Health Research & Development in Africa

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African Civil Society meeting on the Intergovernmental Working Group (IGWG) on Intellectual property, Innovation and Health

28 - 29 August 2007, Nairobi, Kenya

Introduction

- Research
  - refers to basic experimental research involving identification of possible chemical compounds or theoretical mechanisms
- Development
  - refers to the exploitation of discoveries
- Research and development
  - has a special commercial significance apart from its conventional coupling of scientific research technological development

Introduction

- Health research is a necessity for:
  - effectively addressing health needs
  - Improving health systems using existing resources and knowledge
  - Providing evidence to set priorities for equity in health and inform policies
  - Focusing resources on national health priorities
  - Identify wastage and ineffective actions
  - Discover new ways to prevent and treat challenging diseases

Introduction

- Strong national health research systems are needed to attain better health
- Governments should be committed to raising the level of research and development that takes place in the region
- Research programmes must be based on the needs of the public

Health Research Environment

- In general, R&D activities are conducted by
  - universities
  - public and private research institutions
  - companies
- Some common measures by organizations devoted to R&D include:
  - rates of peer-reviewed publications
  - numbers of patents
  - budgets

Health Research Environment

- When economically solid research level products emerge
  - Corporations buy licenses from research institutions or hire scientists directly
- The development phase of drug delivery is almost entirely managed by private enterprise
- However in Africa, many individual projects rarely yield exploitable product

Health Research Environment

- The environment for health research in Africa presents a host of challenges:
  - Chronic lack of funds
    - Most countries allocate little or no resources for health research
  - Lack of clarity on national health research priorities
  - Inadequate systems to set, communicate and implement national health research priorities
  - Dependence on donor funds
    - agendas are largely donor driven, often at the expense of national priorities.

Health Research Environment

- HR capacity needs strengthening
- Taking health research beyond the 'produce-and-disseminate' model
- Research and knowledge translation
- Actors and users of research information
  - policy makers
  - researchers
  - communicators (media)
  - communities
  - civil society

Health Research Environment - case studies

Cameroon:

- **Due to scarce resources, the govt. allocates little funding to health research**
- **For the most part, research is supported by bilateral and multilateral organizations**
- **This results in donor-driven - as opposed to priority-driven research agenda**
- **Health research is characterised by a lack of coordination between and among key health research players.**

Health Research Environment - case studies

Cameroon:

- **HR activities primarily undertaken by:**
  - **Ministry of Public Health**
  - **Ministry of Animal Husbandry and Fisheries**
  - **Ministry of Scientific Research**
- **They are unaware of each other's research projects, a situation that contributes to the lack of clearly defined national HR priorities**
- **Priorities for individual research institutions are set internally, rather than in collaboration with other institutions**

Health Research Environment - case studies

The Gambia:

- **A well structured environment, but dominated by a foreign research institute**
- **Priority-setting for health research falls under**
  - **the Ministry of Health**
  - **or the UK Medical Research Council (MRC) laboratory that is based in the country.**
- **Requests to fund programs are channelled through these organizations**

Health Research Environment - case studies

The Gambia:

- **MOH is the main driver for health systems research**
- **while the MRC conducts biomedical research.**
- **Health research priorities are set based on common problems defined from a local perspective, such as malaria, AIDS, pneumonia, and TB.**
- **Attracting funding to conduct critical research on health concerns other than communicable diseases is reported as being a formidable challenge.**

Health Research Environment - case studies

Kenya:

- **Has a fairly elaborate research system comprising of regulatory and executing institutions.**
- **National Council for Science and Technology**
  - **supposed to execute a coordinating role by overseeing all the types of research to be undertaken in the country including their clearance and authorization**
- **Ministry of Health**
- **National Ethical Review Boards**

Health Research Environment - case studies

Kenya:

- **Ministry of Science and Technology**
- **Ministry of Education (MoEd)**
  - **through institutions of higher learning**
- **Public Research Institutes**
- **Commodity Based Research Institutes**
- **Private or non-governmental organizations**
- **Research is influenced by the prevalence of diseases of national importance**
  - **but more often by the funding Agencies.**

Health Research Environment - case studies

Kenya:

- **The human resource capacity for research exists but still require strengthening**
  - **General lack of initiatives/funding for capacity strengthening**
  - **In cases where they exist, they are largely embedded in project grants and administered on ad hoc basis**
  - **Inability to retain senior researchers due to low incentives in health research**
  - **weak collaboration and relationships between researchers, health research regulators and health officials**

Product R and D in Africa

- TDR co-sponsor and facilitator of an initiative on Product R and D in Africa
- Traditional medicine (TM) research is a good entry point to product development for Africa
  - TM is where African science has some competitive advantages
  - medicinal plants are abundant and widely used in the continent
- Diagnostics
  - the investment costs required are lower than for drugs and vaccines

Product R and D in Africa

- TM research on the continent is mostly
  - at discovery stages of product development
  - and, to a lesser extent, to preclinical testing
- More often only observational studies are carried out
  - probably due to ethical considerations
  - financial constraints
- The challenge then is to advance candidate products to clinical testing, manufacturing, and access

Product R and D in Africa

- Issues to be considered include
  - capacity strengthening for research
  - regulatory review, good clinical practice, ethical issues
  - advocacy and awareness
  - interaction with regional and international agencies
  - intellectual property rights

Product R and D in Africa

- **Patent protection**
  - **provides an incentive for R&D**
  - **however the patenting of intermediate technologies (particularly gene-based ones) required in the research process may actually create disincentives for researchers in terms of accessing technologies they need**

Product R and D in Africa

- **Protection of Intellectual Property Rights (IPR)**

Problems:

- **The Process is expensive (applications for patents, legal fees)**
- **It is based on alien, not traditional values**
- **Requirements for patents (novelty, innovation, application / usefulness) favour the 'single compound' ideology, not traditional medicine**

Product R and D in Africa

- **Protection of Intellectual Property Rights (IPR)**

Suggested solutions:

- **National Laws to regulate:**
  - **access to genetic resources**
  - **equitable benefit sharing**
- **Active involvement of communities in formulation of laws and regulations**
- **Empowering the community to participate in matters relating to regulation of access and benefit sharing (e.g. form legally recognised local associations)**

Product R and D in Africa

- **Protection of Intellectual Property Rights (IPR)**

Suggested solutions:

- **Advocate regulations to take the interests of indigenous and cultural knowledge at the regional and international levels.**
- **Develop national expertise in negotiating on IPR related issues (genetic resources).**
- **Multidisciplinary technology transfer bodies.**

Product R and D in Africa

- **Nigeria:**
- **Nigerian Government established National Institute for Pharm Res & Dev (NIPRD) in 1989 to develop raw materials, traditional medicines and medicines from indigenous biodiversity.**
- **grants from WHO, UNDP, UNIDO**
- **Support from Georgetown University Medical Center**
- **Regular budgetary allocations from Nigerian Government**

Product R and D in Africa

- **Nigeria:**
- **Research by the team at NIPRD, led to the development of herbal medicinal product called Niprisan® for the management of sickle cell anaemia**
- **In vitro anti-sickling effects**
  - **Collaboration With children hospital of Philadelphia**
- **Double-blind, placebo-controlled, randomized cross-over clinical trial**
  - **at NIPRD clinic, Abuja between 1997 and 1998**

Product R and D in Africa

PATENT

- **NIPRISAN was patented in Nigeria, USA, England, and 42 other countries between 1998 and 2000 through a grant by UNDP**

LICENSING OF NIPRISAN TO XECHEM

- **In 2002, the Federal Ministry of Health granted XECHEM Inc. an exclusive license for the manufacture, global sale and marketing of NIPRISAN**

MANUFACTURE OF NIPRISAN

- **XECHEM Pharmaceuticals Nig Ltd has commenced the commercial manufacture of NIPRISAN in Abuja for the global market**

Conclusion

- There is a lot of research information that exists in Africa but access is limited
- The government's inability to fund research, "leaves the scientists at the mercy of external funding agents whose priorities determine the priority areas of the researchers."
- innovation or R&D into medicines for the most important diseases of developing countries is therefore ignored

Conclusion

- **Public funding for research on health problems in developing countries should be increased**
- **This additional funding should seek to exploit and develop existing capacities in developing countries for R&D**

Thank you