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HISP
Health Information Systems Programme

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Overview of this lecture

✓ Introduction to HISP

✓ Health information systems (basics)

✓ The DHIS software

- And please interrupt me, participation is encouraged!

What is HISP?

- ✓ Health Information Systems Programme

- ✓ Global network of individuals and organisations
    - ✓ Academic institutions
    - ✓ Non-governmental organisations
    - ✓ Governmental organisations
    - ✓ Free-lancers

- ✓ A South-South-North collaboration

Why HISP?

✓ The overall objective of HISP is to improve health information systems (HIS) in developing countries

✓ In many developing countries killer diseases (like HIV/AIDS) and poor health services hamper human, social and economic developments

✓ Appropriate information and HIS are seen as crucial to strengthen the health systems in developing countries

✓ 3 of 8 Millennium Development Goals (MDGs) are related to health

✓ Despite huge economical efforts (incl. Norwegian funding) most HIS initiatives tend to fail to sustain over time

HISP objectives

✓ To support local management of health care delivery and information flows

✓ Design, implement and sustain HIS following a participatory approach

✓ Facilitate the spread of best practices and software within and across developing countries

How did it all begin?

✓ Started as a small pilot project in one district in Western Cape, South Africa in 1994

✓ Collaboration between University of Oslo and University of Western Cape, funded by NORAD

✓ Just after the fall of Apartheid, political context of change and local empowerment

✓ Objective to support a district-level health information system

✓ The DHIS software was developed following Scandinavian IS research methodologies

Why did it take off?

✓ Based on the relative success in one district the Eastern Cape province wanted the project and soon other provinces followed

✓ The DHIS became the national standard for HIS in SA in 1999

✓ Flexible software, a simplistic approach and an academic network facilitated the "transfer" of HISP to Mozambique in 2001 and later to many more countries in Africa and Asia

HISP anno 2008 is truly global

HISP components

✓ Research and Education
   - ✓ Important contribution to the research field of information systems in developing countries
   - ✓ PhD school (more than 20 international PhD students)
   - ✓ International masters programmes (local masters and in Oslo)

✓ Software development
   - ✓ Global open source sw development
   - ✓ DHIS 1.4 and DHIS 2 used in several countries

✓ Project implementation
   - ✓ Supporting/responsible for HIS implementation in many countries (South Africa, Nigeria, Botswana, Zanzibar, Zambia, 3-4 states in India, Malawi, Mozambique, Vietnam, Ethiopia, Tajikistan, Sierra Leone)
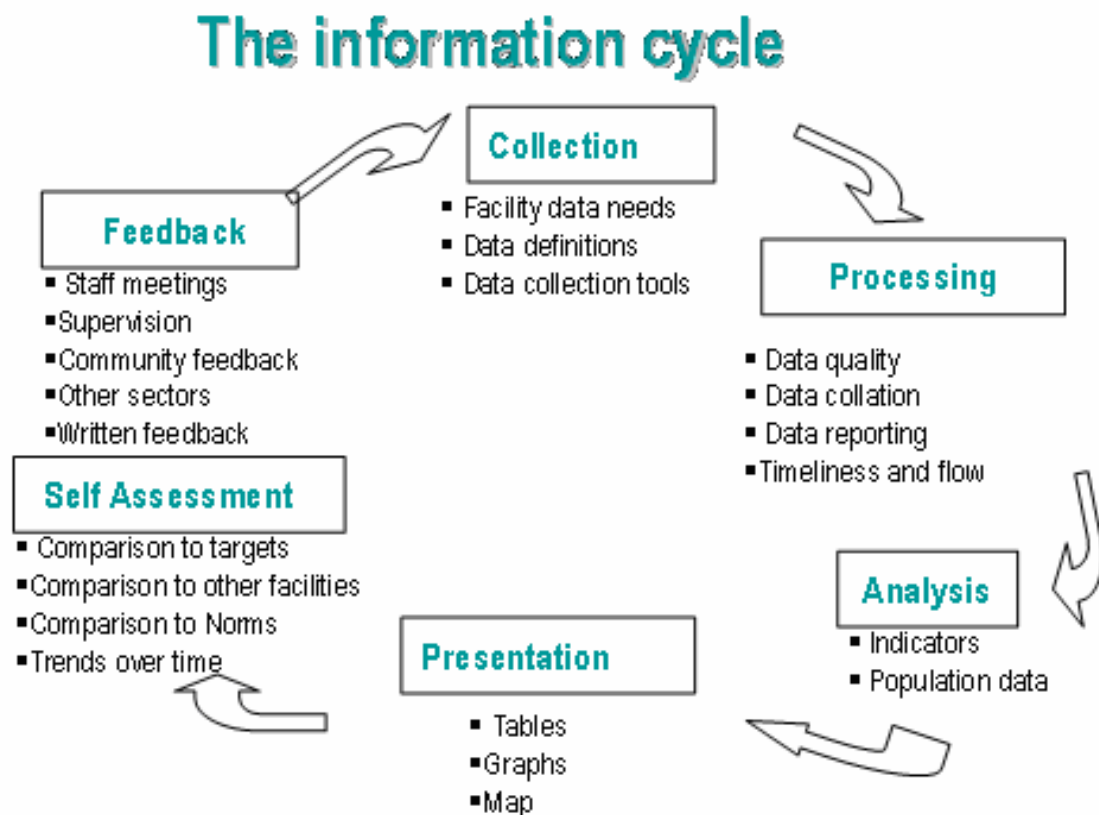
Funded by Norwegian government (NORAD, NFR), EU, WHO/HMN, various local governments

Health Information systems (HIS)

Our main focus: Primary Health Care (PHC) and Routine HIS

✓ Primary health care:

  ✓ first level health care, in the community (*helsestasjon* og *fastlegetjenesten* in Norway)

  ✓ focus on mothers and children and killer diseases (HIV/AIDS, Tuberculosis, Malaria)

✓ Routine HIS:

  ✓ Aggregated data (numbers not names)

  ✓ Typically monthly or quarterly data reporting from clinics to districts to province to ministry

  ✓ To support local health management

HIS activities - The Information Cycle

The information cycle

Collection
- Facility data needs
- Data definitions
- Data collection tools

Processing
- Data quality
- Data collation
- Data reporting
- Timeliness and flow

Analysis
- Indicators
- Population data

Presentation
- Tables
- Graphs
- Map

Self Assessment
- Comparison to targets
- Comparison to other facilities
- Comparison to Norms
- Trends over time

Feedback
- Staff meetings
- Supervision
- Community feedback
- Other sectors
- Written feedback

Main components of a (paper-based) HIS

✓ An organisational hierarchy
- ✓ service-delivery and administrative units

✓Datasets/forms/reports
- ✓ Sets of data elements are collected together in specific forms that are used to report up the hierarchy

✓The data flow
- ✓ The data is aggregated at a given frequency at the health facilities (service-delivery units) and reported up one level
- ✓ The other levels collate/summarise the data and report a summary report to the level above

Trends in HIS

✓ Towards a data warehouse approach

  ✓ The number of computerised systems available is quickly increasing, towards one for each vertical health programme

  ✓ Increased need for data integration and monitoring across health programmes

  ✓ Increased availability of reasonable internet connections in many developing countries opens up for online data presentation

✓ The DHIS itself can be seen as a data warehouse

  ✓ Still limitations to how much data that can be integrated in the DHIS

  ✓ Need to look at other data integration approaches

    ✓ DHIS data presentation layer on top of a "virtual database" integrating various data sources

    ✓ example from India

HISP software – The DHIS

✓ DHIS 1.4
- ✓ MS Access/VB 6
- ✓ Developed in South Africa
- ✓ Large user base in Sub-Saharan Africa (80 %)

✓ DHIS 2
- ✓ Java open source web frameworks
- ✓ Developed mainly in Norway, but also in India, Ethiopia and Vietnam
- ✓ Large user base in 3-4 states in India, 2 provinces in Vietnam

✓ DHIS Data Warehouse (online analysis, reports, GIS)
- ✓ Customisation of third-party software
  - ✓ OpenHealth, Pentaho, BIRT, KIDS
- ✓ Developed in Norway and Tanzania
- ✓ Compatible with both DHIS 1.4 and DHIS 2
  - ✓ can use database or API as data source
- ✓ Still limited use (very new), but huge potential

It's all open source

DHIS 1

- ✓ First version already in 1996
  - ✓ Developed for one pilot district in Cape Town, SA
  - ✓ Became national standard for HIS in SA in 1999

- ✓ Followed the Scandinavian tradition of systems development methods
  - ✓ user participation
  - ✓ evolutionary prototyping
  - ✓ bottom-up

- ✓ Developed "in the field"

- ✓ Small closed and long-term development team with 1-3 developers
  - ✓ main developer is now expert in health information
  - ✓ short release cycles

- ✓ DHIS 1.4 released in May 2006, now version 1.4.0.87

DHIS 1 pros and cons

Pros:

✓ A very good design-business fit

✓ Flexible and relatively simple to use (user base expanded from 1 district to 10 countries)

✓ Integrated with Excel pivot tables for dynamic data analysis

Cons:

✓ Not web-enabled

✓ Not a modular or layered architecture ("one big block")

    ✓ difficult to distribute development

    ✓ difficult to add local functionality

✓ Lack of flexible report tools

DHIS 2

✓ Background
  ✓ process started in 2004
  ✓ need for a web-enabled DHIS
  ✓ need for a modular architecture to distribute sw development in the HISP network
  ✓ need for OS and database independence

✓ Technologies and tools
  ✓ Spring, Hibernate, WebWork, Maven, Subversion

DHIS 2 development

✓ First release (2.0-M1) in February 2006
   ✓ The current release is 2.0 beta (M9+)

✓ Global team of core developers:
   ✓ Lars Helge – Norway
   ✓ Abyot – Ethiopia
   ✓ Bharath – India

✓ Important contributions from other master students in Oslo and students from INF5750

✓ Local technical teams in India, Vietnam and Sierra Leone/Mali develop local report modules and other specialised functionality

✓ Vietnam and India are recruiting and training new core developers – but long term process

DHIS 2 communication platform

✓ The confluence wiki for collaborative documentation

✓ The Trac issue tracker for bug tracking and project management

✓ Subversion for source control management

✓ Mailing list for developers, users, and a subversion commit-list (scm)

A typical infrastructure for larger open source projects

DHIS 2 pros and cons

Pros:

- Web-enabled, can be used offline and online

- OS and DBMS independency with java and Hibernate

- Flexible configuration (modular web portal)

- Architecture and dev. process supports distributed development

Cons:

- slow processing of large amounts of data

- complex core module (transaction management, user security, assembly of portal etc.)

- difficult to grasp the frameworks

DHIS Data Warehouse

✓ For web-based presentation and analysis of the DHIS data

✓ Compatible with both DHIS 1 and 2

   ✓ important glue between the two to make the transition more seamless

✓ Making use of third-party software

   ✓Pentaho Open Source Business Intelligence, www.pentaho.com

   ✓ OpenHealth, WHO-developed

   ✓BIRT (Business Intelligence and Reporting Tools), http://www.eclipse.org/birt

   ✓KIDS (Key Indicators Data Systems), http://kids.fao.org

✓ Important step for HISP in order to compete in an increasingly tough market

DHIS Data Warehouse cont.

Functionality:
- ✓ Online reports
    - ✓ for monitoring and feedback
    - ✓ accessible to stakeholders at different levels
    - ✓ both standard and ad-hoc
- ✓ Dashboards
    - ✓ Quick monitoring of the health status
    - ✓ Interactive charts and tables
    - ✓ Key indicators and customised to user (health programme specific, MDG, staffing etc.)
- ✓ GIS (Geographical Information Systems)
    - ✓ Make the data more visible using thematic maps
    - ✓ Monitor key indicators for different levels, easy to zoom in and out
- ✓ Data Integration
    - ✓ Making use of ETL tools to integarte various data sources

Some references

HISP:
HISP International Wiki – www.hisp.info
HISP SA – www.hisp.org
HISP India – www.hispindia.org
HISP research papers - http://www.hisp.info:8080/display/HISP/ResearchPapers

HIS:
RHINO (Routine HIS network) - http://www.rhinonet.org/
MDGs for health - http://www.who.int/mdg/en/

Global health:
Foreign Affairs roundtable debate - http://www.foreignaffairs.org/special/global_health/
Norwegian Prime Minister's campaign on MDGs:
http://www.regjeringen.no/en/dep/smk/Selected-topics/The-Millenium-Development-Goals.html?id=87050

DHIS:
DHIS 1 downloads - http://www.hispkerala.org/latest_downloads/
DHIS 2 wiki - http://www.hisp.info:8080/display/DHIS2/Home
DHIS 2 issue tracker – www.hisp.info/dhis2
DHIS 2 online demo - http://www.hisp.info:8090

Data Warehouse technologies/tools:
Pentaho – www.pentaho.com
BIRT - http://www.eclipse.org/birt/phoenix/
KIDS - http://kids.fao.org

Q&A

Questions?

Thank you.