



Learning Brief

Developing a health knowledge network: the case of SA HealthInfo

This learning brief is aimed at providing insight into the planning and development of the South African Health Knowledge Network, SA HealthInfo. The methodology behind this initiative is in essence based on the principles of knowledge management and the drivers of a system of innovation – in this instance as applicable to the needs of the health system in South Africa. The knowledge network aims to provide a one-stop interactive forum/resource, for quality-controlled and evidence-based health research information, to a wide spectrum of users. Moving from its prototype phase to a system with useful content, the knowledge network is expected to stimulate the process of innovation within the South African health system, from the level of consumers making more informed decisions about their own health, to policy making. It will hopefully add to regional and global knowledge sources.

Introduction

The Essential National Health Research (ENHR) approach highlights the need for improved information flow. Systems that will cater for knowledge creation, conversion and flow in a larger system of innovation – using a knowledge-network approach - are required. This is in essence what the South African Medical Research Council (MRC) and its partners are aiming to achieve with SA HealthInfo.

This learning brief provides insight into the rationale and planning of the knowledge network, as well as some practical lessons learned.

Careful planning required - using a specific methodology

At the risk of being a little too theoretical - we discuss a number of the 'drivers' behind a health knowledge network to give the reader some insight into the initial planning process.

The information society as a driver

The planning of this project was particularly influenced by the momentum created by the Information Society and Development (ISAD) conference held in South Africa in May 1996, where the United Nations Economic Commission for Africa (UNECA) launched the African Information Society Initiative (AISI). AISI has since been adopted by various influential global organisations, such as the World Bank and UNESCO. At the ISAD conference South African President, Thabo Mbeki (then Deputy President), stressed that "the ability to use information effectively is now the single most important factor in deciding the

competitiveness of countries".¹ One of the most crucial issues impacting on the development of a nation is its health status. The AISI action framework² therefore also identified specific goals in terms of the way in which information and communication technology (ICT) can be used to achieve more efficient and affordable health care. We recognised the need for an appropriate health ICT platform that would benefit the information society - and would have a positive impact on the development of southern Africa.

Drivers of a health knowledge network:

- The information society as a driver
- The dynamics of innovation
- Capitalising on modern ICT
- A knowledge management approach
- The dynamics of knowledge networks
- Requirements of the health system

The dynamics of innovation

The important role of information and knowledge in the innovation system is clear. Players in the innovation system must establish "informational reciprocity".³ During research collaboration, the players in the system benefit from mutual learning and knowledge exchange, enabling them to overcome complex, and often indivisible, technical problems.⁴ This is very true of many health research ventures. However, one should be aware that there may be difficulties in ensuring information flows between the various expert and specialist groups, taking into account their differing perspectives and knowledge bases.⁵

The more information flows in the system, the more likely players are to arrive at useful solutions.

Capitalising on modern ICT

Developments in information and communication technologies (ICT) offer a major opportunity for improving the way in which research and development is operated, structured, co-ordinated and communicated. There are a number of these technologies linked to knowledge management. All of these are within reach of developing countries provided that funding is available, however, the 'digital divide' also comes into play. South Africa may be better off than most other developing countries in terms of telecommunication infrastructure, but still has to cope with high telecommunication costs. This problem is further compounded by an uneven distribution of Internet access between urban and rural areas. The issue of the digital divide requires concerted action by players at country-specific and global level. According to Tessa Tan-Torres Edejer⁶ "the way forward is to exploit the full interactivity of the internet, which allows rapid feedback and change to continuously mould information into knowledge".

It is therefore important to link an initiative such as SA HealthInfo to other initiatives aimed at providing access to the web at community level – such as multi-purpose community centres (telecentres) and health waystations. Wireless technology, where appropriate, should be considered for such access.

Using a knowledge management approach

Knowledge management is viewed as an essential driver for innovation. According to Malhotra⁷ "Knowledge Management caters to the critical issues of organisational adaptation, survival and competence in the face of increasingly discontinuous change. Essentially it embodies organisational processes that seek a synergistic combination of the data and information processing capacity of information technologies, and the creative and innovative capacity of human beings".⁷

The dynamics of knowledge networks

A knowledge network must be a virtual network with various players participating as end-users, but also contributing to knowledge sources. The aim of a knowledge network is to build and organise a network of local and global knowledge resources of relevance to the particular community of members and users. The knowledge network therefore evaluates, indexes

and links relevant 'knowledge nodes' and provides the facilities and functionalities to communicate, interact, transact and work collaboratively.

The specific requirements of the health system

Health status is the result of a complex system, involving various players. Interaction among these players, involving researchers, health services, industry, health policy makers and communities in an iterative process, is also the basis for the ENHR approach. ENHR has been adopted by the MRC and the South African national Department of Health as a planning framework. For ENHR to succeed it must be supported by efficient knowledge management – promoting the logical transformation of data first to information then to knowledge in a systematic way, thereby enabling the innovation process for the creation of new knowledge and knowledge dissemination aimed at implementation of findings. The International Conference on Health Research for Development, held 10-13 October 2000 in Bangkok, underlined the importance of knowledge creation and appropriate knowledge management in the health system.

Building SA HealthInfo

The health knowledge network has several components. Modules for specific content areas are complemented with services such as discussion forums, access to electronic publications, document delivery and a call desk.

A significant challenge for the knowledge network was to develop an architecture that supports powerful

The aim of a knowledge network is to build and organise **a network of local and global knowledge resources of relevance** to the particular community of members and users, with access to **quality-controlled and evidence-based health research information**.

Furthermore it enables the **players in the system to interact** with each other and with remote suppliers of knowledge sources for the purpose of **collaborative action** and goal achievement.

One needs to:

Establish remote/local technical infrastructure or **leverage existing** infrastructures.

Encourage local specialists to act as **catalysts** to encourage the flow of moderated information.

searching capability and, at the same time, provides access to information in a fast and generally accessible way. Another key element is the logical integration and structuring of information and matching with appropriate target audiences via appropriate network and access control mechanisms.

Most of the information provided by the knowledge network is public domain and therefore freely available through the (Internet) web site, but in order to be useful to researchers and stimulate innovation, the development team made it possible to restrict access to some areas of the site so that some private information is accessible, and information can be shared within specific groups.

The development team took into account the need to deliver comprehensive and unified access to a heterogeneous collection of information sources through a secure access layer.

Modules of SA HealthInfo

The SA HealthInfo modules are mini information clearinghouses and they tend to operate as mini information portals.

Currently the following modules are available:

- Bioinformatics
- Chronic diseases of lifestyle
- Ethics in health research
- Evidence-based medicine
- HIV/AIDS
- Malaria
- Medical Inventions
- Mental health
- Nutrition
- Traditional Medicines
- Tuberculosis
- Violence and injury surveillance

We have been fortunate to have competent module owners. The following illustrates some of their experiences:

Prof. Demetre Labadarios, Head of the Department of Human Nutrition of the University of Stellenbosch and module owner of the Nutrition module commented: "It takes quite an effort to bring to the fore the information treasures which are sometimes hidden in cabinets or at best exist as printed reports, sometimes without any reference system or

categorisation. They require specific editing and value adding, but once you have started the flow, things really get moving! The Nutrition module allows us to link various local existing databases, focused web sites and electronic journal publications – giving them better presence and momentum in their own right. We are also in the process of packaging our information sources to cater for various user groups. By acting as a reliable and independent source of credible information, we hope to improve the knowledge levels of professionals and the public alike about appropriate nutrition in our country, thereby having a significant impact on various nutrition-related disorders in order to ameliorate their adverse effect on health."

Sibongile Pefile, module owner of the Traditional Medicines module commented: "This module provides a unique mechanism to unlock the skills of traditional healers and indigenous health knowledge, which can now be integrated with modern science and technology. In such unlocking of traditional medicines knowledge one must take into account the sensitivities regarding intellectual property rights and ownership of information."

Way forward

Sustainability is an important issue for the survival and continued growth of SA HealthInfo and efforts are being made to commercialise aspects. Ongoing efforts will drive knowledge sharing down into modules to create specific portals for researchers (e.g. TB, Bioinformatics and HIV/AIDS), with important resources such as secure data movement and collaborative services to facilitate communication among researchers with similar interests.

Conclusion

Two overarching goals guided the process of developing the health knowledge network, i.e. building a healthy nation through research and furthering the information society. It is also in line with the ENHR approach and the World Health Organization's initiatives to network scientists for collaboration in solving complex health problems.⁸

Without doubt there is a need to provide relevant health information to front-line health workers, policy makers and consumers, and to allow for a platform for reciprocal information flow. In creating a health knowledge network we have to use relevant technology, appropriately, and plan access to the portal in such a way that rural areas are included.

The MRC has a powerful role to play in terms of co-ordinating a drive to integrate previously disparate

information resources into a single trusted portal. This should also stimulate re-use of existing information resources and avoid duplication of effort.

The development of the health knowledge network has also highlighted the following:

- It must be planned against the background of established principles and needs, which will dictate the methodology.
- It assists in creating an enabling ICT environment, with relevant capacity building.
- Appropriate bandwidth must be available.
- As this information portal is to be used over a large geographic area, with varying degrees of telecommunication infrastructure, it may be necessary to find alternatives to the common modem-landline approach.
- It makes previously insular information resources accessible.
- It creates momentum in developing new information resources.
- It provides a secure environment for health information.
- It must link with projects aimed at the roll-out of waystations or telecentres for Internet under-served areas.
- The human element and personal interaction should not to be ignored, in terms of:
 - tacit knowledge flow via discussion forums;
 - the role of librarians and knowledge officers as information filters;
 - the availability of a physical call centre (helpline);
 - services such as document provision.
- Apart from the catalyst role in terms of innovation, the knowledge network will also provide government, the policy-making environment and communities with a unique decision-support instrument.

References

- 1 South Africa. *The information society and the developing world: a South African approach, May 1996*, letter by Deputy State President Thabo Mbeki, 1996; www document, URL <http://www.csir.co.za/isad/letter.htm> (URL not active anymore – refer to <http://www.csir.co.za>)
- 2 United Nations Economic Commission for Africa. *The African Information Society Initiative: An Action Framework to build Africa's Information and Communication Infrastructure 1996*, www document, URL <http://www.bellanet.org/partners/aisi/aisi.htm>
- 3 Häusler J, Hohn H-W, and Lutz S. Contingencies of innovative networks: A case study of successful interim R&D collaboration. *Research Policy*, 1994; 23 (1): 47-66.
- 4 Clarysse B, Debackere K, and Rappa MA. Modeling the persistence of organizations in an emerging field: the case of hepatitis C. *Research Policy* 1996; 25 (5): 671-687.
- 5 Fincham R, Fleck J, Procter R, Scarbrough H, Tierney M, and Williams R. *Expertise and Innovation: Information Strategies in the Financial Services Sector*. Oxford: Clarendon Press, 1995.
- 6 Tan-Torres Edejer T. Disseminating health information in developing countries: the role of the internet. *BMJ* 2000; 321 (7264) 797-800.
- 7 Malhotra Y. *Knowledge Management for the New World of Business*, 1997; www document, URL <http://www.brint.com/km/whatis.htm>
- 8 World Health Organization, Advisory Committee on Health Research. *A Research Policy Agenda for Science and Technology to support global health development*. Geneva: WHO, 1998.

Contact

For further information, please contact:

Jacobus Adriaan Louw, Executive Director:
Informatics and Knowledge Management, South
African Medical Research Council

Malegapuru William Makgoba, President of the
South African Medical Research Council

Address for correspondence:

Dr JA Louw

MRC

PO Box 19070

Tygerberg 7505

South Africa

E-mail: jalouw@mrc.ac.za

<http://www.sahealthinfo.org>

These learning briefs are published by the Council on Health Research for Development (COHRED). To receive a free copy of the Handbook, and any forthcoming learning briefs, please contact:

COHRED c/o UNDP, Palais des Nations, CH1211 Geneva 10, Switzerland

• **Phone:** +41 22 917 8558 • **Fax:** +41 22 917 8015

• **Email:** cohred@cohred.ch • **Website:** <http://www.cohred.ch>