



ASSINGMENT REPORT **ON** **THE STANDARDS OF MEDICAL RECORD** **KEEPING**

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Course Name: Health Service and Hospital Management

Submission date: 13-01-2021

Question: *Discuss the standards of medical record keeping. Enumerate the benefits of record keeping and elaborate on any digital record keeping tools you know.*

Standards of Medical Record Keeping:

Medical records are the patient's personal information, address, details of treatment, examination and any other health information stored in notes, or electronic platform chronologically. The primary purpose of a medical record is patient care. Due to the lack of systematic or well-organized record keeping, the health care professionals encounter many challenges such as information missing, inconsistency, proper identification, clinical audit & research, resource allocation, epidemiological study, service planning, performance monitoring, inpatient medication, diabetes chart, nursing checklist, and prior treatment history access.

Goals and Objectives:

Good medical record keeping is at the forefront of medical practice. Not only do medical notes act as a learning tool, but they are also needed in medico-legal circumstances and more importantly, for patient safety and communication between multi-disciplinary team members. It ensures quality of care, continuity of care, assessment of care, and evidence of care¹.

Record keeping standards:

- Data availability: The patient's complete medical record should be available at all times during their stay in hospital
- Required information: Medical record should contain patient in detail information
- Standard structure: The record keeping platform should contain the standard structure and layout
- Documentation: Documentation within the record should reflect the continuum of patient care
- Admission and discharge: Admission, handover and discharge should be recorded using a standard platform
- Audit log: Every entry should have strong and non-editable audit log with entry person name, designation, unique identification, email, mobile number.
- Timing of entry: It should have the facility of timely medical record entry of each of the patient when admitted
- Entry reference: For any critical patients information, senior health professional should be present

Digital Record Keeping Example: I would like to share the current digital record keeping practice for the Ministry of Health and Family Welfare. I have involved with many electronic record keeping platforms from the past 7/8 years. I have developed few of the applications and helped to develop many of them. I have also actively involved with the following Digital Record Keeping Applications/ Solutions/ Software's developments or customizations or implementations:

- **Hospital or health care management:** DHIS2, RxHAS, Practo-India, OnHealth24, OpenMRS, Bhamni⁺⁺
- **Laboratory management system:** WHONET, OpenELIS
- **Customer Relationship Management:** Oddoo CRM
- **Supply Chain management system:** D2LMIS, SCMP, OpenLMIS
- **Health Survey information system:** Ona, Epicollect, Odk
- **Enterprise Solution:** SAP, ISPERP, OpenERP, SHR etc.

I am going share one of the largest Health Information System which has been running in DGHS since 2014.

About DHIS2: District Health Information Software 2 (DHIS2) is an open source, web-based health management information system (HMIS) platform. Today, DHIS2 is the world's largest HMIS platform, in use by 73 low and middle-income countries. Approximately 2.4 billion people live in countries where DHIS2 is used. Including NGO-based programs, DHIS2 is in use in more than 100 countries. The core DHIS2 software development is managed by the Health Information Systems Program (HISP) at the University of Oslo (UiO). HISP is a global network comprised of 13 in-country and regional organizations, providing day-in, day-out direct support to ministries and local implementers of DHIS2².

My Involvement: I worked with Department of Informatics, University of Oslo, Norway more than 3 years. I diligently worked for many countries including Bangladesh. I developed many apps and functionalities for Maternal Neonatal, Patient Behavior Checking, Supply Chain Information System, Tuberculosis Patient information management, routine health information system, malaria summary data collection, training, capacity development and so many other areas. Hopefully, I can elaborate the functionalities of DHIS2.



Picture: I am standing with the DHIS2 global community, University of Oslo, Norway.

KEY FEATURES OF DHIS2

A. GOVERNED OPEN SOURCE:

The DHIS2 platform boasts data warehousing, visualization features, and the possibility for data users and policy makers to generate analyses from live data in real-time. DHIS2 development is coordinated by HISP at UiO, with developers located in Norway, India, Vietnam, Tanzania, Ireland, and the United States of America. Until 2011, DHIS2 was developed and maintained by PhD students and faculty members at the Department of Informatics at UiO, working closely with the users through implementation and research projects. From 2012, in response to the increasing demands, the core software development organization was professionalized by hiring full-time developers, architects and project managers. The result was that new user demands were captured and introduced through professional quarterly release cycles².

B. DYNAMIC EMBRACE OF TECHNOLOGY

From the beginning, priority has been on embracing new technology while also ensuring a robust solution that will work in resource-constrained settings. Many technologies are used, including the opportunity to report by SMS from feature phones. DHIS2 was the first governmental information system south of Sahara to scale online nationally (in Kenya in 2011). The new DHIS2 [Android App](#) allows offline data capture across all DHIS2 data models.

C. IN-COUNTRY OWNERSHIP

Each country has its own “instance” of the DHIS2 platform with full ownership of the application and data. In collaboration with experts in the DHIS2 community, ministries of health configure their own information system on top of the generic platform. A crucial aspect of DHIS2-implementation is that data ownership rests with each user institution.

D. CAPACITY BUILDING

To ensure that implementations result in sustainable health information systems which are used to support decision-making, HISP-UiO spends significant resources on building institutions and commitment.

E. UPTAKE BY KEY GLOBAL HEALTH INSTITUTIONS

Recognizing the breadth of national implementations, global health institutions have found it useful to adopt DHIS2 as an institutional software program that allows them to align to national information systems and at the same time meet their institutional data management needs. Such users include the

U.S. President's Emergency Plan for AIDS Relief (PEPFAR), Doctors Without Borders, Population Services International (PSI), and global health programs at the World Health Organization (WHO).

F. DHIS2'S ABILITY TO INTEGRATE WITH OTHER SOFTWARE

DHIS2 has a modular, layered architecture with a strong and open application programming interface (API). This means that DHIS2 essentially serves as a data warehouse with more than 60 native applications which pull or push data stored in the warehouse to perform different functions such as data quality checks or making scorecards.

G. BENEFITS OF SCALE

The widespread adoption of DHIS2 has allowed the realization of a whole series of other benefits. Recognizing its uptake, WHO endorsed DHIS2 as a global public good, and has developed data quality management apps and normative guidance to support countries in better application of DHIS2.

H. CROSS-SECTOR APPLICABILITY AND INTEROPERABILITY

DHIS2 is well-suited for a broad range of applications, notably now covering routine reporting for district, facility, and community health, education, water and sanitation, agriculture, and more. For example, in Zambia alone DHIS2 serves as the national MIS for three-line ministries.

I. SUSTAINABILITY

The development of the DHIS2 core platform has received funding from Norad, the University of Oslo and the Research Council of Norway from the very beginning in 1994. In 2013 PEPFAR and the Global Fund committed to support the DHIS2 development together with Norad due to the footprint (30 countries and growing fast) DHIS2 had already established. Later UNICEF, CDC, GAVI, and Bill and Melinda Gates Foundation (BMGF) came onboard.

DATA CAPTURE AND VISUALIZATION:

You can visit this platform by using the following credential:

<https://play.dhis2.org/2.35.1>

User: admin

Password: district

Data Capture: This system can capture any kinds of health information. It means that we can develop and customize any health domain for capturing data and decision making. For example:

- COVID-19 Tracker
- Child programme
- Malaria Case Diagnosis, Treatment, and Investigations
- Malaria Focus Investigation
- Tuberculosis
- Maternal Neonatal and Child Health Tracker
- EPI and Cold Chain
- Supply Chain Information Management
- Clinical Monitoring Checklist
- Emergency Response like Rohingya issue
- Facility Assessment
- HIV care
- Project Management
- Productive Health
- ...etc.

It can also capture inpatient and outpatient information with detail indicators.

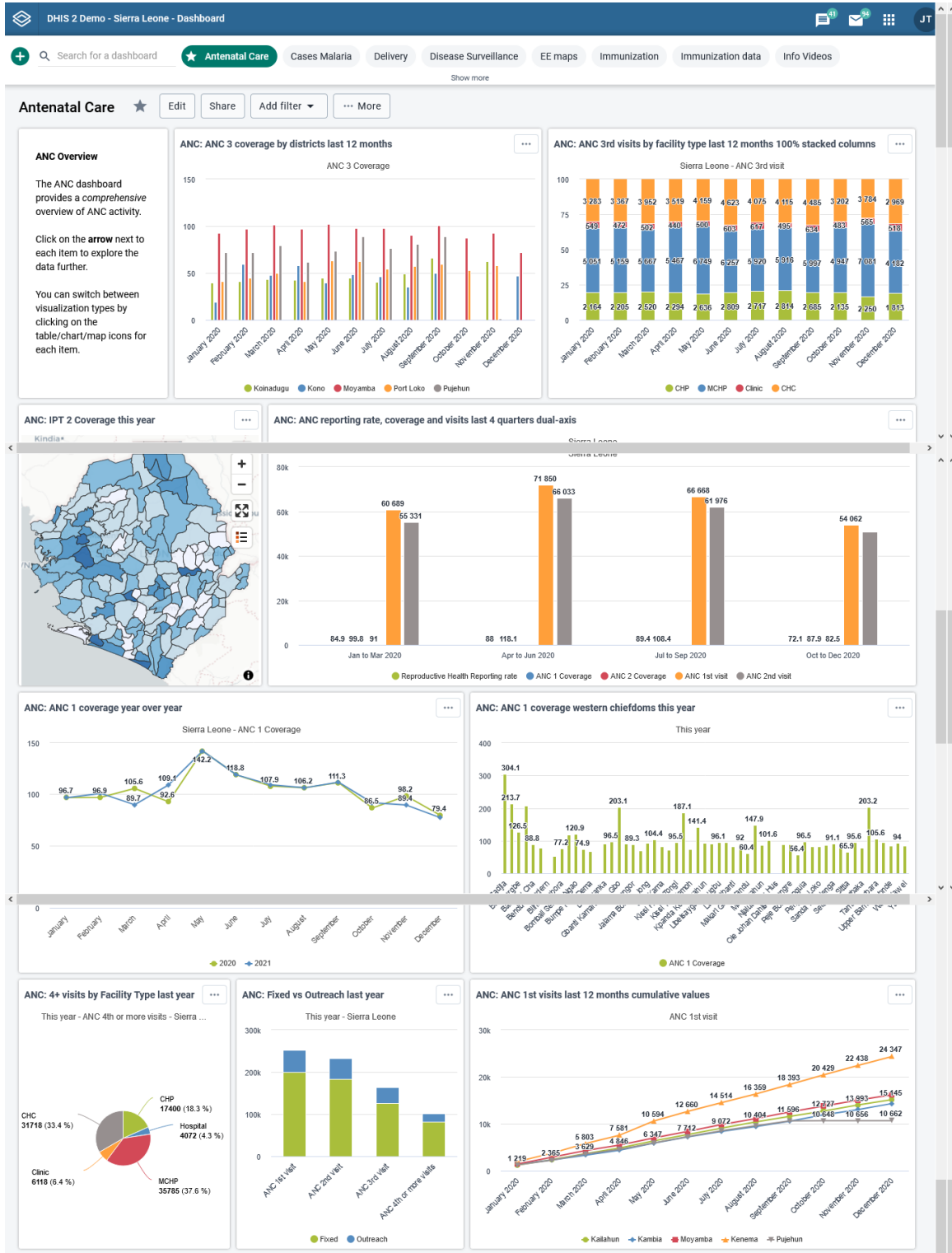
DASHBOARD:

Once you log into this application you can see the following real time, decision making dashboard. Individual users can create their own dashboard with multiple reports so that when they access the system, they can see the updated reports. The user's accessibility has strongly maintained and we can define the level of access to the users any time.

For Bangladesh perspective, we have six levels of users including the national level, division, district, upazila, union and community level. It has active users about 10,000+ and total number of organization units or facilities above 14,000.

It is a bottom-up approach so that any level of users from community clinic to national level can take decision using the dashboard and analytical reports.

The below mentioned dashboard contains the antenatal care, malaria cases, delivery, disease surveillance, immunization, HIV summary, inpatient and outpatient summary, morbidity and mortality information, malnutrition, measles, mother and child health, staffing, reproductive health and many more reports.



Recommendations to use any digital health systems: Before choosing any digital record keeping applications, we need to keep in mind the following areas:

- Patients information should be secured
- Followed ICD-10 codes
- Easy to deploy, manage and customize
- System accessibility should be strongly monitored
- Periodic database backup
- Audit log for any kinds of changes of patient and related information
- Regular training to the users
- Proper SoP or standard documentation of the process flow of the application
- Available Mobile apps
- SMS integration mechanism
- Micro-finance like bKash, Rocket, Nagad integration
- Patient personal portal
- Unique Health ID
- Integration option with other related applications like Gov. portal, EMR, Laboratory Information system etc.

Conclusion: If any public or private health institution wants to use this application, they can easily do it without any big investment like other commercial health application. Still, I have been working in this platform, for many health domains with low resource setup I believe this application will be a best choice for keeping digital health records securely, easily and cost effectively.

References:

[1] Good Medical Record Keeping, <https://internalmedicine.imedpub.com/good-medical-record-keeping.php?aid=6129>

[2] DHIS2, <https://docs.dhis2.org/2.35/en/index.html>

Resources

My developed platform for DHIS2: <http://dhis2trainingland.com/eportal/> and <http://dhis2trainingland.com>