement par des antipaludiques efficaces.3
L'évaluation de l'efficacité thérapeutique des antipaludiques réalisée en 2004 par le Programme national de lutte contre le paludisme montre des taux d'échecs thérapeutiques respectifs de 89,7% pour la Chloroquine, 14% pour la Sulfadoxine-Pyriméthamine et 13,8% pour l'Amodiaquine.4,5

La découverte et la mise au point des dérivés de l'Artémisinine ont fourni une nouvelle classe d'antipaludiques très efficaces. Mais, l'application d'un traitement n'utilisant que l'Artémisinine (en monothérapie) accélère l'apparition de la résistance du parasite à ce produit, du fait de la demi-vie très courte des produits dérivés. Par contre, quand l'Artémisinine est utilisée en combinaison avec d'autres antipaludiques (CTA), elle agit contre le paludisme dans près de 95,4% des cas et le risque de pharmacorésistance est très faible.6

En 2006, l'OMS a demandé aux laboratoires pharmaceutiques de cesser de commercialiser les monothérapies utilisées par voie orale dans le traitement du paludisme simple au profit des CTA.7

Dans cet élan, le Congo a révisé sa stratégie de prise en charge du paludisme avec l'introduction des CTA.8,9 En application de la « Déclaration d'Abuja » le Gouvernement a décrété en 2007, la gratuité du traitement antipaludique pour les enfants de 0 à 15 ans et les femmes enceintes dans les formations sanitaires publiques.10,11

L'objectif de cette étude est de déterminer le niveau de mise en œuvre de la politique de gratuité. De façon spécifique, il s'agit de :
• documenter l'existence ou non sur le marché pharmaceutique de monothérapies ;
• mesurer la disponibilité des CTA dans les pharmacies privées et publiques ;
• mesurer le niveau d'utilisation des CTA.

MÉTHODOLOGIE

L'évaluation de la situation est basée sur une étude transversale, descriptive, réalisée à Brazzaville entre avril et mai 2009.

COLLECTE DES DONNÉES

A l'aide d'un questionnaire, les enquêteurs ont vérifié dans les rayons des structures pharmaceutiques, la présence et le type des antipaludiques le jour de l'enquête et les prix facturés aux patients.

Pour les ménages, les enquêteurs ont vérifié l'antipaludique prescrit en cas de paludisme, l'achat ou non du médicament, le lieu de l'achat et le montant dépensé. En cas de non achat, ils ont demandé la cause.
TRAITEMENT DES DONNÉES
Les données collectées ont été transcrites et analysées sur une feuille Excel.

RÉSULTATS
LES SOURCES D’APPROVISIONNEMENT EN CTA
Les formations sanitaires publiques s’approvisionnent essentiellement auprès de la COMEG et de la Direction départementale de la Santé, en ce qui concerne les CTA visées par la mesure de gratuité.

Les officines privées s’approvisionnent auprès des grossistes privés, qui eux mêmes disposent de centrales d’achat à l’étranger.

Le dépôt confessionnel s’approvisionne auprès des grossistes privés, mais également par le biais de dons.

DISPONIBILITÉ DES CTA
La figure 1 montre la répartition des antipaludiques dans les structures pharmaceutiques. La COMEG n’en dispose que de 5 alors qu’on en trouve 64 dans les formations sanitaires publiques.

Le secteur privé dispose de 91 antipaludiques chez les grossistes et 190 dans les officines, alors que dans le dépôt confessionnel n’en dispose que 8.

La combinaison Artemether + Lumefantrine sont les médicaments les plus représentés au niveau des structures privées alors que la combinaison Artésunate + Amodiaquine est la plus représentée dans les structures publiques.

Tous les antipaludiques présents à la COMEG sont des CTA. Le stock des formations sanitaires publiques est constitué de 17,18% de monothérapies et seulement 50% de CTA.

La proportion des antipaludiques inscrits sur la liste nationale des médicaments essentiels (LNME) est de 100% à la COMEG, 17,20% dans les formations sanitaires, 58,24% chez les grossistes privés, 55,25% dans les officines et 50% dans le dépôt confessionnel.

NIVEAU D’UTILISATION DES CTA
La fièvre a constitué le principal signe exprimé par les patients, isolée ou accompagnée de céphalées, de courbatures, de troubles digestifs ou de symptômes grippaux. Devant ces signes, 76% des patients ont consulté une formation sanitaire publique où un traitement antipaludique a été prescrit.

La figure 2 montre que la quinine et la combinaison Artésunate + Amodiaquine sont les antipaludiques les plus prescrits dans les formations sanitaires publiques. Par contre, l’Amodiaquine et l’Halofantrine qui ne font pas partie des...
Les protocoles thérapeutiques y sont toujours utilisés.

Les prescriptions ont été honorées à 86% par les pharmacies des formations sanitaires, le reste étant acquis dans les pharmacies privées.

Les patients à 88% ont acquis les médicaments prescrits. Pour les 12% restants, soit ils n’avaient pas assez d’argent pour acheter les médicaments, soit ils disposaient déjà certains médicaments à la maison, soit encore ils avaient estimé que tous les médicaments n’étaient pas nécessaires.

### Niveau de mise en œuvre de la mesure de gratuité

Une proportion de 46% des patients ayant participé à l’enquête a bénéficié de la mesure de gratuité.

La figure 3 montre que la mesure de gratuité n’est pas uniformément appliquée dans tous les centres de santé. L’application varie de 0% dans 4 centres à 100% dans un centre.

### Discussion

La présente étude a permis de faire le point sur la mise en œuvre de la mesure de gratuité pour la prise en charge du paludisme.

### Les sources d’approvisionnement en CTA

Depuis 2006, l’approvisionnement en médicaments essentiels des formations sanitaires publiques a été confié à la COMEG. Pour des raisons tant techniques que...
logistiques, la COMEG ne parvient pas à satisfaire les besoins exprimés. Au lieu de renforcer les capacités de la COMEG pour l’amener à mieux remplir sa mission, le Ministère de la Santé a procédé à l’achat des CTA qui sont mises à la disposition des centres de santé publiques par le biais de la Direction départementale de la Santé.

Pour les médicaments faisant l’objet d’un recouvrement des coûts, en plus de la COMEG, les formations sanitaires publiques s’approvisionnent auprès des grossistes privés, en violation de la réglementation en vigueur.

La réglementation de l’approvisionnement des pharmacies privées est bien respectée. Cet approvisionnement ne se fait qu’à partir des grossistes-répartiteurs privés, qui eux-même travaillent avec des centrales d’approvisionnement à l’étranger.

**DISPONIBILITÉ DES CTA**

Cinq formulations ont été retenues pour la prise en charge du paludisme:
- Artésunate + Amodiaquine par voie orale : Traitement de première intention;
- Artemether + Lumefantrine par voie orale : Traitement de seconde intention;
- Quinine par voie orale : Paludisme de la femme enceinte;
- Quinine par voie intraveineuse : Traitement du paludisme grave;
- Sulfadoxine + Pyriméthamine par voie orale : traitement présomptif intermittent chez la femme enceinte.

Les schémas thérapeutiques ne sont pas respectés car un large pourcentage d’autres thérapies restent en circulation aussi bien dans le secteur public que privé. Ceci relève des habitudes acquises par les prescripteurs, mais également de l’insuffisance d’information et de formation sur les nouvelles combinaisons antipaludiques. A cela il faut ajouter la faiblesse du système de supervision des formations sanitaires liée à l’insuffisance des moyens mis à leur disposition.

Au niveau de la COMEG les directives d’approvisionnement sont appliquées. On n’y trouve que la Quinine, la Sulfadoxine + Pyriméthamine et la combinaison Artésunate + Amodiaquine. Malheureusement la disponibilité de ces médicaments n’est pas assurée.

La faiblesse du système de réglementation pharmaceutique favorise l’introduction de nombreux médicaments pour lesquels aucun bénéfice n’a été établi et explique également la présence sur le marché de médicaments n’étant pas inscrits sur la LNME.

**LEVEL OF UTILIZATION OF THE CTA**

Dans les formations sanitaires publiques, une prescription d’antipaludiques sur deux est une CTA. Les antipaludiques les plus prescrits étant à part égale la Quinine et la combinaison Artésunate + Amodiaquine. Ces médicaments sont généralement disponibles à la pharmacie de la formation sanitaire, d’où leur acquisition par les populations par le biais de la mesure de gratuité ou par le recouvrement des coûts. Dans ce dernier cas, deux modalités de paiement sont observées. Pour les centres de santé rationalisés, il existe un ticket modérateur dont la valeur est de 2’000 F. Il permet l’accès aux soins y compris les médicaments. Par contre dans les centres de santé non rationalisés, le médicament est acheté au prix coûtant. Le coût moyen du traitement d’un accès palustre avec les CTA est de 5’877 F, alors qu’il atteint 8’418 F dans les formations sanitaires privées.

**LEVEL OF IMPLEMENTATION OF THE FREE MEASURE**

La présente étude a démontré que la mise en œuvre de la gratuité n’est pas effective dans l’ensemble des centres de santé intégrés. En effet seuls 46% des patients ayant participé à l’enquête ont bénéficié de cette mesure. En termes de centres de
santé appliquant la mesure, seuls 7% ont assuré des prestations à l’ensemble des patients reçus. Par contre dans 28,57% des centres, aucun patient n’a bénéficié de la mesure. La faible disponibilité des médicaments dans certains centres de santé et le manque de mesures d’accompagnement seraient à l’origine de ce faible taux d’exécution.

La mesure de gratuité du traitement antipaludique vise à assurer à toutes les femmes enceintes et aux enfants de 0 à 15 ans un accès au traitement, en vue de contribuer à la réduction de la mortalité maternelle et infantile. Pour cela, le gouvernement devait assurer la disponibilité des médicaments dans les formations sanitaires d’une part, et créer les conditions favorables à la mise en œuvre d’autre part, notamment par :

- le renforcement des capacités des agents de santé en vue d’une prescription, d’une dispensation et d’un usage rationnels des médicaments ;
- le renforcement des capacités de l’autorité nationale de réglementation pharmaceutique pour un meilleur contrôle du marché pharmaceutique ;
- la sensibilisation des communautés à la mesure de gratuité ;

- la mise en place des mécanismes financiers de soutien afin de compenser la réduction du recouvrement des coûts.

**CONCLUSION**

Dans un contexte marqué par la pauvreté, l’amélioration de l’état de santé des populations congolaises constitue une préoccupation majeure des pouvoirs publics.

La prise en charge du paludisme nécessite la mise à disposition des médicaments efficaces et à des coûts abordables pour les populations. Elle exige également des protocoles thérapeutiques adaptés basés sur l’utilisation des CTA.

La présente étude a démontré que la mise en œuvre de la mesure de gratuité n’est pas effective dans l’ensemble des centres de santé intégrés. Pour y arriver, le gouvernement devrait créer les conditions favorables y compris des mécanismes financiers d’accompagnement pour ne pas hypothéquer la mise en œuvre de la politique nationale en matière de prise en charge du paludisme et sa future extension vers les hôpitaux pour les accès graves.

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Despite the progress and efforts being made to strengthen laboratory capacities in the Region, challenges remain. The purpose of this document is to raise awareness on the need to strengthen public health laboratory services and propose actions for building national laboratory capacity.

Laboratories continue to play a critical role in all disease control and prevention programmes by providing timely and accurate information for use in patient management and disease surveillance. For purposes of case management and disease control and prevention, laboratories can be grouped into two broad categories: clinical laboratories and public health laboratories.²

Public health laboratories are responsible for providing timely and reliable results primarily for the purpose of disease control and prevention. However, clinical laboratories are responsible for providing accurate diagnosis of ongoing, recent or past infections for appropriate case management. The focus of the clinical laboratory is individual patient care. However, data generated from both types of laboratories are essential for disease surveillance, control and prevention activities.

In the African Region, the situation of laboratory services is characterized by inadequate staffing, equipment and supplies. These are the main obstacles to early detection of epidemics such as Ebola, Marburg and both multidrug-resistant and extensively drug-resistant tuberculosis. Functioning public health laboratory systems rely on effective disease surveillance and prevention of major emerging, re-emerging and
endemic communicable and noncommunicable diseases.\textsuperscript{2}

At its forty-eighth session, the WHO Regional Committee for Africa passed Resolution AFR/RC48/R2 urging Member States to evaluate the laboratory component of disease control programmes as the first step towards strengthening disease surveillance.\textsuperscript{3} Since the adoption of the resolution, a number of capacity-building activities have been implemented.

Laboratory systems were conducted. In addition, training of staff on diagnostic techniques, laboratory safety, quality assurance and quality control systems has been provided on a regular basis.

Laboratory-based surveillance of meningitis epidemics has played a significant role in timely outbreak response (see tables, source: countries; data compiled by MDSC). Countries in the meningitis belt provide laboratory data on a weekly basis. Feedback on this data is given to all contributing laboratories. A monthly bulletin (MDSC-Multidisease Surveillance Centre Meningitis Monthly Bulletin) on epidemiological and laboratory data is also issued and shared with countries and partners. The regular analysis of laboratory data allows countries to predict the circulating meningitis serotype and thus select the appropriate vaccine.

The polio laboratory network is linked to an active community-based surveillance system that collects specimens from suspected cases and forwards them to laboratories for processing. Regional laboratories have developed capacity to provide genetic information that is necessary for tracking the spread of viruses. The maps below, based on laboratory surveillance by

### Laboratory data on meningitis in West Africa, 2009

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of cases</th>
<th>Number CSF</th>
<th>N. meningitidis</th>
<th>Hib</th>
<th>S. pneumoniae</th>
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</thead>
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<tr>
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<td>350</td>
<td>177</td>
<td>2</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
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<td><strong>194 998</strong></td>
<td><strong>4 968</strong></td>
<td><strong>1 949</strong></td>
<td><strong>32</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Source: Multidisease Surveillance Centre, Ouagadougou, Burkina Faso.

### Serotypes of meningitis pathogens isolated in the meningitis belt countries, 2009
the polio laboratory network, show the distribution of wild poliovirus cases. The lessons learnt from polio have been useful in establishing measles surveillance systems which are integrated with acute flaccid paralysis surveillance in a number of countries.\(^4\),\(^5\)

Despite the progress and efforts being made to strengthen laboratory capacities in the Region, challenges remain. The purpose of this document is to raise awareness on the need to strengthen public health laboratory services and propose actions for building national laboratory capacity.

**ISSUES AND CHALLENGES**

Although progress has been made in strengthening laboratory capacity to support programmes such as poliomyelitis eradication, HIV/AIDS prevention and control, and measles elimination, challenges remain. These include the lack of national policy and strategy for laboratory services, insufficient funding, inadequately trained laboratory staff, weak laboratory infrastructure, old or inadequately serviced equipment, lack of essential reagents and consumables, and limited quality assurance and control protocols. Laboratories are usually given low priority and recognition in most national health delivery systems. The challenge is developing a comprehensive national laboratory policy which addresses the above issues.

Availability and access to quality laboratory services are among the major challenges contributing to delayed or inappropriate responses to epidemics, disease control and patient management. The result has been continued reliance on empirical patient care, a practice that not only wastes resources but also contributes to
drug resistance. The majority of the estimated 12 million annual deaths in sub-Saharan Africa remain uninvestigated.6

Despite the growing threat from emerging and re-emerging pathogens, very few laboratories have capabilities for diagnosing highly infectious diseases such as viral haemorrhagic fever, severe acute respiratory syndrome, chikungunya (a viral illness that is spread by the bite of infected mosquitoes, resembling dengue fever), and the highly pathogenic avian influenza virus, including A/H5N1.7 Countries often ship specimens to other regions for confirmation, resulting in delayed responses to outbreaks. The establishment of centres of excellence or public health reference laboratories to provide diagnostic services for these highly infectious diseases remains a major challenge for most countries.

Evaluation of the results of the external quality assessment scheme conducted in the African Region revealed that a number of laboratories have had difficulties in identifying common bacteria such as Vibrio cholerae and Shigella. The major reasons for such failures in diagnosis were the absence of national quality control systems and the non availability of special culture media, antisera and other essential reagents. Establishing national quality assessment schemes and providing standard laboratory supplies remain major challenges.

Other challenges include the inadequacy of biosafety and biosecurity equipment and guidelines, poor coordination and inadequate representation of laboratory personnel in public health policy development and implementation.

Most countries are faced with the challenge of establishing laboratory training schools beyond basic training for technicians, thus limiting the level of technology available in countries. In addition, highly-qualified health workers have little interest in laboratory sciences mainly because of poor incentives and working environment. A survey conducted in 2003 through the external quality assessment programme confirmed that few laboratories were supervised by senior microbiologists and pathologists.8 In addition, the brain drain experience across the health sector has affected the health sector has affected laboratory services.9

The availability and maintenance of laboratory equipment remain further challenges. Systematic assessment of laboratory services carried out in connection with integrated disease surveillance and response programmes demonstrated that countries often do not have the minimum required equipment to provide quality diagnosis. The lack of equipment or the use of substandard or poorly maintained equipment and instruments leads to unreliable laboratory results. 16. Inadequate funding has been identified as a hindrance to quality laboratory services. Even though laboratory partnerships and collaboration have helped sustain and upgrade laboratory services for polio, measles and HIV programmes, countries are not taking advantage of these innovations to strengthen national public health laboratory systems. Hence, there is a need to strengthen partnerships and collaboration to ensure sustainable investment in laboratory services. It is critically important to motivate the laboratory staff to minimize brain drain.

Regular supervision of peripheral laboratories is one strategy for ensuring standard laboratory practices, continuing education and mentoring of laboratory staff. In the African Region, there is weak coordination of laboratories mainly resulting from a lack of formal national networking mechanisms to link all levels. The lack of institutionalized coordination has resulted in unsupervised district and peripheral laboratories with ambiguous quality of testing. Establishing a functioning national laboratory network will
allow countries to overcome the issues highlighted above.

In many countries, the administrative structures of ministries of health only consider laboratories along with pharmacies, radiology and clinical services. Often, more attention is given to essential medicines rather than laboratory services. The challenge is how to advocate for representation of laboratory services at the highest decision-making level.

There are considerable challenges for national public health laboratory services in the African Region. They call for major investments in policy, capacity building and infrastructure development in order to improve patient management as well as disease surveillance, control and prevention. There is need for a combination of complementary measures, actions, strategies and capacity strengthening.

**ACTIONS PROPOSED**

**Develop a comprehensive national laboratory policy**

A national laboratory policy should focus on laboratory organization, structure and coordination; staff motivation and retention; integration of services; essential facilities, equipment and maintenance; biosafety and biosecurity. The policy should also consider staff training requirements, continuing education, career development, laboratory support to national health programmes, minimum essential techniques, standard operating procedures for equipment and technologies by level, and the roles and responsibilities of a national public health laboratory.

**Formulate a national laboratory strategic plan**

A national strategic plan needs to be prepared to implement the national laboratory policy. Its purpose is to ensure the delivery of effective, efficient, accessible, equitable and affordable quality laboratory services.

**Establish or strengthen laboratory leadership**

Strong laboratory leadership ensures that the laboratory agenda is a central component of national health systems. The creation of a high-level, decentralized and coordinated structure is the key in enabling public health laboratories to play a significant role in disease control and prevention.

**Set up a national public health reference laboratory**

There is need to establish well-equipped and sufficiently staffed national public health reference laboratories that will operate as centres of excellence for laboratory services. The national reference laboratory will coordinate national laboratory networks; diagnose pathogens causing major outbreaks, including handling and shipping highly infectious and dangerous pathogens; provide training and continuing education; provide reference testing; support the setting of laboratory norms and standards; produce reagents, where possible; establish and coordinate the national quality assessment scheme; participate in public health research and policy-making; and use information and communication technology to link laboratories.

**Strengthen the public health laboratory supply and distribution system**

To ensure continuous laboratory supplies, it is necessary to establish a demand-driven system where laboratories specify and quantify their needs based on standards defined at national level. Existing distribution systems should be strengthened to provide efficient delivery of laboratory supplies.

**Improve public health laboratory quality assurance systems**

A quality assurance programme is the backbone of quality laboratory performance. Establishing or strengthening laboratory quality assurance programmes will...
allow countries to improve the reliability and reproducibility of laboratory results. The national public health reference laboratories of Member States should produce and distribute quality assessment proficiency panels to national laboratories to identify and correct gaps in the quality of laboratory service. Participation in the national external quality assessment scheme should be linked to annual laboratory registration and renewal processes.

Strengthen laboratory staff training at all levels
The laboratory needs for staff training and continuing education should be identified and addressed. This will allow laboratory staff to remain motivated and up-to-date in the available technologies. Countries will need to invest in the necessary infrastructure.

Ensure maintenance of laboratory equipment
Basic training is essential for laboratory technicians to operate laboratory equipment and perform preventive maintenance. Maintenance should be done on a preventive basis rather than a corrective basis. National public health laboratory services should therefore build internal capacity for preventive and curative maintenance; manufacturers should only attend to serious equipment problems.

Strengthen laboratory management information systems
A strong laboratory management information system allows a country to provide regular and accurate data for evaluating and planning quality laboratory services. An ideal laboratory data management system should include collection of appropriate information, analysis and utilization of results at every level, periodic reporting on equipment and supplies, financial resource reports, summary of testing processes, quality assessment reports, and staff inventory.

Monitor and evaluate laboratory services
Establishment and strengthening of monitoring and evaluation systems with targets and measurable indicators will allow countries to improve the delivery of quality laboratory services. Monitoring and evaluation should incorporate laboratory activities such as adherence to standard operating procedures and safety guidelines, quality assessment activities, laboratory performance and workload, and utilization of supervisory tools.

Ensure adequate funding for public health laboratory services
Public health laboratory services should be funded through several mechanisms, including government budgetary provision and dedicated grants, credit lines and income-generating activities, e.g. charging fees for services provided. Additional funding opportunities for laboratories exist through partnerships like the Global Fund to Fight AIDS, Tuberculosis and Malaria; polio initiatives; Rotary International; and the global highly pathogenic avian influenza networks. Integration of national public health laboratory programmes will ensure sharing and optimal use of available resources.

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IMPROVING THE AVAILABILITY, QUALITY AND USE OF HEALTH INFORMATION, RESEARCH EVIDENCE AND KNOWLEDGE TO STRENGTHEN HEALTH SYSTEMS

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The availability, quality and use of health information, research evidence and knowledge is not adequate in the African Region. This has resulted in two major types of knowledge gaps: gaps in health knowledge, and the so-called “know-do gap”. Health knowledge gaps are where essential answers on how to improve the health of the people in the Region are missing. This is an issue related to the acquisition or generation of health information and research evidence. The “know-do gap” is the failure to apply all existing knowledge to improve people’s health. This is related to the issue of sharing and translation of health information, research evidence, or knowledge. Although there are major structural constraints, the key to narrowing the knowledge gap and sustaining health and development gains is a long-term commitment to strengthen national capability to ensure the availability of relevant and high quality health information and evidence and its use for policy and decision making. The close linkage and coordination of fragmented disciplines such as information, health research and knowledge management is seen as an essential step in this process and is also a key action that countries should consider as part of the Framework for the Implementation of the Algiers Declaration.
The utility of health information, research evidence and knowledge (collectively described as knowledge) is to better inform and thus empower individuals and the public to make the right decisions regarding their health and well-being; influence public health policy and decision making; advance the frontiers of knowledge to develop products and tools for the promotion, maintenance, protection and restoration of health.

A national health information system (HIS) has been defined as a set of interrelated components and procedures organized with the objective of generating health information and intelligence to monitor the health status and health services of a nation and to improve public health leadership and management at all levels. The goal is to increase the availability of timely, reliable and user-friendly information at all levels of the health system. Health information systems are a fundamental component of health systems, effective health research, and a strategy to narrow the knowledge gap.

A health research system has been defined as the people, institutions and activities involved in the generation and application of information, evidence and knowledge. Health research includes five generic areas of activity: measuring the problem; understanding its cause(s); elaborating solutions; translating the solutions or evidence into policy, practice and products; and evaluating the effectiveness of solutions. The primary functions of a research system are to identify priorities; mobilize resources and maximize the use of existing ones; promote ethical and good practices in research; develop and sustain the human and institutional capacity necessary to conduct research: disseminate research results to target audiences; apply research results in policy and practice; and evaluate the impact of research on health outcomes.

Health information and evidence should play a major role in directing resource flows and health programmes. Generation and consolidation of information and evidence on public health issues, including publication of comparative and analytical reports and promotion of research studies on key public health topics, are critical. This requires establishing and maintaining a strong system that generates the information, evidence and knowledge required to analyze, understand and operate health systems in an efficient manner.

Knowledge management is a set of principles, tools and practices that enable people to create knowledge, and to share and apply what they know in order to create.
value and improve efficiency and effectiveness, strengthen health systems and improve health outcomes. Knowledge management can facilitate information dissemination and sharing, capacity building, education and distance learning, research support and documentation, and promote and support communities of practice as well as diseases and epidemic surveillance and response. This is possible because of advances in information and communication technologies that have hugely expanded the amount of, and access to, health information and knowledge.

This paper describes four key problems regarding health information, research evidence and knowledge, as well as the opportunities and constraints that face countries in attempting to address them. An agenda for action based on the Framework for Implementation of the Algiers Declaration is also presented.

THE KNOWLEDGE GAP

There are several kinds of knowledge gaps (for example the knowledge gap between industrialized countries and the rest of the world; or the generational gap in knowledge between the old and the young).

Two major types of gaps are however important for the African Region. There are gaps in health knowledge, where essential answers on how to improve the health of the people in the Region are missing. This is an issue related to the generation of health information or evidence. There is also the failure to apply all existing knowledge to improve people’s health, which is often referred to as the ‘know–do gap’. This is related to the issue of sharing and translation of health information, research evidence, or knowledge. Closing these gaps is a major challenge.

The knowledge gap is particularly wide in the WHO African Region and presents a challenge to the achievement of the Millennium Development Goals and other agreed targets. The knowledge gap as described above is one of the four gaps identified in WHO’s 11th General Programme of Work (2006-2015), along with gaps in social justice, responsibility and implementation.

The key to narrowing the knowledge gap and sustaining health and development gains is a long-term commitment to strengthen national capability to ensure the availability of relevant and high quality health information and evidence and its use for policy and decision making. Narrowing the gap is achievable if civil society, the private sector, governments, international organizations, and individuals work jointly to create an environment where essential knowledge is sought, shared, and applied for health development, equity, and security in the Region. The need for commitment and the achievability of narrowing the knowledge gap in the African Region have been recognized by ministers of health and other policy makers.

Some countries in the African Region have made considerable commitments to health research and information, and their national health research and information systems are increasingly effective, but in many other countries the systems remain under-resourced, with limited potential to generate, disseminate, or apply knowledge. Despite the increasing availability of external financial resources, investment on substantive actions to narrowing the knowledge gap is generally fragmented and uncoordinated.

COORDINATION AND SYNERGY

Thus, health information is handled between ministries of health, planning and statistical bureaus. Health research is handled by several sectors including health, education, science and technology, agriculture. The multi-sectoral nature of information and
research is unavoidable, but the potential for synergy is lost because the effort of the various sectors is not coordinated by the ministry of health.

The fragmentation of health information and research by disciplines and areas of work (such as information, health research and knowledge management), and duplication and redundancy of efforts, as well as competition for the same limited resources, are also problems. At times, this is exacerbated by donors’ interests and pressure. Such fragmentation cannot be defended on logical or logistic grounds. It is not logical because all three disciplines or areas of work (and related institutions and donors) contribute to the same knowledge cycle of information, evidence, and knowledge (as described above) resulting in action to improve health outcomes. Moreover better coordination and synergy is a necessity to most countries of the African Region which are in continuous states of severe resource constraint.

To start reversing this fragmentation and ensure better coordination of efforts, and to promote a culture that is conducive to the acquisition, generation, sharing and application of information, evidence and knowledge, countries will need to take a series of essential first steps as described in the section describing the way forward.

**AVAILABILITY OF RELEVANT AND HIGH-QUALITY HEALTH INFORMATION**

Data on births, deaths, and causes of death (i.e. evidence for progress in attaining key MDGs on levels and causes of mortality) are lacking in the majority of countries of the Region, where vital events go unregistered and causes of death remain poorly understood. Of the 46 countries of the Region, only four have a mortality registration coverage rate of 75% or higher.6

Despite a heavy reliance on household surveys for many health indicators (including data on inequities between population groups), national surveys have not been frequently conducted in the Region. The frequency is often too low to allow close monitoring of MDG progress of several indicators. Moreover, data emanating from household surveys are inevitably subject to margins of uncertainty with the result that apparent changes between surveys may not be statistically significant.7

Data on the availability and distribution of health facilities and the health workforce are often incomplete, inaccurate and out of date. Few countries have systems that can monitor the service delivery or the availability of essential medicines, equipment and supplies; data on population access to essential services, especially at sub-national or district level is limited.

Poor quality of available data is usually due to the small sample size of national surveys that give unreliable results for mortality estimates, particularly maternal mortality ratio. Also, because of inadequate statistical and laboratory capacity, valid measures of disease and disability can be hard to come by in many countries.8

Completeness, timeliness and accuracy of reporting are often described as problematic for routine health information because they relate only to the populations using public health services.9 Data management is also not adequate in most countries where there are no clear procedures for the collection, storage, analysis, and distribution of data, nor a centralized data depository. Moreover lack of standardization (e.g., by age) of estimates by country statistical offices may result in information (e.g., on mortality) that may not compare favourably with that of estimates from international (including UN) estimates.10
AVAILABILITY OF RELEVANT AND HIGH-QUALITY EVIDENCE

Despite the volume and variety of data generated through the routine health management information system, the information is systematically under-analyzed and under-utilized for monitoring of MDGs, planning and programme reviews. Many countries put little emphasis on health information and research within the national science and technology agenda. As a result, critically needed evidence on health systems may not be available. Moreover, most of the global funding for research does not go to studies addressing the major health problems of developing countries11.

Donor-driven health information and research agendas can divert national investments to international priorities. Most of national household survey timing and objectives are largely driven by funding agencies. Because the focus is on international data needs and cross-country comparability, such survey programmes may neglect major health data needs of countries (e.g., at district level). Science-and-technology-driven, externally supported research does not usually give priority to health systems and policy research12.

Researchers give priority to publishing in international high-impact journals that favour basic or fundamental research over operational studies focusing on health systems. Most institutions also follow policies and career structures that promote publication based on quantity (e.g., number of items published in a peer-review journal) rather than relevance to national priorities.

Poor quality of evidence arises from the lack of use of standardized, rigorous, and systematic methods to produce evidence, as well as to present or package it in appropriate format. However, another important quality consideration is whether the whole process of generation of information and evidence followed standard ethical norms.

In order to be admissible as evidence or be trusted, any information or conclusions should be based on data that are obtained using adequate ethical standards, including securing informed consent before data collection, ensuring the safety of study participants, as well as disclosing all relevant findings of a trial, even if they are negative. Currently, the capabilities of Regional countries to monitor and regulate the scientific and ethical conduct of research and protect human subjects of research from harm are limited13 (Figure 1).

Very few systematic reviews are attempted to synthesize the vast amount of health information into evidence suitable for policy-and decision-making. There is a tendency to use literature reviews and expert opinion to produce evidence. Systematic reviews are important ways of treating vast amounts of information in an objective, unbiased and verifiable (and thus scientific) way14.

Figure 1. Percent of health research institutions with policies and committees for scientific and ethics review, African Region, 2007

![Figure 1. Percent of health research institutions with policies and committees for scientific and ethics review, African Region, 2007](image-url)
The evidence produced is also often not formatted in a manner that helps to inform researchers, policy-makers, practitioners, and members of the public. The evidence is not packaged in a user-friendly format, and made relevant to the local context.

**ACCESS TO EXISTING GLOBAL HEALTH INFORMATION**

Poor access to existing global health information results in wasted opportunities and repeatedly reinventing the wheel. This poor access could be a result of the inability to even learn about the very existence of specific key information owing to the vast amount of information available globally. It could also be caused by the inability to retrieve information in a timely fashion owing to the lack of computer technology or an Internet connection. The information could also be inaccessible because it is not in a form that is comprehensible to the user – for example when a non-technical audience is presented with materials in technical jargon, or in a language not spoken by the audience. Copyright regulations and cost of information are important factors that limit full access to existing global health information. Even with better availability of indexes, a wealth of information from countries of the Region is not accessible because either it is never published in any form. Even if it is published, it is generally not indexed.

**USE OF EVIDENCE AND KNOWLEDGE FOR ACTION**

Lack of use of existing evidence and knowledge for action could result because policy and decision makers may not value the evidence presented. This in turn could be due to the fact that either they do not understand the evidence, trust it or there are other competing interests (e.g. a pressure or lobbying group). Users will trust and appreciate evidence and make more efforts to apply it they are given a chance to and are supported in articulating their needs for evidence. They should also be given the opportunity to work closely with the producers of evidence. Despite several initiative ongoing in some countries, most countries do not as yet provide conducive environments for use of evidence for policy- and decision-making.

In addition to scientific soundness of a proposed policy or its firm basis on research evidence, policy makers are also concerned with the feasibility of its implementation and the opinion of the community. Thus, it is important that research evidence be integrated with organizational and political evidence in order to be attractive to policy makers.

**OPPORTUNITIES AND CONSTRAINTS**

There are indications of an increasing trend in transparency of the policy process in the African Region. There is also a growing recognition that without improving health systems MDG goals and targets on maternal and child mortality or control of major diseases will not be achieved. Any improvement in resource allocation to the health system resulting from this recognition would be beneficial for information, research and knowledge systems because these are part and parcel of health systems. Moreover, there has been an upsurge in the interest of donors and lenders to improve the availability and quality of health information and evidence to enable better monitoring the use of allocated funds for agreed upon goals (including the MDGs).

The increasing availability of information and communication technologies, particularly of the Internet and mobile telephony, has improved the prospect of narrowing the knowledge gap in the Region. The median increase in access to both mobile and fixed lines in the African Region between 2002 and 2007 was over 50% (as measured by the compound annual growth rate), with some countries showing over 100% increase during the same period.
Although there are encouraging prospects that are cause for some optimism, there are equally daunting structural constraints in the Region that have to be surmounted if the knowledge gap is to be narrowed significantly.

Most of the knowledge gap, particularly the gap related to the application of existing knowledge, is a result of inadequate human, material and financial resources. The case of maternal mortality in the African Region exemplifies that resource constraints impede the application of knowledge. The information and knowledge on effective interventions for reducing maternal mortality (such as adequate access to obstetric emergency services and adequate transport to these facilities) has existed for many years, and have been used to reduce maternal mortality in Europe and USA early in the last century and recently in emerging economies such as Malaysia and Thailand. This information on effective intervention is also available to health workers and policy makers in the African Region. However, over 250 000 mothers continue to die each year in the African Region (about half of the global total) because of complications in pregnancy and delivery. Better knowledge may improve current efforts in this area. However, unless obstetric emergency services are available in districts close to mothers (an institutional issue), and there is adequate transportation facilities to take them in event of a complication (an infrastructure issue), appreciable reduction in mortality will not be possible.

Most countries have small economies and are dependent on external assistance for improving their citizen’s health. Moreover, the amount of external assistance offered is usually not adequate or sustainable. For example, the Africa MDG Steering Group in its 2008 Report estimated that Sub-Saharan countries would require over 10 billion dollars every year to reach the MDG targets on maternal and child mortality. Current external flow of funds for these efforts is however estimated to be no more than 10% of the requirements.

In spite of the increasing trend in coverage of ICT technology particularly mobile telephony (as described above), only seven countries have existing coverage over 50%. Critical infrastructures needed to significantly improve the knowledge gap (such as road transport, broadband communication or electric power) are still poorly developed. For example, excluding South Africa and Algeria, the entire African Region total electric consumption is less than that of Republic of Korea (Figure 2).

Knowledge generation, acquisition, absorption or application is dependent on the total intellectual capital of a country. Widespread illiteracy, limited post-secondary or continuing education complicated by the mass-migration of health professionals (the so called ‘brain-drain’) are major constraints on the effort to narrow the knowledge gap. The literacy rate for the African Region currently stands at 63%; the lowest of all of the WHO Regions.
THE WAY FORWARD

The Algiers Declaration was adopted by the 59th Session of the WHO Regional Committee (September 2009). The Algiers Declaration and the Framework for its implementation include a list of recommendations to countries, which, if implemented, could reinforce the availability, quality and use of knowledge to improve their people’s health.

Countries were asked to consider to:

1. Establish a broad multidisciplinary national working group composed of information scientists, statisticians, researchers, policy-makers and decision-makers from the health, education, science and technology, and other relevant sectors, tasked with initiating the process of implementation of the Algiers Declaration.

2. Establish or strengthen national and multisectoral structures or mechanisms such as a national coordination committee to oversee the development and implementation of policies and plans.

3. Conduct a national situation analysis to develop evidence base on the current state of national health information and research systems, and knowledge management, and ensure that the situation analysis is repeated at regular intervals.

4. Establish or strengthen a health research, information and knowledge management unit within the ministry of health to ensure coordination of efforts and to serve as a secretariat to the multidisciplinary national working group.

5. Develop a comprehensive evidence-informed national policy and strategic plan for narrowing the knowledge gap integrating health information, research and knowledge management systems.

6. Ensure that the health information, evidence, and research agenda includes broad and multi-dimensional determinants of health and that all efforts in these areas are linked to national health needs and policy priorities.

7. Adopt policies that promote access to global health information, evidence and knowledge by examining and adopting the application of intellectual property rights and by supporting North-South and public-private research partnerships within the context of the global strategy and plan of actions on public health, innovation and intellectual property.

8. Establish appropriate national policies and mechanisms for scientific and ethical oversight in the collection of data and generation of health information and evidence, including regulation of clinical trials; and for sensitization of people to their role, rights, and obligations when participating in studies.
Countries will also need to consider the following in order to improved the availability and quality of health information and evidence:

11 Identify and integrate all existing sources of reliable information, including information from the private sector.

12 Institute procedures to ensure the generation and availability of information that meet international norms and standards and to clearly define relations between the various components of the health information system.

13 Ensure the availability of relevant and timely health information by increasing the frequency of national demographic and health surveys; completing the 2010 census round; strengthening birth and death registration; carrying out surveillance and gathering service statistics; and enhancing monitoring of health systems strengthening.
Better dissemination and sharing of information, evidence and knowledge would require countries to:

14 Improve the management of health information through better analysis and interpretation of data; presentation of information using the proper format to ensure use for decision making; and sharing and reapplying information and experiential knowledge.

15 Promote innovative research directed towards discoveries in basic knowledge and its transformation into new tools such as medicines, vaccines and diagnostics.

16 Ensure the availability of relevant and timely evidence by reorienting the institutional research agenda to pressing local problems such as health systems research.

17 Ensure appropriate and adequate generation of evidence by strengthening institutional mechanisms for adequate ethical and scientific review of research from inception to publication and use of results.

18 Promote the use of systematic reviews in the production of evidence.

19 Establish mechanisms and procedures for documenting experiential knowledge and best practices in implementing health programmes.

20 Support the establishment of health libraries and information centres at local and national levels; link them to regional and international networks; and ensure that they have the necessary infrastructures, systems and human resources.

21 Ensure availability of printed and electronic materials in appropriate formats and languages.

22 Develop and strengthen the evidence base for health systems by consolidating and publishing existing evidence and facilitating knowledge generation in priority areas.

23 Ensure that all local publications (in all formats and languages) are included on the relevant international indexes.
In order to improve the use of information, evidence and knowledge countries should also consider to:

25 Ensure that policy-makers and decision-makers articulate their need for evidence and that they are part of the agenda setting process.

26 Improve the capacity of decision and policy makers to access and apply evidence.

27 Improve the sharing and application of information, evidence and experiential knowledge by, for example, supporting the establishment of Communities of Practice.

28 Support the translation of research results into policy and action by creating appropriate mechanisms and structures including promoting regional and country networks of researchers, decision-makers, and policy-makers for evidence-informed public health action.

29 Promote translational and operational research to assess how discoveries might be optimally utilized and strategically implemented to enhance access.

Better access to existing global health information, evidence and knowledge is the foundation to any efforts to narrow the knowledge gap. Countries should:

30 Promote wider use of indexes including those that enable access to local, non-English, and unpublished (i.e., 'gray literature') materials.

31 Improve use of expertise locators and social networks to better access and utilize experiential knowledge.

32 Promote open-access journals and institutional access to copyrighted publications (e.g. through HINARI).

Wider access to information and communication technologies for health is also essential. Within the framework of national ICT development policies and plans, countries would also need to:

33 Develop/strengthen web-based applications and databases.

34 Strengthen the management of databases, information, evidence and knowledge, particularly at district levels.

35 Critically evaluate available technologies to identify those that meet local demands and ensure interoperability between various systems.
Countries are also expected to establish or strengthen monitoring and evaluation mechanisms to track the implementation of the Algiers Declaration by identifying relevant input, process, output, and outcome. It is also important to develop or strengthen existing mechanisms in order to institutionalize monitoring and evaluation of all aspects of the implementation of the Declaration.

WHO will assist countries by developing a monitoring framework for the implementation of the Algiers Declaration and identify selected and standardized indicators to monitor the progress made by countries and promote sharing of best practices among them. The African Health Observatory that is being established by WHO will facilitate monitoring of the implementation of the Algiers Declaration and progress towards achieving the Millennium Development Goals and other global and regional health goals.

Acknowledgements

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References

COMMUNICABLE DISEASES EPIDEMIOLOGICAL REPORT

DATA VALID EFFECTIVE
17 FEBRUARY 2010

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BREAKING NEWS:
CEREBROSPINAL MENINGITIS EPIDEMICS

The epidemic season has started in countries of the meningitis belt. By the week ending on 7 February 2010 the Multi-Disease Surveillance Centre of Ougadougou (MDSC) reported that 3 districts (Pama and Titao, Burkina-Faso) and the Central African Republic (1er Arrondissement, Bangui) are in a state of epidemic. The epidemiological situation of the disease and its causal pathogens is being closely monitored by the MDSC and the affected countries for evidence based action.

CDER EDITORIAL

Through this issue of the CDER we are happy to share with you some findings from the analysis of weekly disease surveillance data received from countries of the WHO African Region. The hottest news is that “countries of the meningitis belt are going through the epidemic season”.

Together with communicable diseases, the Republic of Niger is monitoring malnutrition due to protein-energy deficiencies (PEM) on a weekly basis. This is a good example of how surveillance of noncommunicable health conditions can be jointly done with communicable disease surveillance. Analysis of the data for the year 2009 provides evidence that PEM is a major endemic condition in Niger: this fact calls for more support to this country against this underlying determinant of disease and high disease burden.

Maternal and neonatal tetanus (MNT) still occur in many countries of our Region, a situation that calls for action against this disease targeted for elimination. Since any case of neonatal tetanus is a sign of defective performance of our curative and public health services, the list of MNT-affected districts and villages should be given priority in health planning at field level. The appropriate response is through the strengthening of primary health care, including community-based surveillance and response, and the strengthening of mass immunization and routine immunization.

With regard to the timeliness and completeness of reporting, some of us still question the quality of weekly and monthly disease surveillance using aggregated data report forms in Africa. A snapshot of the level of these indicators in Tanzania is provided in this Report.

We hope you enjoy reading this issue of the CDER. Your feedback would be most welcome.

DR J. B. ROUNGOU
DIRECTOR, DPC DIVISION, AFRO
Analysis of Niger’s weekly disease surveillance data reveals that malaria, cerebrospinal meningitis (CSM), dysentery, and measles have dominated the epidemiological situation in this country during the year 2009 (Table 1). An outbreak of CSM that claimed over 500 lives marked the first half of the year 2009, from weeks 5 to 19 (Figure 1). From week 8 to 17, more than 500 cases of the killer disease were reported per week, including more than 1,500 at the peak of the epidemic on week 17. The sharp decline usually occurs with the first rains of the year in this Sahelian country. Prompt access to treatment, proper case management and the causal pathogens (most of them being *N. meningitidis* rather than *S. pneumoniae*) explain the moderate case fatality rate, another reason being a possible high number of community deaths among defaulting patients. More details on this epidemic, including information about the causal pathogens will be shared in next issues of the CDER.

Some other findings are worth commenting from the findings of Niger’s data analysis. A malaria epidemic followed the CSM’s from weeks 33 to the end of the year (Figure 2). Table 1 reminds us that Guinea worm disease (also called dracunculosis) is not eradicated in Niger yet. Measles has claimed 49 deaths. With 155 cases and 37 deaths tetanus is still not a rare disease. Protein energy malnutrition in the under five years old is highly prevalent. Laboratory information is needed about the reported cases of bloody diarrhea, diphtheria. The suspected yellow fever cases have not been lab confirmed. The good news was that there was no reported cholera case.
Table 1. Reported cases of, and deaths from, health conditions under weekly surveillance in Niger, 2009

<table>
<thead>
<tr>
<th>Disease</th>
<th>Cases</th>
<th>Deaths</th>
<th>Case fatality rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute flaccid paralysis</td>
<td>234</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Avian influenza</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Bloody diarrhoea</td>
<td>7,905</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Cerebrospinal meningitis</td>
<td>13,449</td>
<td>558</td>
<td>4</td>
</tr>
<tr>
<td>Cholera</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Dracunculiasis (Guinea worm disease)</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Filariasis</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Malaria</td>
<td>1,764,643</td>
<td>1,699</td>
<td>0</td>
</tr>
<tr>
<td>Measles</td>
<td>7,429</td>
<td>49</td>
<td>1</td>
</tr>
<tr>
<td>Protein energy deficiencies, moderate in under 5 year-olds</td>
<td>115,418</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>Protein energy deficiencies, severe in under 5 year-olds</td>
<td>84,914</td>
<td>426</td>
<td>1</td>
</tr>
<tr>
<td>SARS</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tetanus, neonatal and maternal only</td>
<td>14</td>
<td>7</td>
<td>50</td>
</tr>
<tr>
<td>Tetanus, other types</td>
<td>141</td>
<td>30</td>
<td>21</td>
</tr>
<tr>
<td>Whooping cough</td>
<td>1,355</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Yellow fever (no confirmed case)</td>
<td>21</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: Ministry of Health Niamey, 8/1/2010 update.

Malaria episodes occurred throughout the year in Niger with an epidemic pattern from week 33 to the end of the year with a peak at week 40 (Figure 2). This pattern is historically usual: therefore, public health interventions against malaria are indicated all the year long, mostly before week 33 (mid-August) in order to lower the peak.

Figure 2. Trends of reported malaria episodes in Niger in 2009

Source: Ministry of Health Niamey, 8/01/2010 update.
Table 2 provides a list of 30 districts that have reported tetanus cases. Priority should be given to these districts when planning anti-tetanus interventions in Niger. Because it reported a high number of cases of this disease, Birni N’Konni’s district deserves a special consideration. To optimize the cost of such interventions the integrated disease surveillance (IDS) case report forms will provide the exact locations where this disease occurred.

### Table 2. Reported cases of tetanus in Niger, by district, 2009

<table>
<thead>
<tr>
<th>District</th>
<th>MNT cases</th>
<th>Other types</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abalak</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Arlit</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Birni N’Konni</td>
<td>1</td>
<td>43</td>
<td>44</td>
</tr>
<tr>
<td>Boboye</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Bouza</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Dakoro</td>
<td>0</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Dogon-Doutchi</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Dosso</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Gaya</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Goure</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Guidan-Roumdji</td>
<td>0</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
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</tr>
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<td>0</td>
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<tr>
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<td><strong>Total</strong></td>
<td><strong>14</strong></td>
<td><strong>141</strong></td>
<td><strong>155</strong></td>
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</table>

Source: Ministry of Health Niamey, 8/01/2010 update.

## NEONATAL TETANUS IN THE WHO AFRICAN REGION: A CALL FOR INTENSIFIED ACTION

Beyond the borders of Niger, neonatal and maternal tetanus remain a public health problem in the Region. Most of the countries have reported cases, with a relatively poor response rate (Table 3).
<table>
<thead>
<tr>
<th>Country</th>
<th>Total number of cases</th>
<th>Cases responded to</th>
<th>Mothers were vaccinated</th>
<th>Mothers were adequately vaccinated</th>
<th>Delivery by physician or midwife</th>
<th>Sterilized blade used to cut cord</th>
<th>Cases that died</th>
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<td>Algeria</td>
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<td>3</td>
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<td>0</td>
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<td>6</td>
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<td>21</td>
<td>21</td>
<td>7</td>
<td>7</td>
<td>31</td>
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<tr>
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<td>2</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>Zimbabwe</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>403</strong></td>
<td><strong>113</strong></td>
<td><strong>152</strong></td>
<td><strong>80</strong></td>
<td><strong>23</strong></td>
<td><strong>137</strong></td>
<td><strong>213</strong></td>
</tr>
</tbody>
</table>

Proportion of all cases: 28% 38% 20% 6% 34% 53%

Source: Ministries of Health, IDSR case-based Data.
With technical support from WHO/AFRO, Botswana has computerized its IDS Monthly Disease Report form. Jan 2004 to Nov 2009 data have been entered at Ministry of Health level using EpInfo. The following table derives from the analysis of this very rich data set.

### Table 4. Disease cases and deaths in Botswana as reported using the IDS monthly aggregated data

<table>
<thead>
<tr>
<th>Disease</th>
<th>Outpatient cases</th>
<th>Outpatient deaths</th>
<th>Inpatient cases</th>
<th>Inpatient deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute flaccid paralysis</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>AIDS, new case</td>
<td>1871</td>
<td>4</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Cholera</td>
<td>0</td>
<td>0</td>
<td>11</td>
<td>1</td>
</tr>
<tr>
<td>Diarrhoea with blood</td>
<td>3260</td>
<td>0</td>
<td>126</td>
<td>2</td>
</tr>
<tr>
<td>Diarrhoea with severe dehydration in the under 5 year-old</td>
<td>1408</td>
<td>3</td>
<td>370</td>
<td>18</td>
</tr>
<tr>
<td>Diarrhoea with some dehydration in the under 5 year-old</td>
<td>13741</td>
<td>5</td>
<td>1369</td>
<td>21</td>
</tr>
<tr>
<td>Hepatitis B</td>
<td>14</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>HIV infection</td>
<td>12352</td>
<td>2</td>
<td>330</td>
<td>17</td>
</tr>
<tr>
<td>Human rabies</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Malaria in the 5+ year-old</td>
<td>7270</td>
<td>0</td>
<td>200</td>
<td>1</td>
</tr>
<tr>
<td>Malaria in the 5+ year-old, laboratory confirmed</td>
<td>331</td>
<td>1</td>
<td>82</td>
<td>3</td>
</tr>
<tr>
<td>Malaria in the under 5 year-old</td>
<td>3900</td>
<td>0</td>
<td>110</td>
<td>0</td>
</tr>
<tr>
<td>Malaria in the under 5 year-old, laboratory confirmed</td>
<td>184</td>
<td>0</td>
<td>41</td>
<td>0</td>
</tr>
<tr>
<td>Malaria in the under 5 year-old, with severe anaemia</td>
<td>17</td>
<td>0</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Measles</td>
<td>199</td>
<td>0</td>
<td>33</td>
<td>0</td>
</tr>
<tr>
<td>Meningitis</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Neonatal tetanus</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>Plague</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pneumonia in the under 5 year-old</td>
<td>2970</td>
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<td>121</td>
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<tr>
<td>Pneumonia in the under 5 year-old, severe</td>
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<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Rabies</td>
<td>1221</td>
<td>1</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>STI genital ulcer in females</td>
<td>3080</td>
<td>0</td>
<td>16</td>
<td>0</td>
</tr>
<tr>
<td>STI genital ulcer in males</td>
<td>3304</td>
<td>0</td>
<td>25</td>
<td>0</td>
</tr>
<tr>
<td>STI pelvic inflammatory disease</td>
<td>7879</td>
<td>0</td>
<td>112</td>
<td>13</td>
</tr>
<tr>
<td>STI urethral discharge in males</td>
<td>9332</td>
<td>0</td>
<td>68</td>
<td>0</td>
</tr>
<tr>
<td>STI vaginal discharge</td>
<td>20837</td>
<td>1</td>
<td>175</td>
<td>0</td>
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<tr>
<td>STI other</td>
<td>4964</td>
<td>2</td>
<td>41</td>
<td>13</td>
</tr>
<tr>
<td>Typhoid fever</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Viral haemorrhagic fever</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Yellow fever</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

**Expected monthly reports (24 districts over 11 months):** 264

**Monthly reports received:** 234

**Completeness of Districts Reporting to Ministry of Health:** 89%

Source: Ministries of Health, IDSR case-based Data.
HOW GOOD CAN TIMELINESS AND COMPLETENESS OF REPORTING BE IN AFRICAN COUNTRIES?

Timeliness and completeness of reporting are core IDSR indicators. When they are high, they facilitate early detection of and timely response to priority health events. With regard to all reporting sites, completeness measures the representativeness of the reported facts.

From the national (MoH) level, both indicators can be measured using for numerator the number of districts that have sent reports on-time on one hand, late or on-time on the other hand. These numerators are divided by the number of districts that have the duty to report to MoH. Measured this way, timeliness and completeness of reporting have limited value. Each of the two indicators is most of the time above 80% despite low reporting by some health facilities to their districts.

The most robust measurement of timeliness and completeness of reporting uses in its numerator and denominator the most peripheral reporting sites (clinics, dispensaries, hospitals and other health facilities) of each country’s health system (Table 5). Any silent peripheral reporting site lowers the indicators away from the acceptable threshold (set at 80%). The following table shows the recent performance of Tanzania's weekly surveillance of disease system.

Table 5. Summary of epidemiological situation in the United Republic of Tanzania by the 6th week, 2009

<table>
<thead>
<tr>
<th>Total no. of districts</th>
<th>No. of expected reports</th>
<th>No. of timely reports</th>
<th>No. of reports received</th>
<th>% of reports received</th>
<th>Timeliness</th>
<th>Completeness</th>
</tr>
</thead>
<tbody>
<tr>
<td>126</td>
<td>4 628</td>
<td>3 243</td>
<td>3 243</td>
<td>70%</td>
<td>76.2%</td>
<td>76.2%</td>
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</table>


Table 6. Summary of key notifiable diseases in Tanzania during the year 2010 as of 24/2/2010

<table>
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<tr>
<th>Disease</th>
<th>Week 6 (18 Jan, 2010 – 24 Jan, 2010)</th>
<th>Cumulative (Week 1 &amp; 6)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cases</td>
<td>Deaths</td>
</tr>
<tr>
<td>Cholera</td>
<td>214</td>
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<tr>
<td>Plague</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Rabies</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Acute flaccid paralysis</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Cerebrospinal meningitis</td>
<td>9</td>
<td>1</td>
</tr>
<tr>
<td>Measles</td>
<td>7</td>
<td>0</td>
</tr>
</tbody>
</table>

Nota bene: At the surveillance data aggregation level (district, province, ministry of health), failure to report cases and to detect an epidemic may in fact be due to low completeness of reporting surveillance data. Completeness of reporting comforts us in our conclusions regarding the magnitude of the health conditions being monitored and their geographical representativeness. As such it is used for the interpretation of the findings of surveillance: in any given country, poor completeness of reporting is a confounder for the observed situations. Finally silent and other poorly performing districts are lowering the national score of completeness and timeliness of reporting: given the importance of these IDSR indicators they should be supported to improve.
Table 7. Confirmed cases of pandemic AH1N1 influenza by country of the WHO African Region, 2009

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Nota bene:
— = zero.
Senegal data are not included in this table. This country has recently reported laboratory confirmed cases. Influenza reporting has shifted to routine monitoring of Influenza-like illnesses and severe acute respiratory infections, from mostly the network of influenza surveillance laboratories including Flutet.

Source: Member States daily Reports to WHo. 9 Feb 2009 update, DPC Afro.
NEWS AND EVENTS

IMPROVING THE HEALTH OF WOMEN IN THE AFRICAN REGION

“What brings us here today are some sobering statistics. The fact that maternal mortality in sub-Saharan African is the highest in the world, estimated at 900 per 100 000 live births ... that one out of 26 women in sub-Saharan Africa is still at risk of dying during childbirth, or becoming infertile as a result of it.”

These soul-stirring words came from Liberian president, Ellen Johnson-Sirleaf, at the launch of the Commission on Women’s Health in the African Region which took place on 14 April at the city hall in Monrovia, Liberia’s capital. “In my own country”, President Johnson-Sirleaf continued, “the maternal mortality rate stands at close to 1 in every 100 live births”.

Instructively, she described the data contained in her introductory remarks as “shameful numbers”, not a surprising observation considering that in the developed world, one woman in every 7 300 is at risk of during childbirth.

The launch was attended by the Special Representative of the United Nations Secretary-General in Liberia, Ellen Loj, who described as “sobering” the 2009 Millennium Development Goals report which indicated that approximately half a million women and girls died as a result of complications during pregnancy, childbirth or die in the six weeks following delivery.

Elsewhere in her speech, the Liberian leader persistently stressed the need to “tackle this preventable tragedy among African women”. She also very clearly articulated her ideas on what needs to be done: to advocate for women’s health; to empower and scale up services for women; to mobilize increased resources to address women’s health and, generally, to provide all-round support for the work of the Commission.

The concerns raised by President Johnson-Sirleaf are, in themselves, more than enough justification to establish the Commission which was put in the place in 2009 by the WHO Regional Director for Africa, Dr Luis Gomes Sambo, at the urging of the Health Ministers of the 46 countries which constitute the WHO African Region.

The Commission’s principal brief therefore is to collect information on the key factors influencing the current state of women’s health in Africa and make appropriate recommendations.

The 17-member multi-disciplinary body is made up of top-notch politicians including parliamentarians, representatives of the African Union, and leading physicians, sociologists, economists, obstetricians, gynaecologists and researchers. President Johnson-Sirleaf is the Honorary Chair of the Commission.

Speaking at the launch of the Commission, Dr Sambo called for urgent and appropriate actions to deal with issues affecting women’s health, such as physical, sexual and psychological violence, low economic status, early marriage of young girls, and female genital mutilation – all of which are common currency in some African societies.

He maintained that “Women’s role in society goes far beyond child-bearing and includes other dimensions. Women need to be in good health and be given the opportunity to unleash their potential for social and economic prosperity”. He also pointed out that the health sector had a specific responsibility to provide quality health care that responds to specific women’s health needs along the life cycle, including safe pregnancy. “These endeavours require strong leadership, multidisciplinary thinking and multi-sectoral actions at all levels including communities, families and individuals” he said.

In her remarks at the launch, the Special Representative of the UN Secretary-General exhorted the Commission to work with WHO and its Member States in order to lay a strong foundation for fostering a comprehensive medical care programme with a focus on sexual and reproductive health. “Such a programme will help address most of women’s health care needs and hopefully will reduce maternal deaths in the Region”, she said.

The expectation is that, as Dr Sambo said, the Commission will facilitate the identification of key problems; address their political, economic and social dimensions and tackle the clinical and public health aspects related to healthcare delivery.

In carrying out this important assignment, President Johnson-Sirleaf and her Commission need the support of all Africans and friends of Africa.
"Interruption of dracunculiasis (commonly known as guinea worm disease) – appears to have occurred in Nigeria" a team of independent international expert evaluators said in a report issued in February in Abuja, the Nigerian capital.

The report was authored by a team which had just concluded an evaluation of the Nigerian Guinea Worm Eradication Programme (NIGEP), at the request of the Nigerian Federal Government.

The 13-member team of evaluators comprised seven international evaluators including from the US Centers for Disease Control, UNICEF and WHO, complemented by six national experts on guinea worm disease (GWD).

Following the last reported indigenous guinea worm case in November 2008, the Nigerian Government requested WHO to carry out an evaluation.

The objectives of the evaluation were to:
- confirm interruption of local transmission of GWD in Nigeria;
- assess the quality and extent of integrated GWD surveillance within the national disease surveillance and response system;
- assess the capacity of affected communities and the surveillance system in place to detect and contain any case, if it occurred;
- assess the quality and extent of documentation of all pre-certification activities;
- evaluate safe water supply coverage in the target areas and other villages at risk;
- formulate relevant recommendations to improve pre-certification activities.

After an in-depth review of NIGEP's strategies and progress as reported by the Programme's coordinator, the evaluators broke up into seven teams which visited 15 of the country's 36 states, 40 Local Government Areas (LGAs) and 136 villages.

Out of the 50 villages identified by NIGEP as being at-risk and under active surveillance, fifteen of the villages were selected for visits. Field reviews were carried out using standardized questionnaires, and review of records and reports. Based on the assessment, the evaluation team reached five conclusions:

1. Although active searches and interviews in the selected villages suggested that no confirmed GWD cases were recorded in 2009, the team came across rumours (not reported or investigated) that in that year GWD occurred in villages not under active surveillance in four LGAs in three States. While the possibility of missed cases in the previous 12–24 months needed to be ruled out in such foci, NIGEP, in collaboration with the Integrated Disease Surveillance and Response (IDSR) officials needed to strengthen ongoing nationwide surveillance to confirm the absence of transmission.

2. The sensitivity of the current IDSR system was not considered satisfactory for the detection and containment of GWD especially in villages which were not formally endemic.

3. Among the general public awareness of the reward for reporting GWD cases, was low and the response mechanism to rumours was deficient. In formerly endemic villages, GWD surveillance was satisfactory, and communities, village volunteers and health staff demonstrated awareness of the need to report GWD cases. However the sensitivity of the surveillance system to detect GWD within 24 hours across all formerly endemic villages needed to be improved upon. Also, supervision by GW coordinators was deficient and not regularly conducted, and even during the infrequent visits the quality of supervisory visits was not optimal.

4. Until eradication of GWD in Nigeria is finally certified, NIGEP needs to continue undertaking action in the following areas which have so far been satisfactory: documentation of pre-certification activities, ensuring security and retrievability of data in formerly endemic areas, elaboration of reports on interventions and revision of existing guidelines for meeting the elimination goal.

5. With regard to safe drinking water supply coverage – one of the criteria for certifying a country as GWD-free – the gap in drinking water supply needed immediate and urgent attention. The evaluation revealed that 36 (72%) of the 50 villages under active surveillance have inadequate water sources, and eight (16%) have no single source of safe water.

The evaluators made a number of recommendations, including strengthening and extending the IDSR mechanism to at least 80% of health facilities; regular review of IDSR reports by State and Local Government GWD focal persons and their IDSR counterparts; the transformation of the IDSR system into an electronic data based system; the institution of public communication in local languages and of cash rewards for reporting GWD cases.

Other recommendations include providing physical access by healthcare workers to vulnerable communities; placing such communities under active surveillance; prioritizing and accelerating access to safe drinking water to 50 at-risk villages in 2010 (targeting the eight villages with no safe water supply and the 28 others with inadequate water supply), and budgeting at the three tiers of government to ensure the achievement of pre-certification requirements.

"We believe that Guinea worm transmission has been interrupted in our land and we are confident that Nigeria will be struck off the list of Guinea-worm-endemic countries in a short while," commented a former Minister of Health of Nigeria, Prof. Babatunde Osotimehin.
The African Health Monitor is a magazine of the World Health Organization Regional Office for Africa (WHO-AFRO) published four times a year (January, April, July and October). It is a multilingual publication with peer-reviewed articles in English, French and Portuguese.

The aim of the African Health Monitor is to promote and facilitate evidence-based policy and decisions to strengthening programmes for health promotion, protection, and restoration in the African Region. In order to achieve its aim, the Monitor serves as a medium for publication of articles that monitor the health situation and trends, and track progress toward the health-related Millennium Development Goals and other internationally agreed-upon goals. It will publish and disseminate relevant and scientifically rigorous public health information. It will also disseminate information on public health interventions carried out in the Member States with the cooperation of AFRO technical programmes.

Prospective authors should follow the Monitor stylesheet, which can be obtained by sending an email message to the Editorial Office at AHM@afro.who.int or by using this intranet link http://intranet.afro.who.int/guidelines/ahm.pdf

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