

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.

La disponibilité, la qualité et l’utilisation de l’information sanitaire, des bases factuelles de recherche et des connaissances ne sont pas adéquates dans la Région Africaine. Cette situation a abouti à la formation de deux types de déficits principaux en termes de connaissances: des déficits au niveau des connaissances de la santé et le « fossé entre savoir et action ». Les déficits relatifs aux connaissances de la santé se situent là où des réponses essentielles sur la manière d’améliorer la santé des populations dans la région font défaut. L’acquisition ou la production d’informations sanitaires et de bases factuelles de recherche sont au cœur du problème. Le « fossé entre savoir et action » correspond à l’échec d’appliquer toutes les connaissances existantes dans le but d’améliorer la santé des populations. Cette question est liée à celle de la diffusion et de l’utilisation des informations sanitaires, des bases factuelles de recherche ou des connaissances. En dépit de contraintes structurelles majeures, la solution pour réduire le déficit des connaissances et maintenir les acquis en matière de santé et de développement, est un engagement à long terme visant à renforcer la capacité nationale. La mission de cette dernière consiste à assurer la disponibilité d’informations ainsi que de bases factuelles à la fois pertinentes et de premier ordre dans le domaine de la santé, dans l’objectif de les utiliser pour l’élaboration des politiques et de la prise de décision. Les liens étroits entre des disciplines fragmentées, telles que l’information sanitaire, la recherche pour la santé et la gestion des connaissances, et leur coordination sont vus comme une étape essentielle dans ce processus et constituent également une action clé que les pays devraient prendre en compte en tant que composante du cadre pour la mise en œuvre de la Déclaration d’Alger.

A disponibilidade, qualidade e o uso das informações, dos resultados de investigação e dos conhecimentos na área da saúde são inadequados na Região Africana. Este facto provocou dois tipos de lacunas em termos de conhecimento: lacunas nos conhecimentos de saúde e lacunas no nível do “saber fazer”. Das lacunas nos conhecimentos de saúde resulta a ausência de respostas à pergunta como se pode melhorar o estado de saúde das pessoas na região. Este tópico está relacionado com a aquisição ou criação de conhecimento na área da saúde e de resultados de investigação. O não “saber fazer” representa a falha na capacidade de aplicar todos os conhecimentos existentes para melhorar a saúde das pessoas. Está relacionado com a partilha e tradução de informação, resultados de investigação ou conhecimentos na área da saúde. Apesar de existirem grandes constrangimentos estruturais, a chave para a redução das lacunas no conhecimento e para avanços substanciais na saúde e no desenvolvimento representam um compromisso a longo prazo para aumentar a capacidade nacional de assegurar a disponibilidade de informações e investigação relevantes, de alta qualidade, na área da saúde e a sua utilização na política e no processo de tomada de decisões. Uma forte interligação e coordenação de disciplinas fragmentadas como a gestão de informação, a investigação médica e a gestão dos conhecimentos é considerada um passo essencial neste processo e é, ao mesmo tempo, uma medida chave que os países devem considerar como fazendo parte do Quadro Orientador para a implementação da Declaração de Argel.

RÉSUMÉ

SUMÁRIO

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 health¹.

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 implementation².

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^{3,4,5}.

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 higher⁶.

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 significant⁷.

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 countries⁸.

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 services⁹. 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) estimates¹⁰.

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.

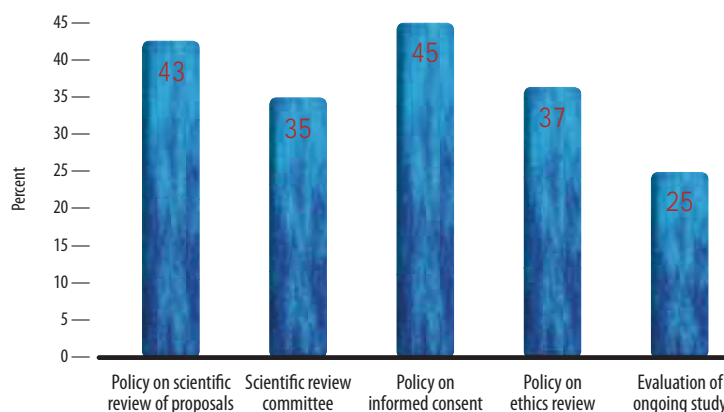
Poor quality of evidence arises from the lack of use of standardized, rigorous, and systematic methods to produce evidence, as well as to present or package it in appropriate format. However, another important quality consideration is whether the whole process of generation of information and evidence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



Source: WHO-AFRO, 2008.

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 context¹⁵.

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 audience¹⁶. 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 indexed¹⁷.

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 initiatives 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 makers¹⁸.

OPPORTUNITIES AND CONSTRAINTS

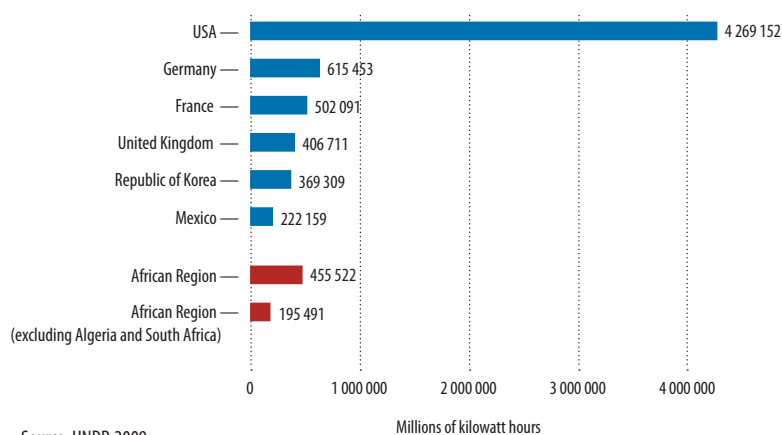
There are indications of an increasing trend in transparency of the policy process in the African Region¹⁹. There is also a growing recognition that without improving health systems MDG goals and targets on maternal and child mortality or control of major diseases will not be achieved. Any improvement 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 period²³.

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

Figure 2. Total electricity consumption in the African Region compared to other countries, millions of kilowatt hours, 2004



(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 possible²⁰.

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 requirements²¹.

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%²². 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 gap²³. 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.

- 9 Establish or strengthen appropriate mechanisms of cooperation including public private, South-South and North-South cooperation, and technology transfer, and create regional centres of excellence to promote research and generate evidence for better decisions, particularly as regards disease surveillance, public health laboratories, and quality control of food and medicines.
- 10 Ensure that adequate financial, material and human resources are mobilized and available at each stage of the policy formulation and implementation process, and at all levels.



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.

- 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 Promote the use of systematic reviews in the production of evidence.
- 18 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.
- 19 Promote open access to primary data, samples and published findings of research results.

Better dissemination and sharing of information, evidence and knowledge would require countries to:

- 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 Establish mechanisms and procedures for documenting experiential knowledge and best practices in implementing health programmes.
- 24 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. ^p

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